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[CAN]

PRECAUTIONS PFP:00001

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

JKS001AE

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

#### **WARNING:**

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

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

UKS001AF

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

#### CALITION

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.
- Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
- 4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
- 5. Diagnose CAN communication system. Refer to LAN-8, "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.

#### **PRECAUTIONS**

[CAN]

**Precautions For Harness Repair CAN SYSTEM** 

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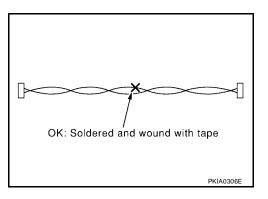
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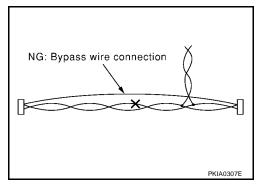
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 Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in).]



 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.)



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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**

UKS001AJ

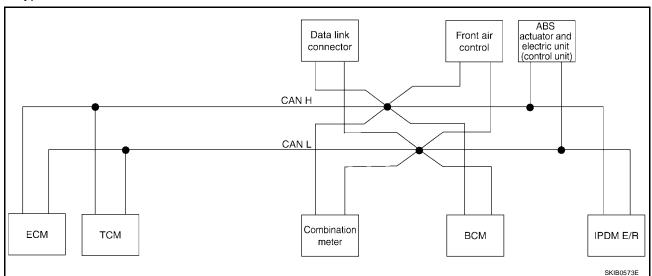
Go to CAN system, when selecting your CAN system type from the following table.

Body type		Truck													
Axle			21	VD				4WD							
Engine		VK56DE													
Transmission		A/T													
Brake control	ABS VDC			ABS					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	14	15
CAN system trouble diagnosis	<u>LAN</u> -24	<u>LAN</u> -50	<u>LAN</u> -79	<u>LAN</u> -112	LAN = 140	LAN <u>-</u> <u>170</u>	LAN = 204	LAN - 232	LAN - 262	<u>LAN</u> <u>-</u> <u>296</u>	<u>LAN</u> <u>-</u> <u>326</u>	<u>LAN</u> <u>-</u> 360	<u>LAN</u> <u>-</u> 398	<u>LAN</u> <u>-</u> <u>427</u>	LAN - 459

<sup>×:</sup> Applicable

## TYPE 1/TYPE 2/TYPE 3 System diagram

Type 1



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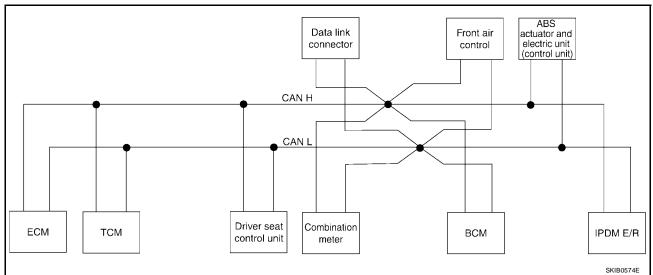
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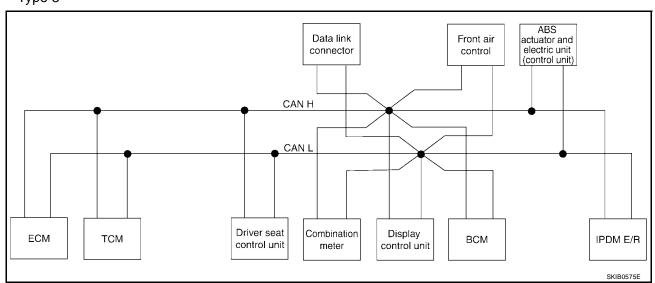
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Type 3



## Input/output signal chart

T: Transmit R: Receive

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
Engine speed signal	Т	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

									[CAN]
Signals	ECM	TCM	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
P range signal		Т	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					<u> </u>	R		R
Blower fan motor switch signal	R					Т	R		
					Т	<u> </u>	R		
A/C switch/indicator signal					R		Т		
Cooling fan speed request signal	Т						R		R
Position light request signal				R		T			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				R		Т			R
				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
Horn chirp signal						Т			R
ABS warning lamp signal				R				Т	
Brake warning lamp signal				R				Т	
SLIP indicator lamp signal				R				Т	

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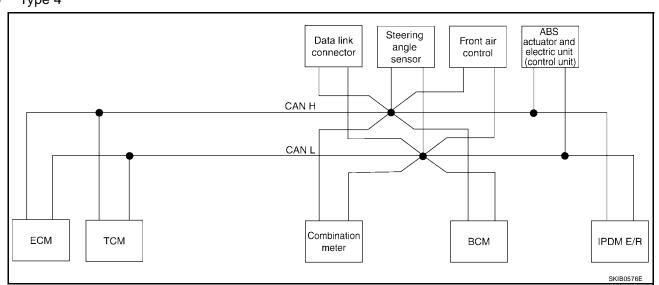
Н

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
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*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					

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

# TYPE 4/TYPE 5/TYPE 6 System diagram

Type 4

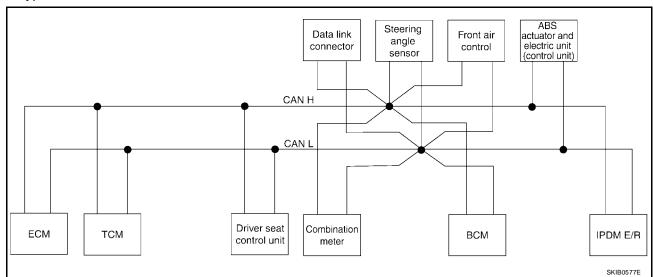


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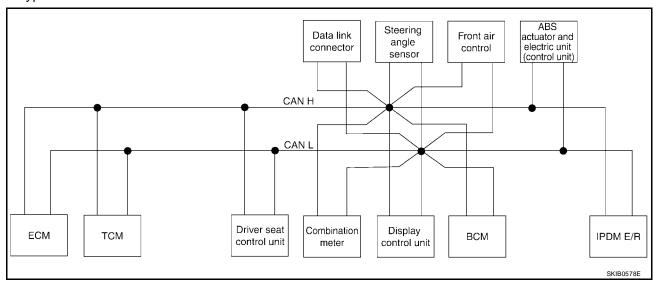
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<sup>\*2:</sup> Column shift model only.





#### • 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	
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								
Battery voltage signal	Т	R								
Key switch signal			R			Т				

[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	АВ
Ignition switch signal			R			Т				R	С
P range signal		Т	R								-
Stop lamp switch signal		R		Т							. D
Fuel consumption monitor signal	Т			R T	R						
Turbine revolution signal	R	Т									Е
Output shaft revolution signal	R	Т									
A/C switch signal	R					Т					
A/C compressor request signal	Т							R		R	F
Blower fan motor switch signal	R					Т		R			-
					Т			R			_
A/C switch/indicator signal					R			Т			G
Cooling fan speed request signal	Т							R		R	
Position light request signal	-			R		Т				R	Н
Low beam request signal						Т				R	
Low beam status signal	R									T	-
High beam request signal				R		Т				R	.
High beam status signal	R			• • • • • • • • • • • • • • • • • • • •		•				T	-
Front fog light request signal						Т				 R	J
Day time running light request signal				R		T				R	-
Day time running light request signal				R				R	Т		-
Vehicle speed signal	R	R	R	T	R	R		R	'		LA
Sleep wake up signal	1	1	R	R	1	T				R	
Door switch signal			R	R	R	T				R	
Turn indicator signal				R		T					
Key fob ID signal			R			T					
Key fob door unlock signal			R			T					M
Buzzer output signal			IX.	R		T					-
Fuel level sensor signal	R			T		'					-
Fuel level low warning signal	IX.			T	R						
ASCD SET lamp signal	Т			R	IX.						
ASCD CRUISE lamp signal	<u>'</u> Т			R							
Malfunction indicator lamp signal	<u>'</u> Т			R							
Front wiper request signal	'			11		Т				R	-
Front wiper request signal  Front wiper stop position signal										T	-
						R T					
Theft warning horn request signal										R	
Horn chirp signal						Т	-			R	-
Steering angle sensor signal							Т		R		-
ABS warning lamp signal				R					T		
VDC OFF indicator lamp signal				R					Т		

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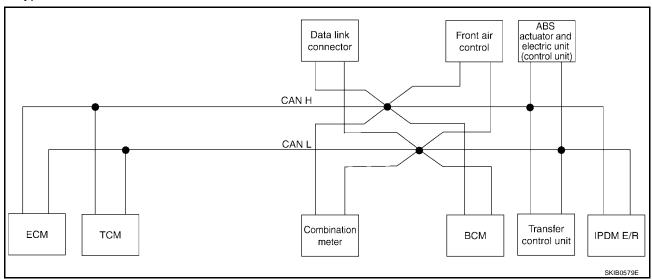
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Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Steer- ing angle sensor	Front air control	ABS actua- tor and elec- tric unit (con- trol unit)	IPDM E/R
SLIP indicator lamp signal				R					Т	
Brake warning 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						

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

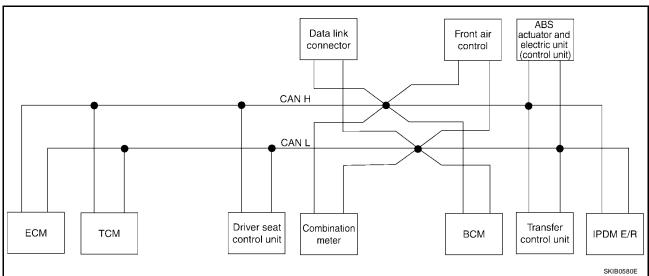
# TYPE 7/TYPE 8/TYPE 9 System diagram

### Type 7

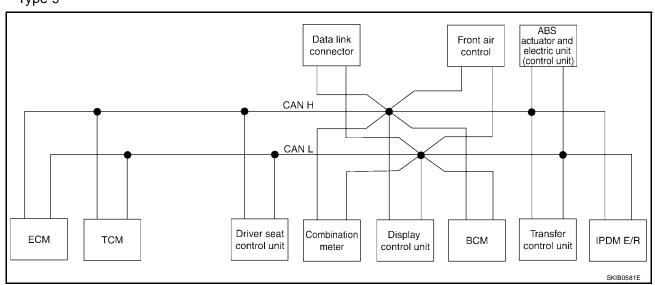


<sup>\*2:</sup> Column shift model only.





Type 9



## 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	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						
Stop lamp switch signal								R	Т	
Battery voltage signal	Т	R								
Key switch signal			R			Т				
Ignition switch signal			R			Т				R
P range signal		Т	R							
Closed throttle position signal	Т	R								
Wide open throttle position signal	Т	R								

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Signals	ECM	TCM	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Front air control	Trans- fer con- trol unit	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			
Accelerator pedal position signal	Т	R							R	
Fuel consumption monitor signal	Т			R T	R					
Turbine revolution signal	R	Т		'	IX					
Output shaft revolution signal	R	т Т								
A/C switch signal		I				Т				
	R					ı				
A/C compressor request signal	T						R			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									Т
Front fog light request signal						Т				R
Day time running light request signal				R		Т				R
				R			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
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	T			R						
Fuel level low warning signal	•			T	R					
Front wiper request signal				•	, ,	Т				R
Front wiper stop position signal						R				T
Theft warning horn request signal						T				R
Horn chirp signal						T				R
ABS warning lamp signal				R		'			Т	1
SLIP indicator lamp signal				R					T	

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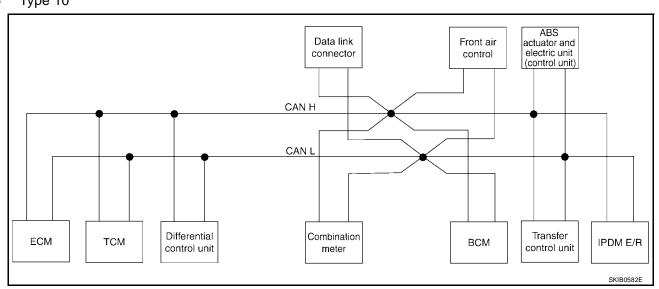
Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Front air control	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
Brake warning lamp signal				R					Т	
System setting signal			R		Т					
			Т		R					
Distance to empty signal				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		T		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*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						
4WD shift switch signal	R							Т		

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

## **TYPE 10/TYPE 11/TYPE 12**

## System diagram

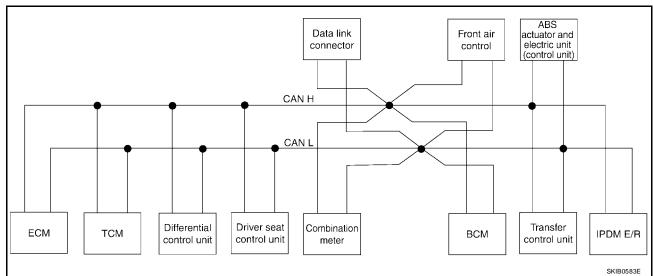
Type 10



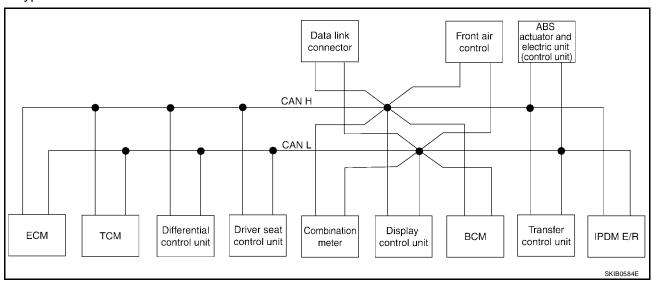
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<sup>\*2:</sup> Column shift model only.





## • Type 12



#### Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	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	Transf er 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						
Stop lamp switch signal									R	T	
Battery voltage signal	Т	R									
Key switch signal				R			Т				
Ignition switch signal				R			Т				R
P range signal		Т		R							
Closed throttle position signal	Т	R									

[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	Transf er con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/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 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			R
Blower fan motor switch signal	R						Т	R			
A/C switch/indicator signal						T R		R T			
Cooling fan speed request signal	Т					K		R			R
Position light request signal	'				R		Т	IX.			R
Low beam request signal					IX		T				R
Low beam status signal	R						!				T
High beam request signal	IX				R		Т				R
High beam status signal	R				K						T
Front fog light request signal	K						Т				R
					В						
Day time running light request signal  Vehicle speed signal			R		R R		Т	R	R	Т	R
vernere 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
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	T				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

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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	Transf er con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
ABS warning 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				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			T						
Manual mode shift up signal*2		R			T						
Manual mode shift down signal <sup>*2</sup>		R			Т						
Tow mode switch signal		R			Т						
A/T fluid temperature sensor signal		Т			R						
4WD shift switch signal	R		R						Т		

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

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

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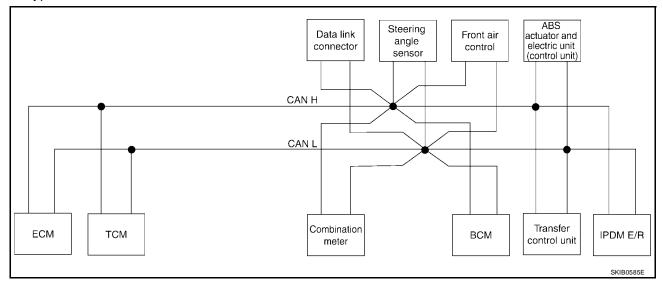
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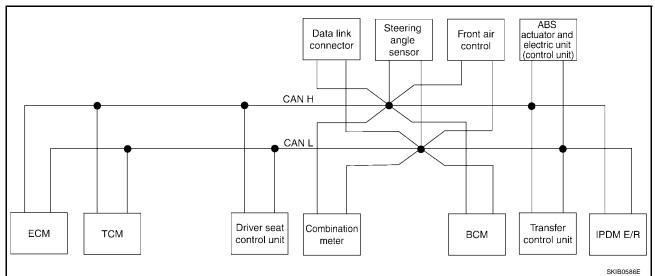
#### **TYPE 13/TYPE 14/TYPE 15**

#### System diagram

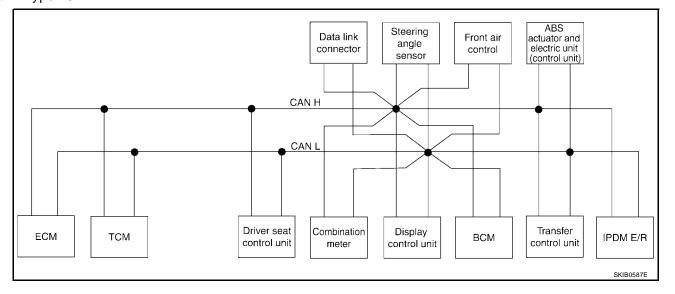
Type 13



Type 14



Type 15



## Input/output signal chart

T: Transmit R: Receive

									T: Tran	smit R:	Receive
Signals	ECM	тсм	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Steer- ing angle sen- sor	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	T									
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								
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 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			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										Т
Front fog light request signal						Т					R
Day time running light request signal				R		Т					R
Vehicle speed signal		_		R		_		R	R	Т	
	R	R	R	T	R	R		R			
Sleep wake up signal			R	R		T					R
Door switch signal			R	R	R	T					R
Key fob ID signal			R			T					
Key fob door unlock signal			R			T					
Buzzer output signal				R		Т					

[CAN]

Signals		400										
ASCD SET lamp signal         T         R <th>IPDM E/R</th> <th>actua- tor and elec- tric unit (con- trol</th> <th>fer con- trol</th> <th>air con-</th> <th>ing angle sen-</th> <th>всм</th> <th>play con- trol</th> <th>bina- tion</th> <th>seat con- trol</th> <th>тсм</th> <th>ECM</th> <th>Signals</th>	IPDM E/R	actua- tor and elec- tric unit (con- trol	fer con- trol	air con-	ing angle sen-	всм	play con- trol	bina- tion	seat con- trol	тсм	ECM	Signals
ASCD CRUISE lamp signal T R R S S S S S S S S S S S S S S S S S								Т			R	Fuel level sensor signal
Malfunction indicator lamp signal         T         R           Fuel level low warning signal         T         R           Front wiper request signal         T         T           Front wiper stop position signal         R         T           Theft warning horn request signal         T         T           Horn chirp signal         T         T           Steering angle sensor signal         T         T           ABS warning lamp signal         R         T           VDC OFF indicator lamp signal         R         T           VDC OFF indicator lamp signal         R         T           SUIP indicator lamp signal         R         T           T         R         T           System setting signal         R         T           T         R         T           Distance to empty signal         T         R           T         R         T           ASCD operation signal         T         R           ASCD Ocancel request         T         R           A/T CHECK indicator lamp signal         T         R           A/T position indicator lamp signal         T         R           A/T position indicator lamp signal         T								R			Т	ASCD SET lamp signal
Total level low warning signal								R			Т	ASCD CRUISE lamp signal
Front wiper request signal         T           Front wiper stop position signal         R           Theft warning horn request signal         T           Horn chirp signal         T           Steering angle sensor signal         T           ABS warning lamp signal         R           VDC OFF indicator lamp signal         R           SLIP indicator lamp signal         R           Brake warning lamp signal         R           System setting signal         T           T         R           Distance to empty signal         T           ASCD operation signal         T           ASCD OD cancel request         T           A/T CHECK indicator lamp signal         T           T         R           A/T position indicator lamp signal         T           T         R           Tire pressure signal         T								R			Т	Malfunction indicator lamp signal
Front wiper stop position signal         R           Theft warning horn request signal         T           Horn chirp signal         T           Steering angle sensor signal         T           ABS warning lamp signal         R           VDC OFF indicator lamp signal         R           SLIP indicator lamp signal         R           Brake warning lamp signal         R           T         R           System setting signal         T           T         R           Distance to empty signal         T           ASCD operation signal         T           T         R           A/T check indicator lamp signal         T           T         R           A/T position indicator lamp signal         T           R         T           R         T           R         R							R	Т				Fuel level low warning signal
Theft warning horn request signal         T         T           Horn chirp signal         T         T           Steering angle sensor signal         T         R           ABS warning lamp signal         R         T           VDC OFF indicator lamp signal         R         T           SLIP indicator lamp signal         R         T           Brake warning lamp signal         R         T           System setting signal         R         T           Distance to empty signal         T         R           ASCD operation signal         T         R           ASCD OD cancel request         T         R           A/T check indicator lamp signal         T         R           A/T position indicator lamp signal         T         R           Tire pressure signal         R         T	R					Т						Front wiper request signal
Horn chirp signal	Т					R						Front wiper stop position signal
Steering angle sensor signal	R					Т						Theft warning horn request signal
ABS warning lamp signal	R					Т						Horn chirp signal
VDC OFF indicator lamp signal         R         T           SLIP indicator lamp signal         R         T           Brake warning lamp signal         R         T           System setting signal         T         R           T         R         T           Distance to empty signal         T         R           ASCD operation signal         T         R           ASCD OD cancel request         T         R           A/T CHECK indicator lamp signal         T         R           A/T position indicator lamp signal         T         R           Tire pressure signal         R         T		R			Т							Steering angle sensor signal
SLIP indicator lamp signal		Т						R				ABS warning lamp signal
R		Т						R				VDC OFF indicator lamp signal
R		Т						R				SLIP indicator lamp signal
System setting signal  T R  Distance to empty signal  ASCD operation signal  T R  ASCD OD cancel request  T R  A/T CHECK indicator lamp signal  T R  A/T position indicator lamp signal  T R  T R  T R  T R  T R  T R  T R  T		Т						R				Brake warning lamp signal
ASCD operation signal												System setting signal
ASCD OD cancel request         T         R           A/T CHECK indicator lamp signal         T         R           A/T position indicator lamp signal         T         R           R         R         R           Tire pressure signal         R         T							R	Т				Distance to empty signal
A/T CHECK indicator lamp signal T R  A/T position indicator lamp signal T R R  Tire pressure signal R T										R	Т	ASCD operation signal
A/T position indicator lamp signal T R R  Tire pressure signal R T	<u> </u>									R	Т	ASCD OD cancel request
Tire pressure signal R T								R		Т		A/T CHECK indicator lamp signal
			R					R		Т		A/T position indicator lamp signal
Tire pressure data signal						Т		R				Tire pressure signal
	<u> </u>					Т	R					Tire pressure data signal
1st position switch signal*1 R T								Т		R		1st position switch signal*1
4th position switch signal*1 R T								Т		R		4th position switch signal*1
Manual mode switch signal*2 R T								Т		R		
Not manual mode switch signal <sup>*2</sup>								T		R		
Manual mode shift up signal *2 R T	+											
	+											
manda mede dim dem digital												
Tow mode switch signal R T												
A/T fluid temperature sensor signal T R T T T T T T T T T T T T T T T T T			_					K		I		<u> </u>

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

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

#### [CAN]

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

PFP:23710

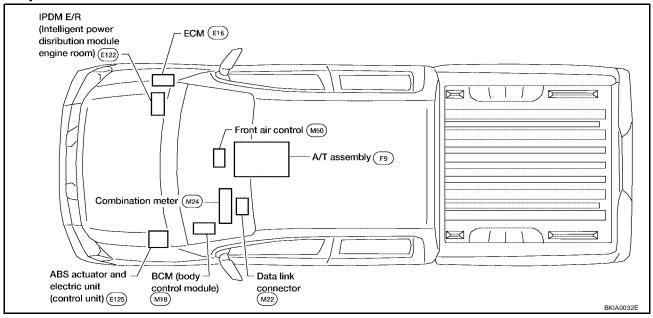
## **System Description**

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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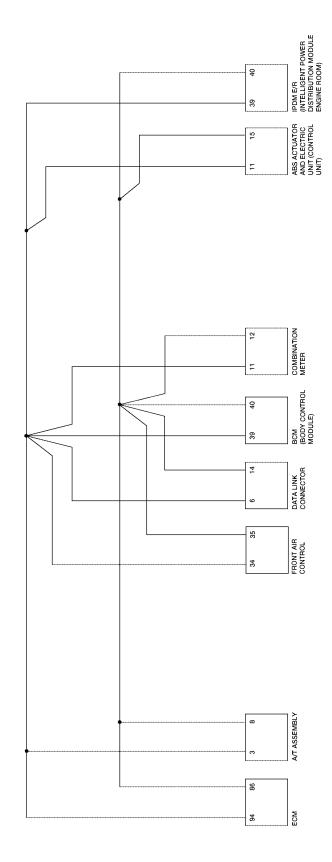
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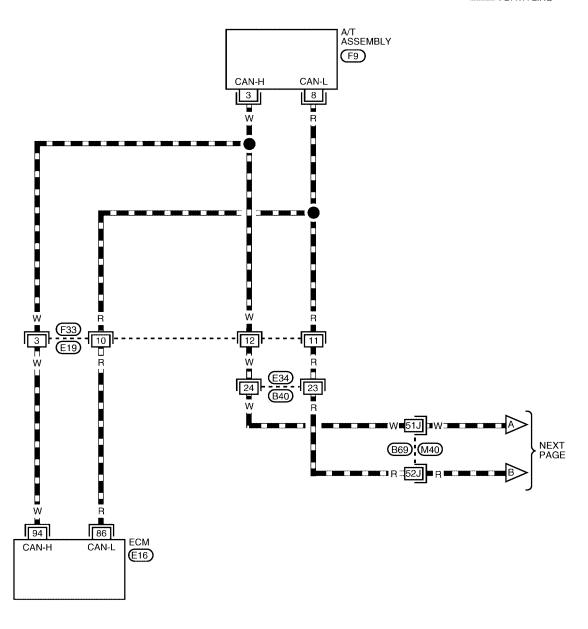
BKWA0130E

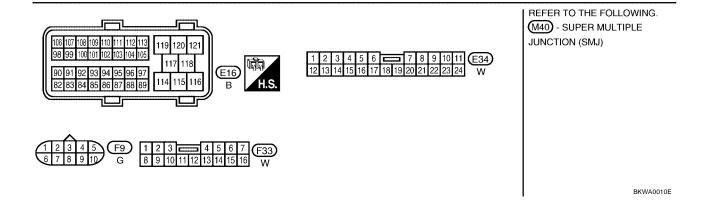
Wiring Diagram - CAN -

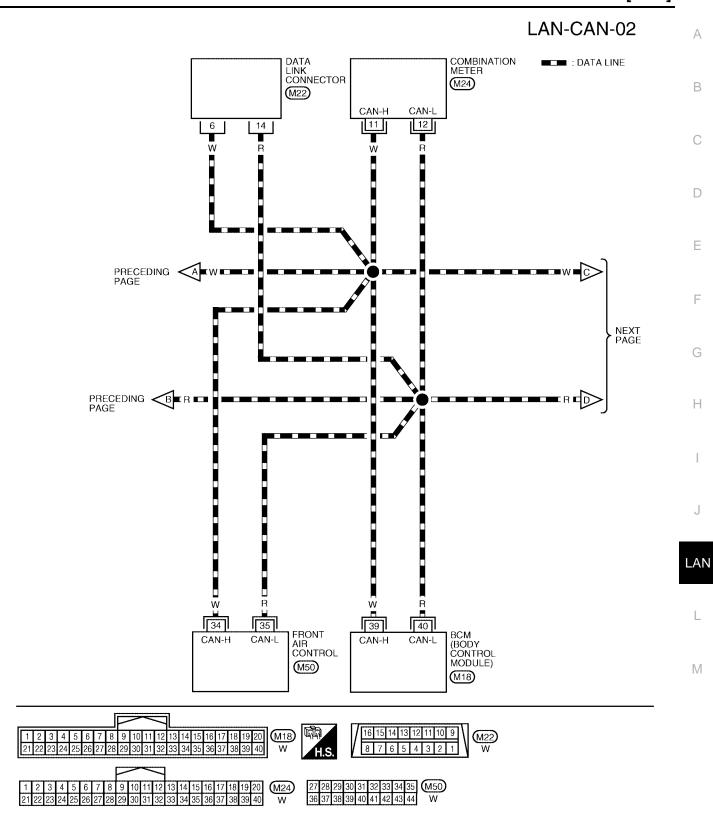
UKS001AN

## LAN-CAN-01

: DATA LINE



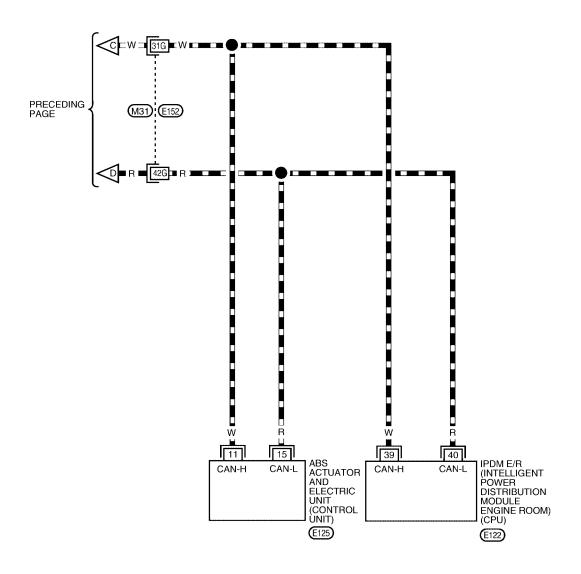


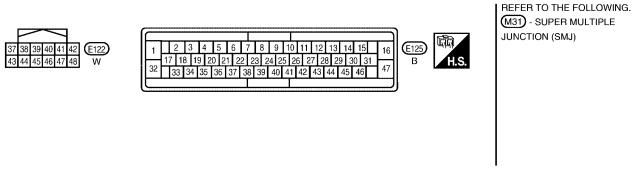


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### LAN-CAN-03

: DATA LINE

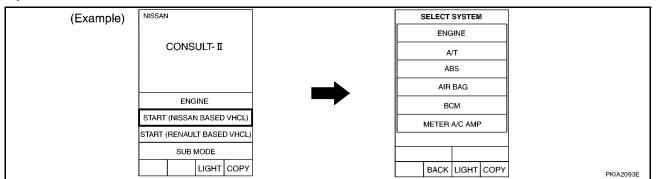




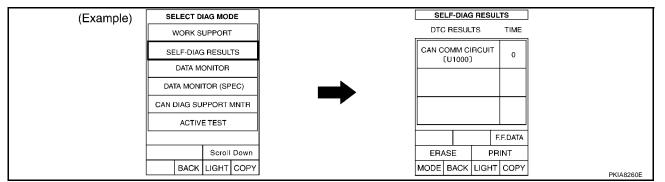
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Work Flow

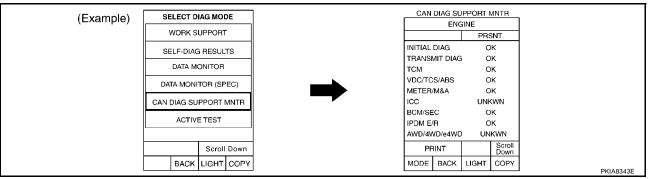
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



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



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



- Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to LAN-30, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-30">LAN-30</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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-32</u>, "<u>CHECK SHEET RESULTS</u> (<u>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.

M screen  Io indication -	Initial diagnosis  NG  NG  NG	Transmit diagnosis UNKWN UNKWN	ECM —	TCM UNKWN	eceive diagnos METER /M&A UNKWN	BCM/SEC	IPDM E/R
- lo indication	diagnosis NG NG	diagnosis UNKWN			/M&A		IPDM E/R
- lo indication	NG	-	_	UNKWN	LINIKWNI		
		UNKWN			I	UNKWN	UNKWN
	NG		UNKWN	_	UNKWN	_	_
_		UNKWN	UNKWN	-	UNKWN	_	UNKWN
	NG	UNKWN	UNKWN	_	_	_	_
lo indication	_	UNKWN	UNKWN	_	_	UNKWN	_
						l	
						l	
					,		
	Attach cop	v of		Attach c	opy of	l	
_							

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

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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 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 ABS CAN DIAG SUPPORT MNTR	Attach copy of IPDM E/R CAN DIAG SUPPORT MNTR	

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

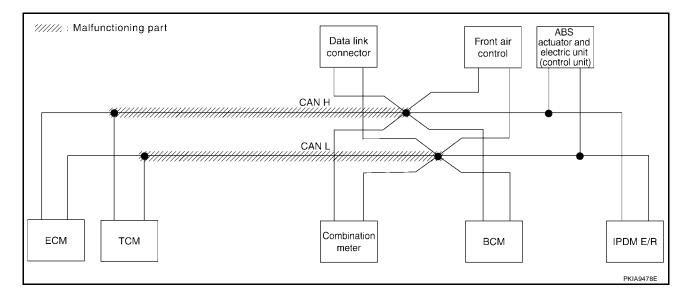
#### NOTE:

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-42</u>, "Circuit Check Between TCM and Data Link Connector" .

				CAN D	IAG SUPPOR	T MNTR		
SELECT S	YSTEM screen	Initial	Transmit		R	eceive diagno	sis	
SELECT S	TOTEW Screen	diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN		UNKWN	UNK WN	UNK WN	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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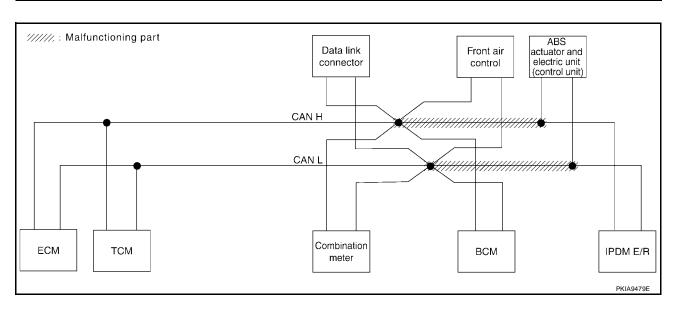
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Case 2

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

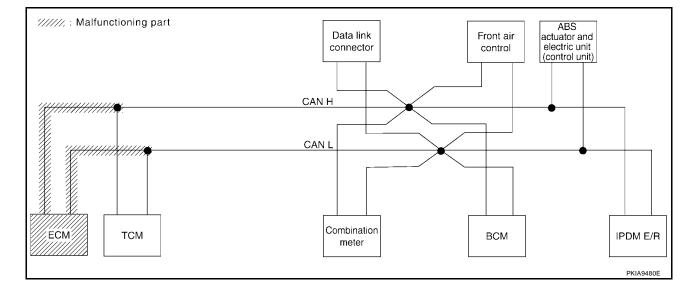
				CAN DIAG SUPPORT MNTR					
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK <b>W</b> N	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNK WN	
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	



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Case 3
Check ECM circuit. Refer to <u>LAN-44, "ECM Circuit Check"</u>.

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

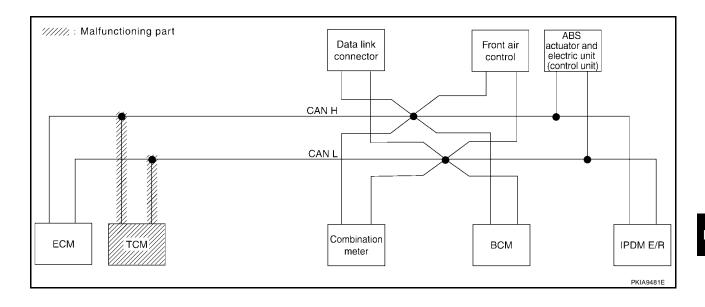


## **CAN SYSTEM (TYPE 1)**

[CAN]

Case 4
Check TCM circuit. Refer to <u>LAN-45</u>, "TCM Circuit Check".

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



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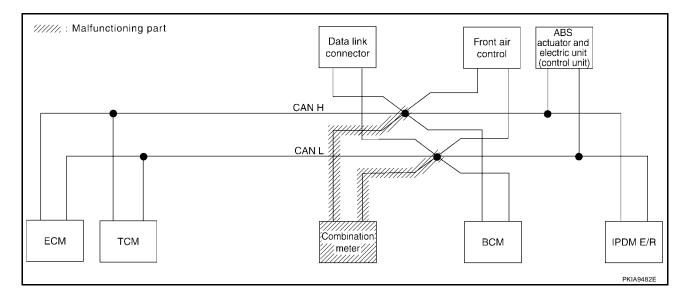
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Case 5
Check combination meter circuit. Refer to <u>LAN-45</u>, "Combination Meter Circuit Check" .

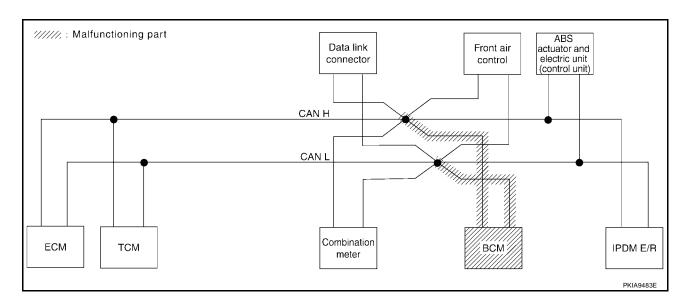
				CAN DIAG SUPPORT MNTR					
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNIKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	_	_	
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	
ABS	_	NG	UNKWN	UNKWN	_	-	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	



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Case 6
Check BCM circuit. Refer to <u>LAN-46</u>, "BCM Circuit Check" .

				CAN D	AG SUPPOR	T MNTR		
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis				
		diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UN <b>K</b> ₩N	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKANN	_



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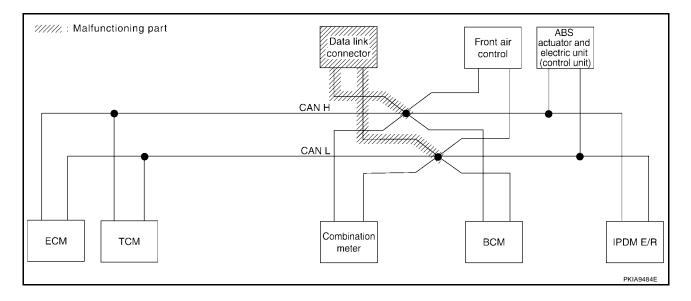
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Case 7
Check data link connector circuit. Refer to <u>LAN-46</u>, "<u>Data Link Connector Circuit Check</u>".

				CAN DI	AG SUPPOR	Γ MNTR		
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis				
OLLLO1 O1	OTEN SCICCI	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
NGINE –	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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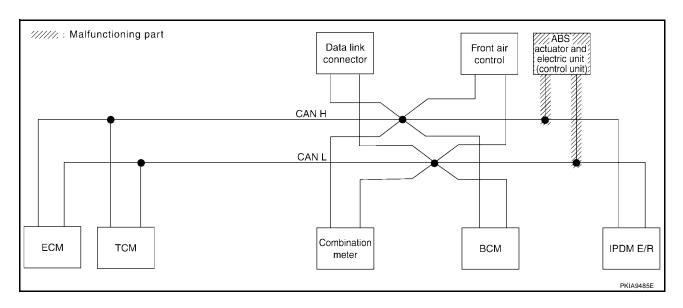
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Case 8

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-47</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

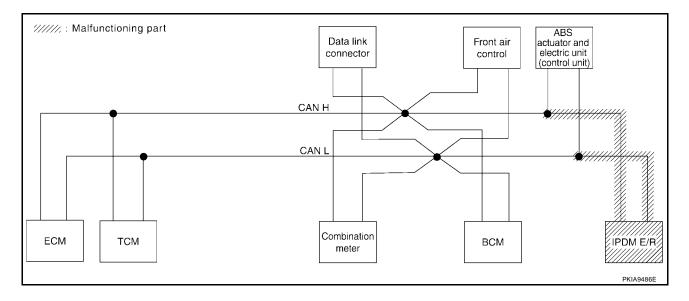
				CAN D	IAG SUPPOR	T MNTR		
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis				
CLLLOT	TOTEW SCIECT	diagnosis	diagnosis	ЕСМ	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	<b>V</b> €	UNK/WN	UNIMN	_	_	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	-



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Case 9
Check IPDM E/R circuit. Refer to <u>LAN-47</u>, "IPDM E/R Circuit Check" .

				CAN D	IAG SUPPOR	T MNTR		
SELECT SYSTEM screen		Initial	Transmit		R	eceive diagno	sis	
		diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	NGINE –		UNKWN	_	UNKWN	UNKWN	UNKWN	UNK <b>A</b> VN
A/T	_	NG	UNKWN	UNKWN	_	- UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNK/WN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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### Case 10

Check CAN communication circuit. Refer to <a href="LAN-48">LAN-48</a>, "CAN Communication Circuit Check"</a> .

				CAN DI	AG SUPPOR	T MNTR		
SELECT SYS	TEM screen	Initial	Transmit		R	eceive diagno	sis	
SELECT STSTEM SCIECT		Initial diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ∕WN	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN
ABS	_	W	UNKWN	UNK/WN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_

### Case 11

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-49}}$ , "IPDM E/R Ignition Relay  $\underline{\text{Circuit Check}}$ ".

				CAN D	AG SUPPOR	T MNTR		
SELECT SYS	STEM screen	Initial	Transmit		R	eceive diagnos	sis	
022201010	diagnos		diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_

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#### Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-49</u>, "IPDM E/R Ignition Relay Circuit Check".

				CAN DI	AG SUPPOR	T MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis					
SELECT SYSTEM screen		Initial diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ∕WN	_	_	
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	UNKWN	
ABS	_	NG	UNKWN	UNKWN	_	-	-	_	
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 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

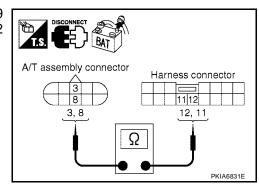
8 (R) - 11 (R)

: 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.
- 2. Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E34 terminals 24 (W), 23 (R).

12 (W) - 24 (W)

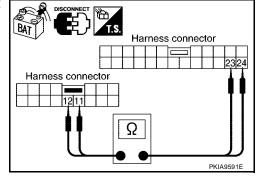
: Continuity should exist.

11 (R) - 23 (R)

: 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 (W), 23 (R) and harness connector B69 terminals 51J (W), 52J (R).

24 (W) - 51J (W)

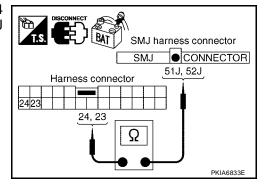
: Continuity should exist.

23 (R) - 52J (R)

: 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 (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W)

: Continuity should exist.

52J (R) - 14 (R)

: Continuity should exist.

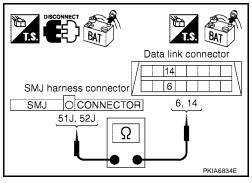
### OK or NG

OK >:

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

LAN-29, "Work Flow"

NG >> Repair harness.



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

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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 M31
- Harness connector E152

#### OK or NG

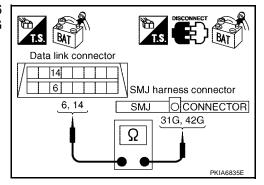
OK >> GO TO 2.

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

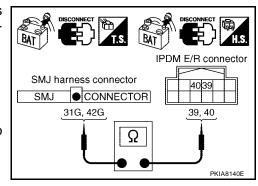
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

### OK or NG

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

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.

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

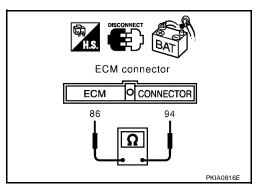
94 (W) - 86 (R)

: 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.

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 (W) and 8 (R).

: Approx. 54 - 66 $\Omega$ 

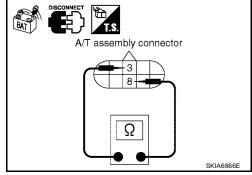
#### OK or NG

OK

>> Replace A/T assembly.

NG

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



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### **Combination Meter Circuit Check**

### 1. CHECK CONNECTOR

- 1. 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.

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

: Approx. 54 - 66 $\Omega$ 

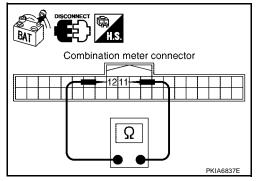
#### OK or NG

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 (W) and 40 (R).

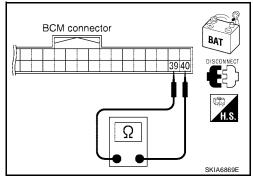
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK

>> Replace BCM. Refer to <u>BCS-25</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

- 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.

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## 2. check harness for open circuit

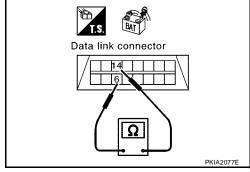
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

: 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.



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

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.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

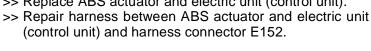
- Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (W) and 15 (R).

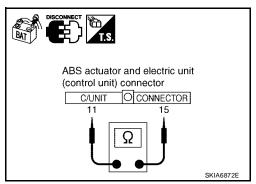
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK

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





### IPDM E/R Circuit Check

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 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.

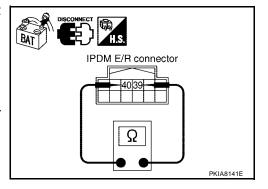
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (W) and 40 (R).

**39 (W) - 40 (R)** : Approx. 
$$108 - 132\Omega$$

#### OK or NG

OK >> Replace IPDM E/R.

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



#### UKS001AZ

### **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
- 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.

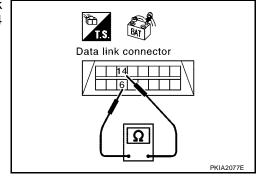
### 2. CHECK HARNESS FOR SHORT CIRCUIT

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

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR SHORT CIRCUIT

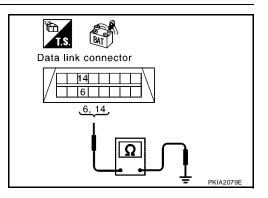
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

> 6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-49, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.



### IPDM E/R Ignition Relay Circuit Check

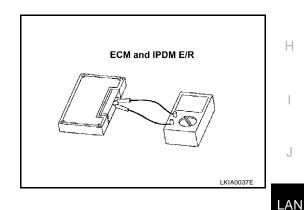
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to 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" .

### 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)**

PFP:23710

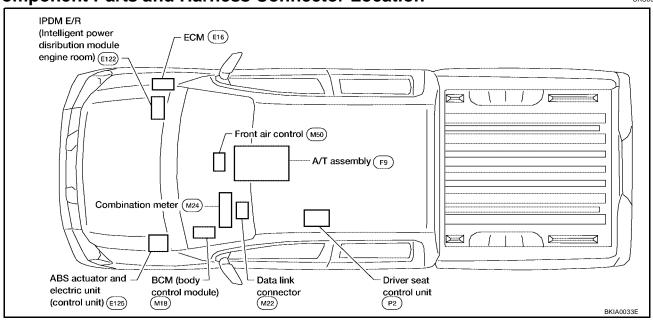
### **System Description**

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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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Schematic UKS001B4

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) 8 33 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) 5 COMBINATION METER 2 BCM (BODY CONTROL MODULE) 4 39 35 FRONT AIR CONTROL 34 DRIVER SEAT CONTROL UNIT 19 A/T ASSEMBLY 98 ECM

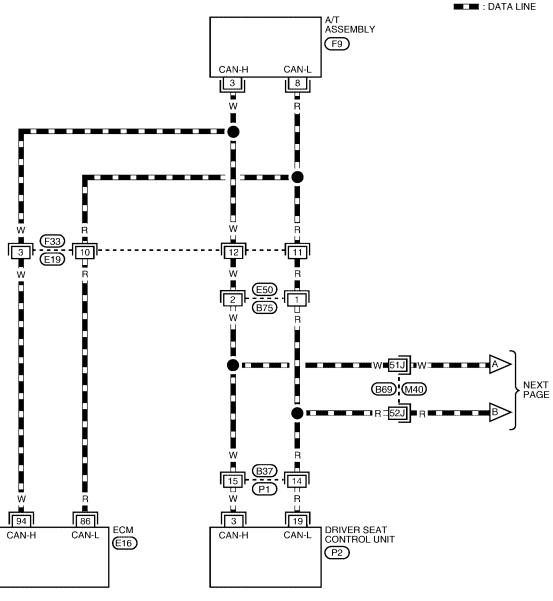
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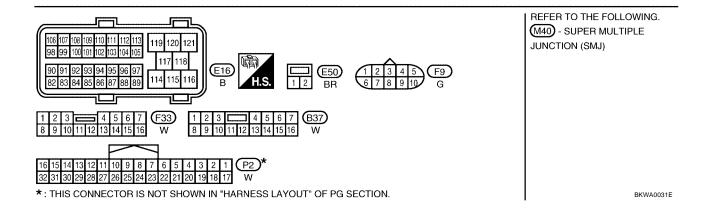
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Wiring Diagram - CAN -

### LAN-CAN-04





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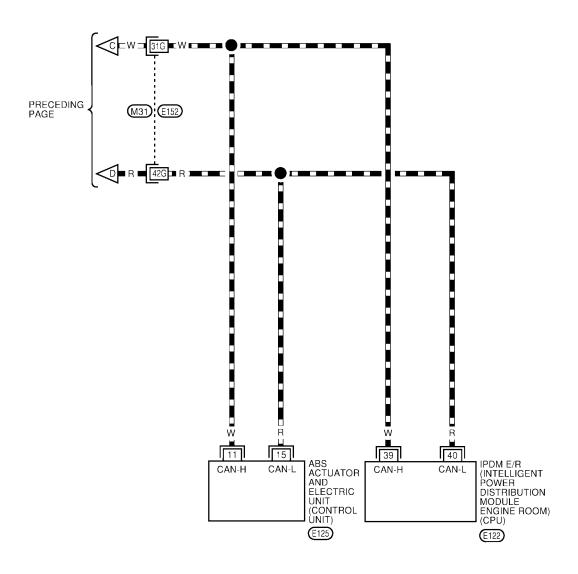
M

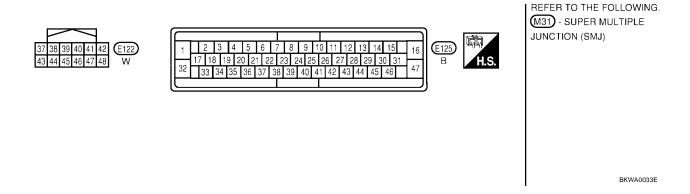
# LAN-CAN-05 DATA LINK CONNECTOR COMBINATION METER : DATA LINE (M24) (M22) CAN-L CAN-H 6 12 14 11 W PRECEDING AWW NEXT PAGE PRECEDING BR ■ PAGE R 40 35 34 39 BCM (BODY CONTROL MODULE) FRONT CAN-L CAN-H CAN-L CAN-H AIR CONTROL (M50) M<sub>18</sub> M<sub>18</sub>

BKWA0133E

### LAN-CAN-06

: DATA LINE



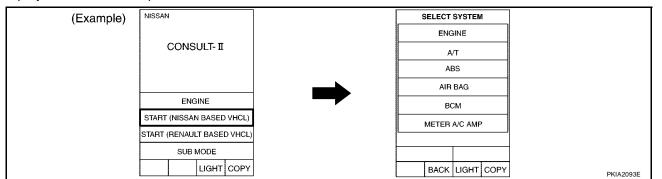


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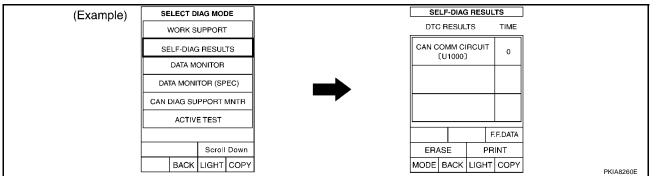
Work Flow

UKS001B6

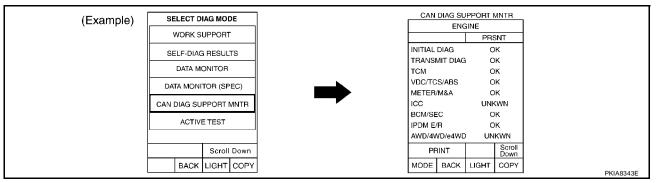
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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-56</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-56">LAN-56</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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-58</u>, "<u>CHECK SHEET RESULTS (EXAMPLE)</u>".

### **CHECK SHEET**

### NOTE:

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

				ÇAN DI	IAG SUPPORT	Γ MNTR		
SELECT SYST	EM screen	Initial	Transmit		R	eceive diagno	sis	
02220.0.0		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
Symptoms :	No indication		UNKWN	UNKWN	_	_	UNKWN	_
	No indication	_	UNKWN	UNKWN			UNKWN	
	No indication		UNKWN	UNKWN			UNKWN	
	No indication		UNKWN	UNKWN			UNKWN	

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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 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)**

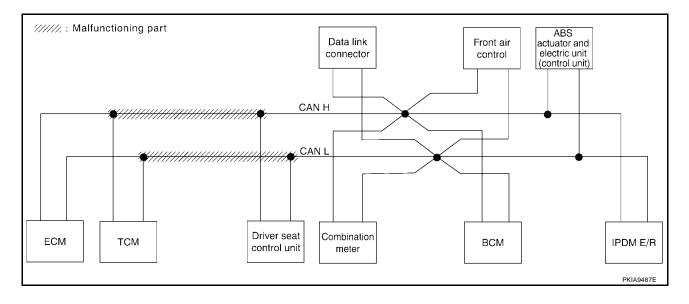
#### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-70</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

				ÇAN D	IAG SUPPOR	Γ MNTR		
SELECT SVST	EM screen	le:tiel	Topograpit		R	eceive diagno	sis	
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	∩ <b>NK</b> WN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNK/WN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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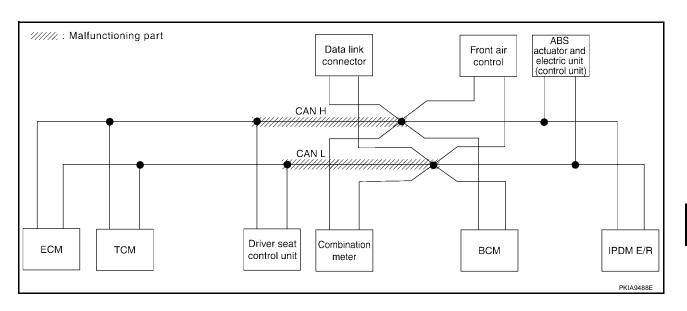
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-71</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

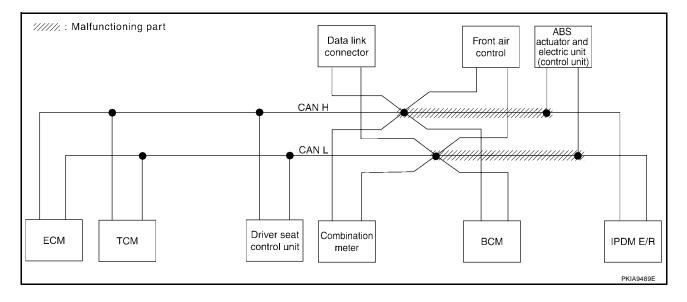
				CAN D	AG SUPPOR	T MNTR		
SELECT SVST	EM scroon	11111	T	Receive diagnosis				
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNK/WN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_



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Case 3
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>.

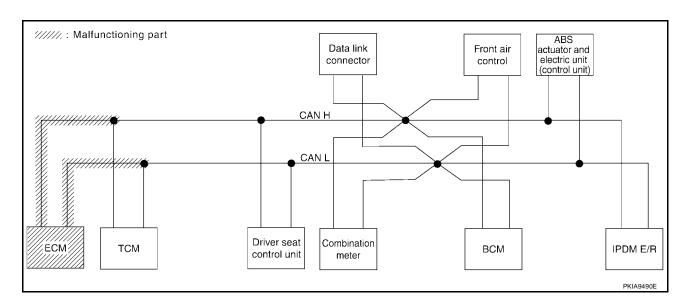
				CAN D	AG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	T		R	eceive diagno	sis	
SELECT STST	LIWI SCIEETI	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNK WN
ABS	-	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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Case 4
Check ECM circuit. Refer to <u>LAN-73</u>, "ECM Circuit Check" .

				CAN D	IAG SUPPOR	T MNTR		
SELECT SYST	EM screen	Initial	Terrenia		R	eceive diagno	sis	
OLLEOT GTGT	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	-	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_



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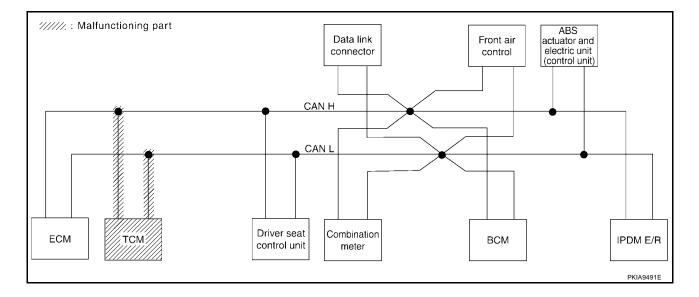
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Case 5
Check TCM circuit. Refer to <u>LAN-73</u>, "TCM Circuit Check" .

				CAN D	IAG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	Tunnanit		R	eceive diagno	sis	
OLLLO1 0101	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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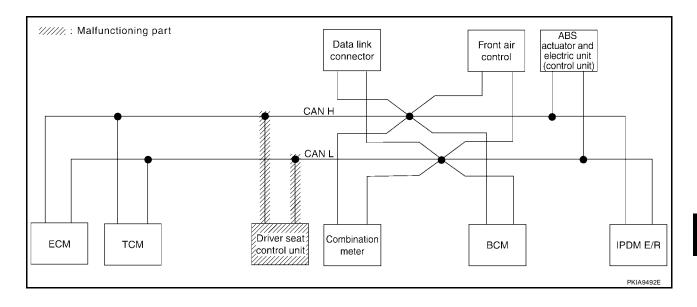
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-74</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

				CAN D	IAG SUPPOR	MNTR		
SELECT SYST	FM screen	Initial	Transmit		R	eceive diagno:	sis	
OLLEGI GIGI	LIVI GCICCII	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN		UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_

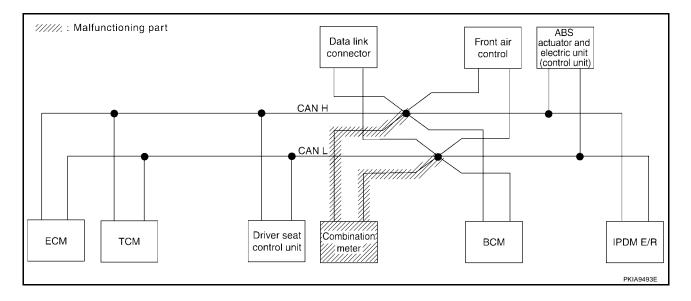


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Case 7
Check combination meter circuit. Refer to <u>LAN-74</u>, "Combination Meter Circuit Check" .

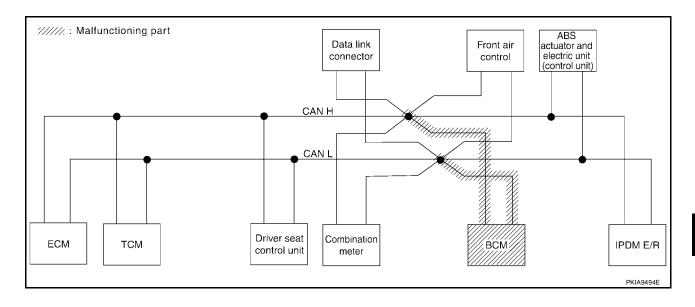
				CAN D	AG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	T		R	eceive diagno	sis	
OLLEOT GTGT	LIW SCIEGIT	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	NNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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Case 8 Check BCM circuit. Refer to <u>LAN-75</u>, "BCM Circuit Check" .

				CAN D	IAG SUPPOR	r MNTR		
SELECT SYST	FM screen	Initial	Transmit		R	eceive diagno	sis	
CELEOT GTGT	LIVI GCICCII	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UN <b>K</b> ₩N	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	UNKWN	_



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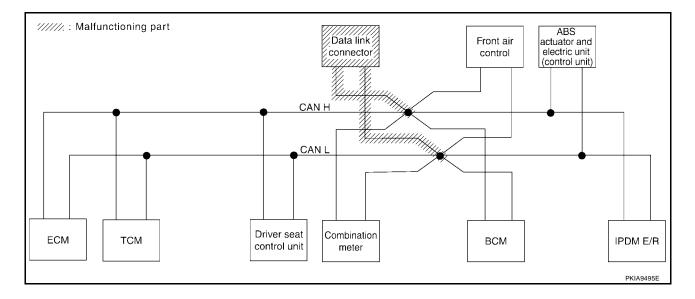
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Case 9
Check data link connector circuit. Refer to <u>LAN-75</u>, "<u>Data Link Connector Circuit Check</u>" .

				CAN D	AG SUPPOR	T MNTR		
SELECT SYST	EM scroop	1(4)	T		R	eceive diagno	sis	
SELECT STST	LIVI SCIEEII	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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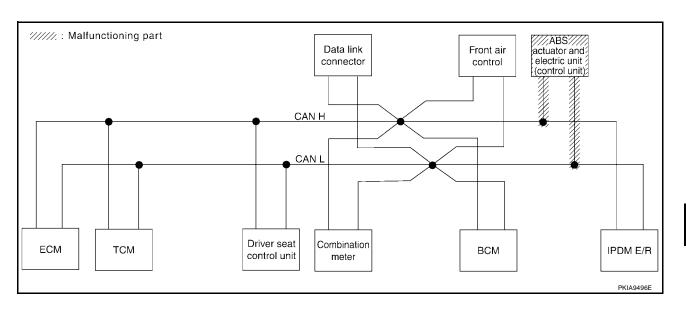
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Case 10

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

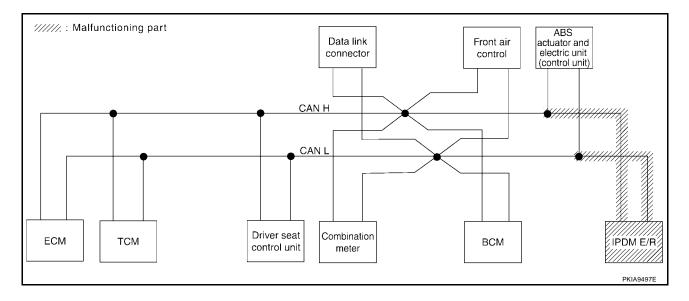
				CAN D	AG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	Tunanit		R	eceive diagno	sis	
SELECT STST	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	/M&A		IPDM E/R	
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	UNKWN
ABS	_	N/S	UNIONN	UNIOWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



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Case 11
Check IPDM E/R circuit. Refer to <u>LAN-76</u>, "IPDM E/R Circuit Check".

				CAN D	IAG SUPPOR	T MNTR		
SELECT SYST	EM screen	Initial	T		R	eceive diagno	sis	
OLLLOT GTGT	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_



[CAN]

Case 12

Check CAN communication circuit. Refer to <a href="LAN-77">LAN-77</a>, "CAN Communication Circuit Check" .

				CAN D	AG SUPPOR	T MNTR		
SELECT SYST	FM screen	Initial	Transmit		R	eceive diagno	sis	
OLLEGI GIGI	EW GETCEN	diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNK <b>W</b> N	=	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	<b>NNK</b> WN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	<b>N</b> €	UNK WN	UNK <b>W</b> N	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_

Case 13

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-77, "IPDM E/R Ignition Relay Circuit Check"}}$ .

				CAN DI	AG SUPPOR	ΓMNTR		
SELECT SYST	EM screen	Initial	Tananit		R	eceive diagno	sis	
OLLLOT GTGT	LIVI SCIECTI	diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	IPDM E/P
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	=	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-

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Revision: January 2005 LAN-69 2004 Titan

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#### Case 14

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-77, "IPDM E/R Ignition Relay Circuit Check" .

				ÇAN D	IAG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	T		R	eceive diagno:	sis	
OLLLOT GTGT	LIVI SCIEGII	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_

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

UKS001B7

PKIA9365E

### 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

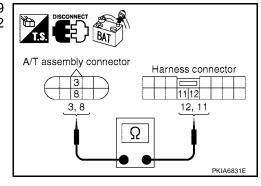
8 (R) - 11 (R)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



### [CAN]

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

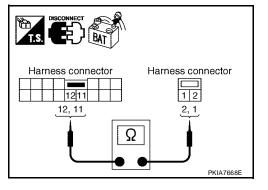
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

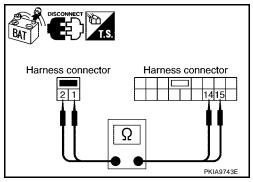
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-55, "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.
- 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 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

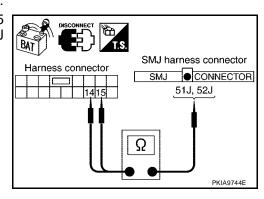
15 (W) - 51J (W) 14 (R) - 52J (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

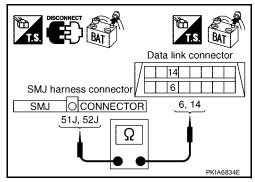
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to  $\underline{\mathsf{LAN-55}}$ , "Work Flow".

NG >> Repair harness.



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

UKS001B9

### 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.

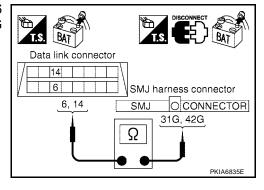
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

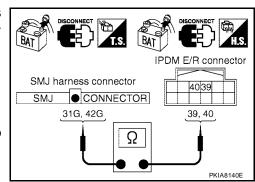
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-55</u>, "Work Flow".

NG >> Repair harness.



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**ECM Circuit Check** 

## 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 (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

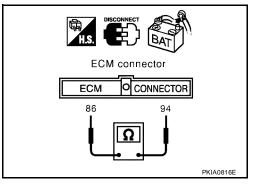
- Disconnect ECM connector.
- Check resistance between ECM harness connector E16 termi-2 nals 94 (W) and 86 (R).

: Approx. 108 - 132 $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



UKS001BB

#### **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

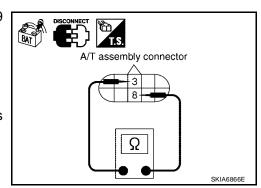
- Disconnect A/T assembly connector. 1.
- Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

3 (W) - 8 (R) : 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.
- 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 (W) and 19 (R).

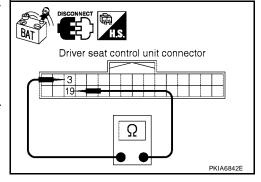
: Approx. 54 - 66 $\Omega$ 

#### 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

- 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 (W) and 12 (R).

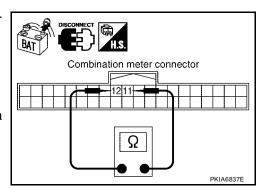
11 (W) - 12 (R)

: 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

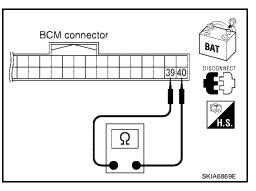
- Disconnect BCM connector. 1.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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

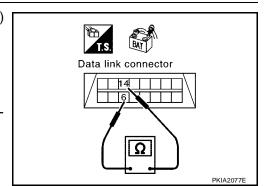
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. 
$$54 - 66\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to LAN-55, "Work Flow".

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



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**LAN-75** Revision: January 2005

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

## 1. CHECK CONNECTOR

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- 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.

## 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 (W) and 15 (R).

: Approx. 54 - 66 $\Omega$ 

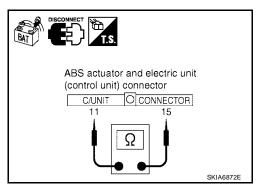
#### OK or NG

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**

1. CHECK CONNECTOR

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- 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 (W) and 40 (R).

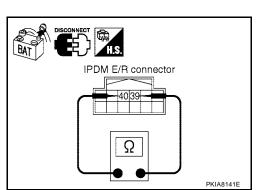
: Approx. 108 - 132 $\Omega$ 

#### 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
- 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.

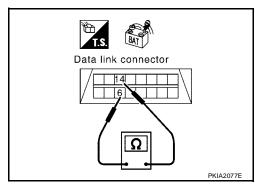
## 2. CHECK HARNESS FOR SHORT CIRCUIT

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

#### 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 (W), 14 (R) and ground.

> : Continuity should not exist. 6 (W) - Ground 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-78, "ECM/

IPDM E/R INTERNAL CIRCUIT INSPECTION". NG >> Repair harness.

IPDM E/R Ignition Relay Circuit Check

# Data link connector 14 161 6, 14,

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".

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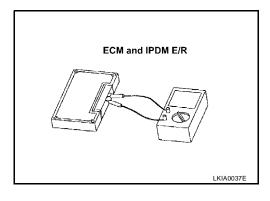
[CAN]

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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 $(\Omega)$ (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



PFP:23710

## **System Description**

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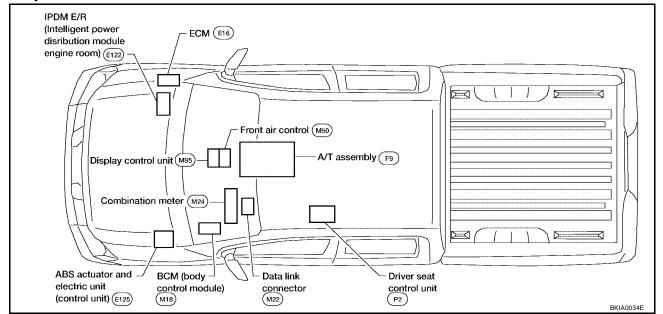
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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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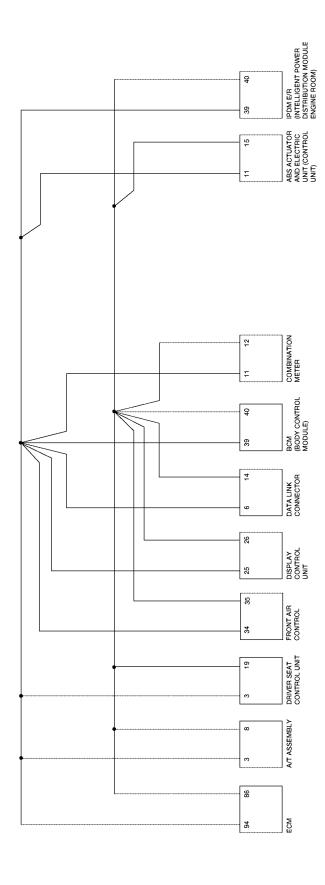
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Schematic UKS001BO



Wiring Diagram - CAN -

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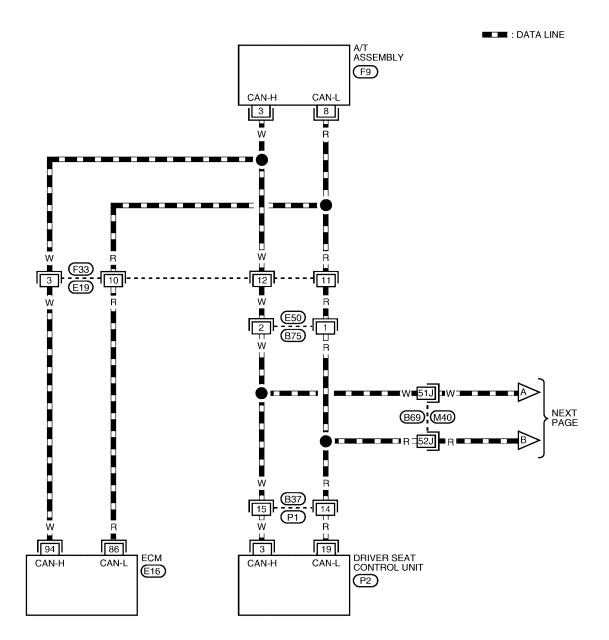
D

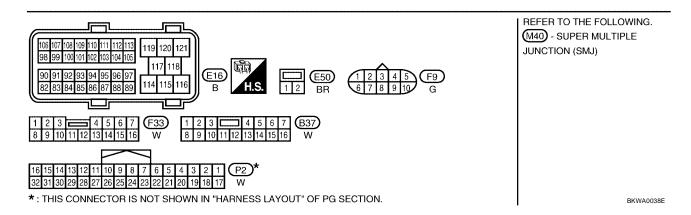
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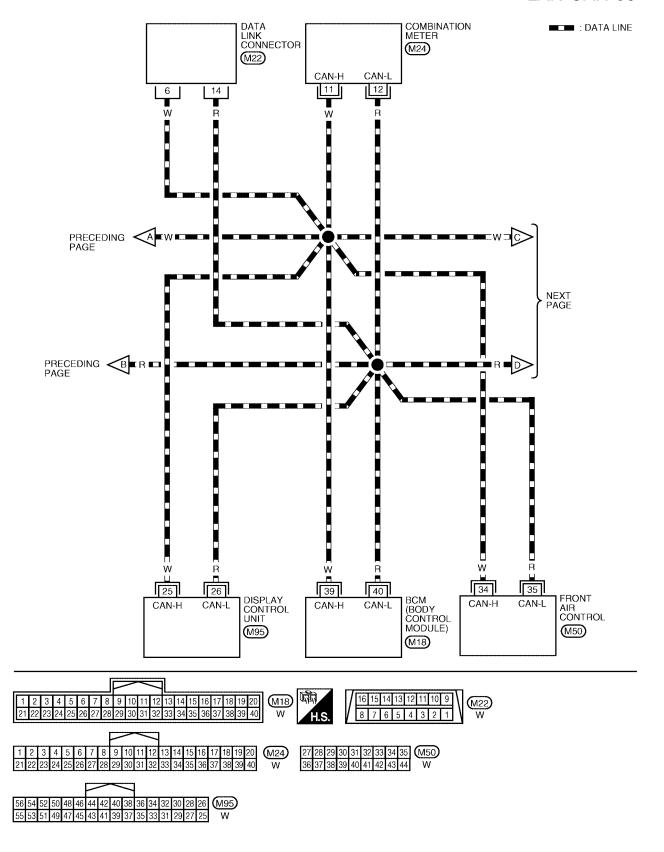
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## LAN-CAN-07





## LAN-CAN-08



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LAN-CAN-09

: DATA LINE

(W31): (E152)

R 42G R

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CAN-H

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

(E125)

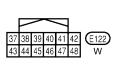
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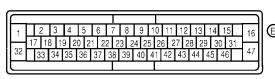
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PRECEDING PAGE



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CAN-H



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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (CPU)

(E122)

REFER TO THE FOLLOWING.

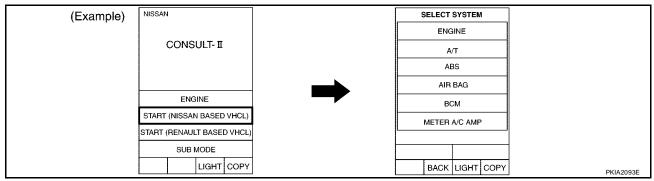
(M31) - SUPER MULTIPLE

JUNCTION (SMJ)

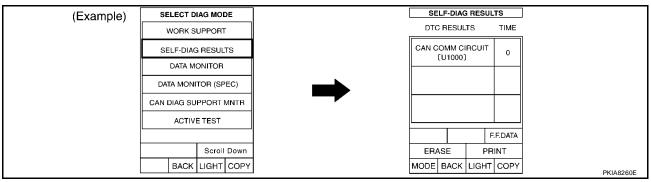
BKWA0040E

Work Flow

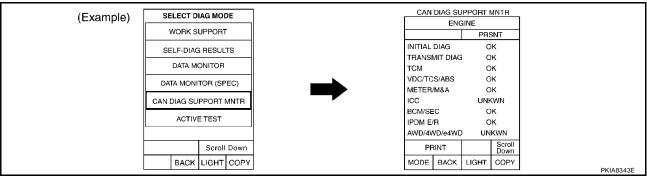
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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", put marks "v" 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.
- 6. Check CAN communication line of the navigation system. Refer to <u>AV-149</u>, "CAN Communication Line <u>Check"</u>.
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-86</u>, <u>"CHECK SHEET"</u>.

[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-86</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-149">AV-149</a>, "CAN Communication Line Check".

9. According to the check sheet results (example), start inspection. Refer to <a href="LAN-88"><u>LAN-88</a>, "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.

SELECT SYSTEM	<u> </u>			C	CAN DIAG SU	PPORT MNTI			
ENGINE	M screen	Initial	Transmit				diagnosis	T	1
ENGINE		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
VT .	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
AUTO DRIVE POS. N	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
3CM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNKWN
ABS	_	NG	UNKWN	UNKWN		_	_	_	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_
		Atta SELE	ch copy of CT SYSTEM		SE	Attach copy of LECT SYSTE	:M		
			CAN DIAG	Attach co display cont SUPPORT MO	rol unit	k sheet			

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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 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)**

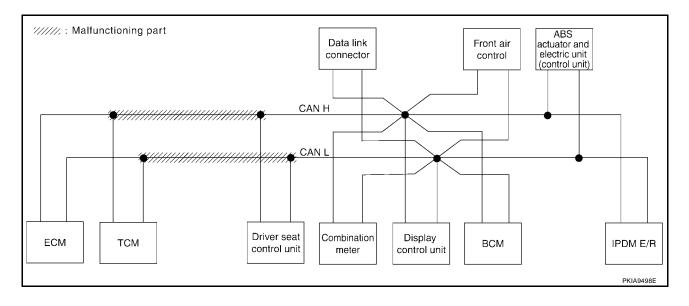
#### NOTE:

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-102</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

				(	AN DIAG SU	IPPORT MNT	3		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	2101 0010011	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	∩ <b>ик</b> /МИ
A/T	_	NG	UNKWN	UNKWN	_	UNWWN	-	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CRC 3	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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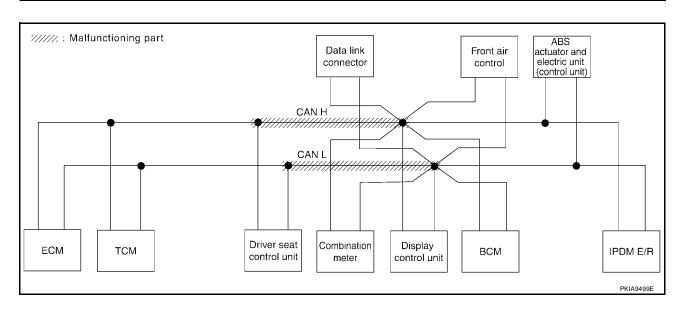
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-103</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

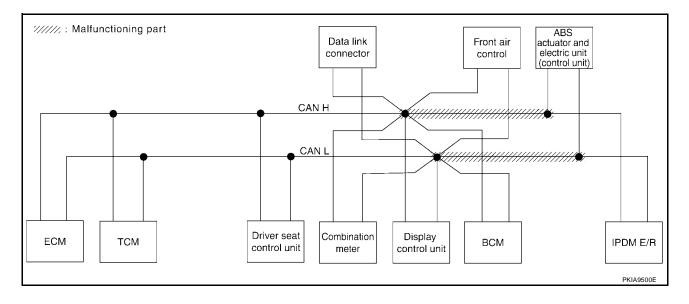
				C	CAN DIAG SU	IPPORT MNT	7		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
OLLLOT OTOT	LIVI GOTCOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UN <b>K</b> ₩N
A/T	-	NG	UNKWN	UNKWN	_	UNIONN	_	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CRC 3	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK <b>W</b> N	_	_	UNKWN	_	_



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Case 3
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-104, "Circuit Check Between Data Link Connector and IPDM E/R"</u>.

				(	AN DIAG SU	PPORT MNT	7		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	LIVI GOTGOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN
A/T	_	NG	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	CANORC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNK WN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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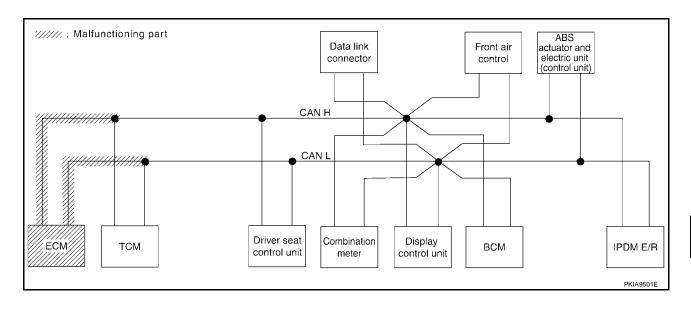
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Case 4
Check ECM circuit. Refer to <u>LAN-105</u>, "<u>ECM Circuit Check"</u>.

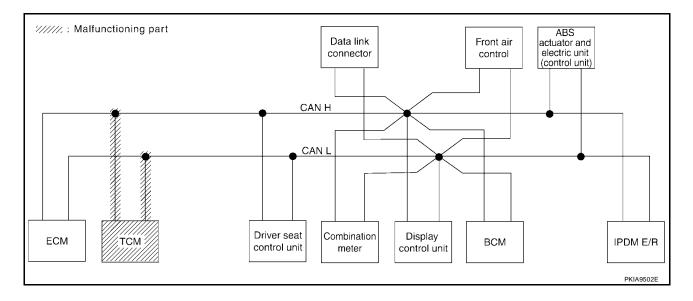
					AN DIAG SU	IPPORT MNTF	3		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 OTO1	LIWI GOTCOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK/WN	UNWWN	UNKWN	_	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	-
AUTO DRIVE POS.	No indication	NG	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 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UN <b>K</b> ₩N	_	_	UNKWN	-	_



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Case 5
Check TCM circuit. Refer to <u>LAN-105</u>, "TCM Circuit Check".

				(	CAN DIAG SU	IPPORT MNT	7		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
GELEOT GTOT	LIVI SCIECTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNIMN	_	_	_
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
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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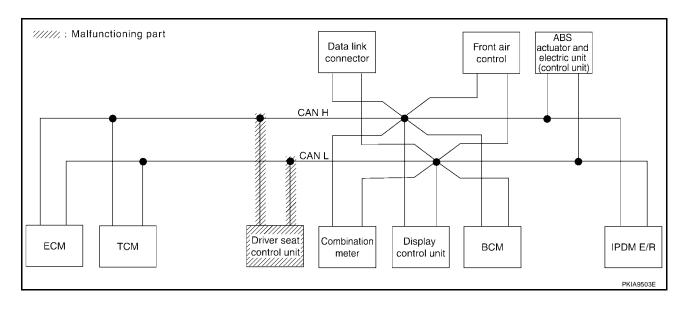
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-106</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

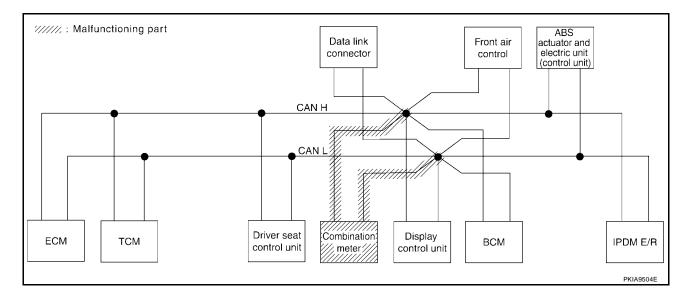
				C	CAN DIAG SU	PPORT MNT	3		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	LINI GOLGOLI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	1	_
AUTO DRIVE POS.	No indication	NG	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
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	-	_



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Case 7
Check combination meter circuit. Refer to <u>LAN-106</u>, "Combination Meter Circuit Check".

				(	AN DIAG SU	PPORT MNT	7		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	2101 001 0011	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CANORC 5	CAN CIRC 2	CAN CIRC 4	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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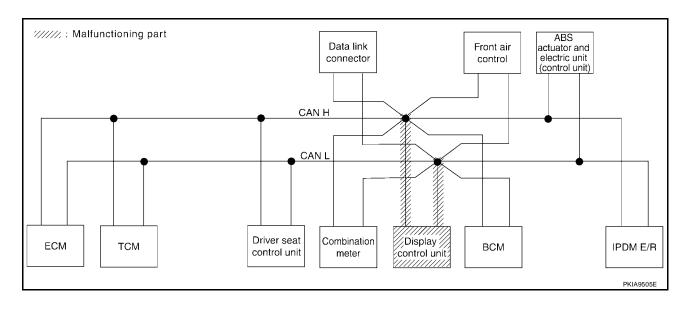
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Case 8
Check display control unit circuit. Refer to <u>LAN-107</u>, "<u>Display Control Unit Circuit Check</u>".

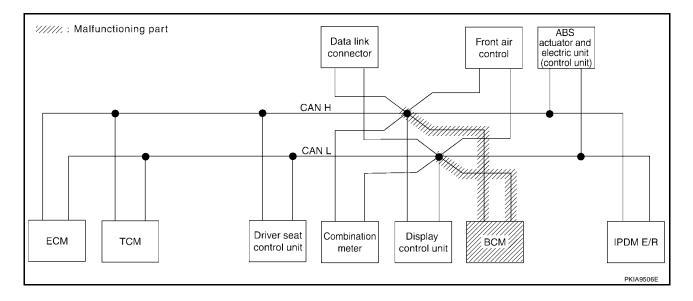
				C	AN DIAG SU	JPPORT MNTF	3		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	LIVI GCICCII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
Display control unit	_	CAN COMM	CANORC 1	CANORC 3	_	CAN CIRC 5	CAN ORC 2	CANORC 4	CAN ORC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	-	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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Case 9 Check BCM circuit. Refer to  $\underline{\mathsf{LAN-107}}$ , "BCM Circuit Check" .

				C	AN DIAG SU	IPPORT MNT	3		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 OTOT	LIVI GOTGOTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	Ī	_
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
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK.WN	1	_



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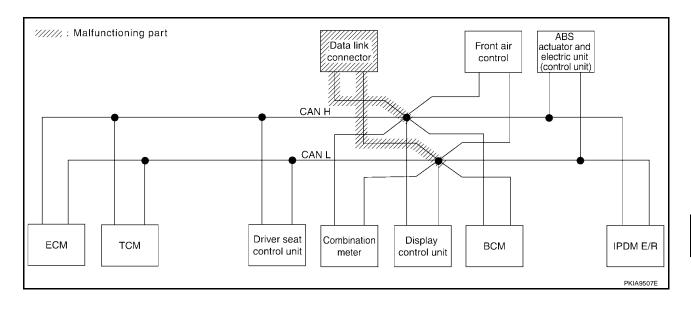
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Case 10

Check data link connector circuit. Refer to LAN-108, "Data Link Connector Circuit Check" .

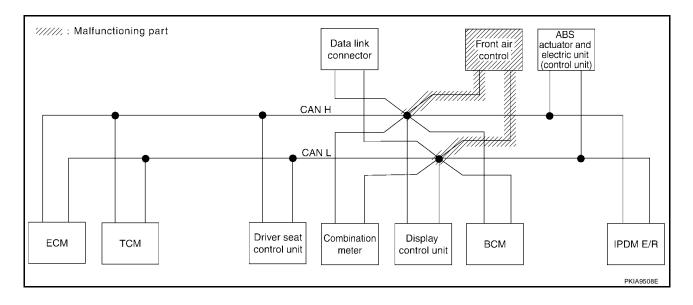
			CAN DIAG SUPPORT MNTR									
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis								
		diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	-	NG	UNKWN	UNKWN	_	UNKWN	_	_	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	-	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			
ABS	_	NG	UNKWN	UNKWN	_	_	_	-	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	ı	-			



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Case 11 Check front air control circuit. Refer to <u>LAN-108</u>, "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	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	-	NG	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 ORC 4	CAN CIRC 7			
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN			
ABS	_	NG	UNKWN	UNKWN	_	_	-	_	-			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			



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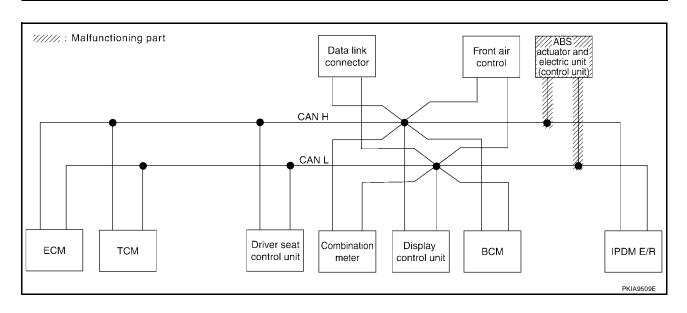
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Case 12

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-109</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

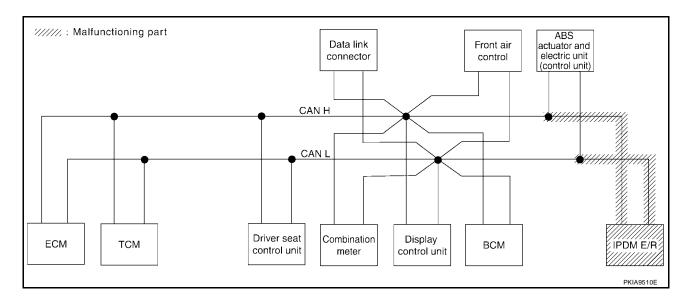
			CAN DIAG SUPPORT MNTR									
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	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			
ABS	_	N/S	UNKWN	UNKWN	_	_	-	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			



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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-109</u>, "IPDM E/R Circuit Check" .

SELECT SYSTEM screen			CAN DIAG SUPPORT MNTR									
		Initial diagnosis	Transmit diagnosis	Receive diagnosis								
				ECM	ТСМ	METER /M&A	BCM/SEC	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN			
A/T	_	NG	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 ORC 7			
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNK			
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			



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Case 14

Check CAN communication circuit. Refer to LAN-110, "CAN Communication Circuit Check" .

			CAN DIAG SUPPORT MNTR									
SELECT SYST	FM screen	n Initial	Transmit	Receive diagnosis								
		diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN			
A/T	_	NG	UNKWN	UNK WN	_	UNION	_	_	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_			
Display control unit	_	CAN COMM	CANAIRC 1	CANORC 3	_	CAN ORC 5	CANOIRC 2	CANORC 4	CANORC			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN			
ABS	_	₩	UNIVAN	UNKWN	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			

#### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-110}}$ , "IPDM E/R Ignition Relay  $\underline{\text{Circuit Check}}$ ".

				(	CAN DIAG SU	IPPORT MNT	3			
SELECT SYSTEM screen		i iiiiaa	Transmit	Receive diagnosis						
			diagnosis	ECM	тсм	METER /M&A	BCM/SEC	Front air control	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	1	_	
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	
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	1	_	

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#### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-110, "IPDM E/R Ignition Relay Circuit Check".

			CAN DIAG SUPPORT MNTR									
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	Front air control	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	_	NG	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			
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			

## Circuit Check Between TCM and Driver Seat Control Unit

UKS001BR

## 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

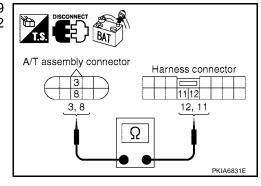
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

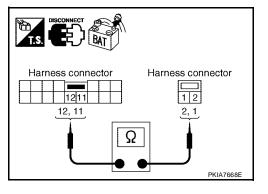
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

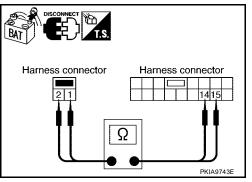
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-84, "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.
- 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

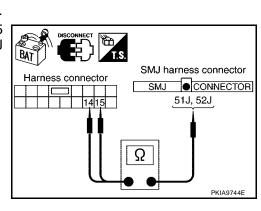
- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : Continuity should exist. 14 (R) - 52J (R) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

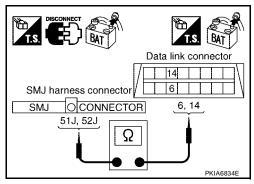
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to  $\underline{\mathsf{LAN-84, "Work Flow"}}$  .

NG >> Repair harness.



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

UKS001BT

## 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.

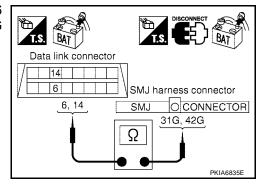
## 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

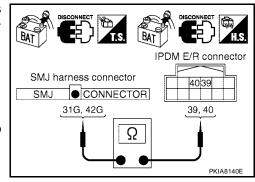
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-84, "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

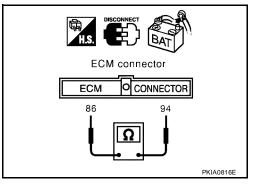
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: Approx. 108 - 132 $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



UKS001BV

#### **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

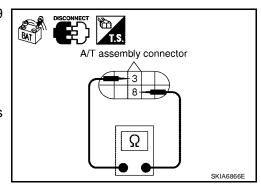
- Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

3 (W) - 8 (R) : 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.
- 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 (W) and 19 (R).

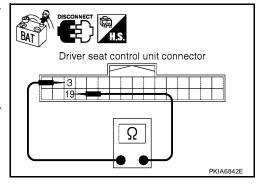
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

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



#### UKS001BX

#### **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 (W) and 12 (R).

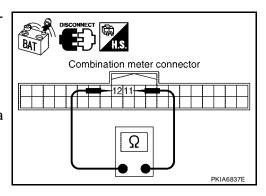
11 (W) - 12 (R)

: 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.
- Disconnect the negative battery terminal. 2.
- 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

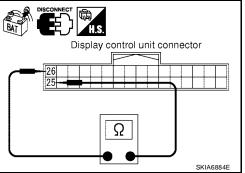
- Disconnect display control unit connector. 1.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (W) and 26 (R).

: 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

- 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

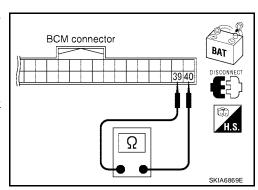
- Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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.
- 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

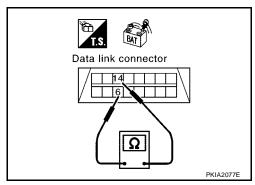
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Approx. 54 - 
$$66\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to LAN-84, "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 (W) and 35 (R).

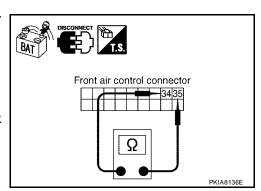
**34 (W) - 35 (R)** : Approx. **54 - 66**
$$\Omega$$

#### OK or NG

NG

OK >> Replace front air control.

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



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

## 1. CHECK CONNECTOR

- 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

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

: Approx. 54 - 66 $\Omega$ 

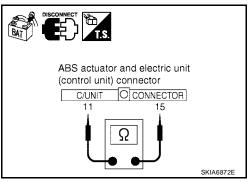
#### OK or NG

NG

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

>> Repair harness between ABS actuator and electric unit

(control unit) and harness connector E152.



## **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

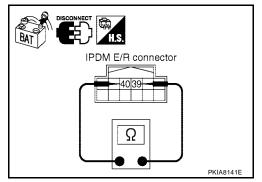
- Disconnect IPDM E/R connector.
- Check resistance between IPDM E/R harness connector E122 terminals 39 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

#### OK or NG

OK >> Replace IPDM E/R.

>> Repair harness between IPDM E/R and harness con-NG nector 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
- 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.

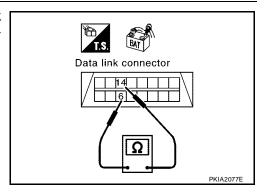
# 2. CHECK HARNESS FOR SHORT CIRCUIT

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

> 6 (W) - 14 (R) : Continuity should not exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR SHORT CIRCUIT

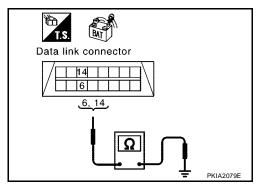
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

> : Continuity should not exist. 6 (W) - Ground 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-111, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.



#### UKS001C6

# 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".

**LAN-110** 2004 Titan Revision: January 2005

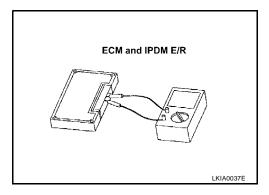
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Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- 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



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# **CAN SYSTEM (TYPE 4)**

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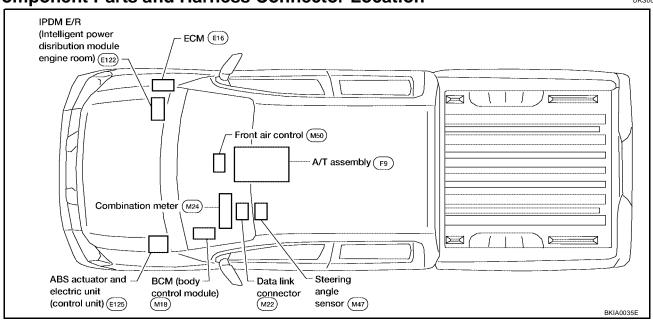
# **System Description**

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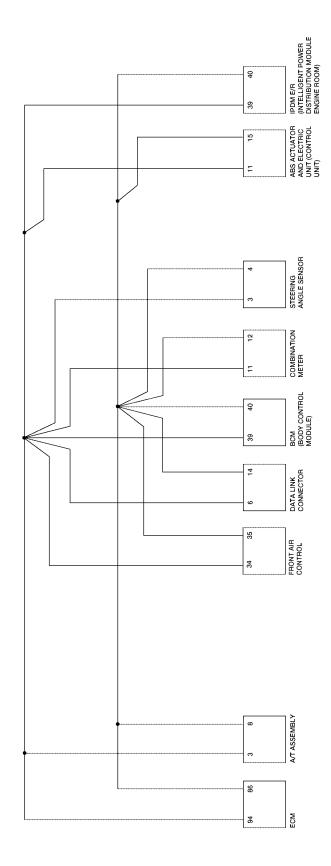
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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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Schematic UKS001E1



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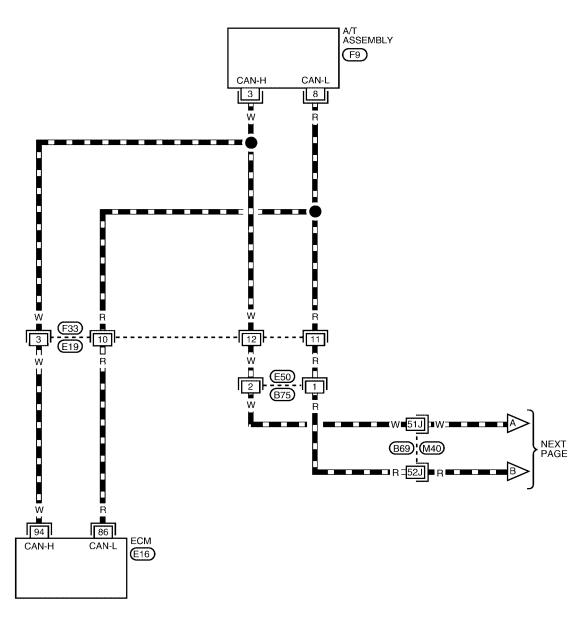
BKWA0136E

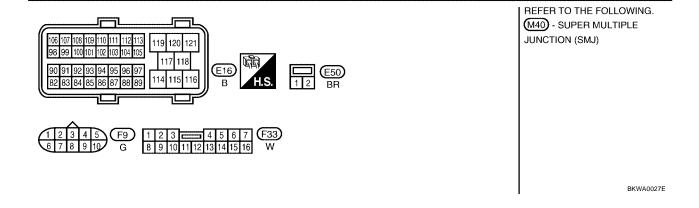
Wiring Diagram - CAN -

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# LAN-CAN-10

: DATA LINE





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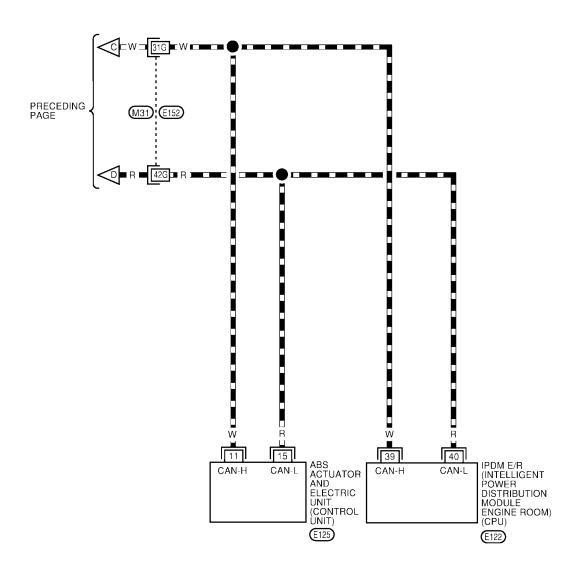
M

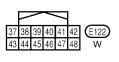
# LAN-CAN-11 STEERING ANGLE SENSOR DATA LINK CONNECTOR COMBINATION METER ■■ : DATA LINE (M24) (M47) (M22) CAN-L CAN-H CAN-L CAN-H 3 [11] 12 4 6 14 w NEXT PAGE LAN B 34 35 39 40 BCM (BODY CONTROL MODULE) FRONT CAN-L CAN-L CAN-H AIR CONTROL (M50) (M18) M<sub>18</sub> M47 W

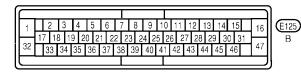
BKWA0137E

# LAN-CAN-12

■■■: DATA LINE







REFER TO THE FOLLOWING.

(M31) - SUPER MULTIPLE

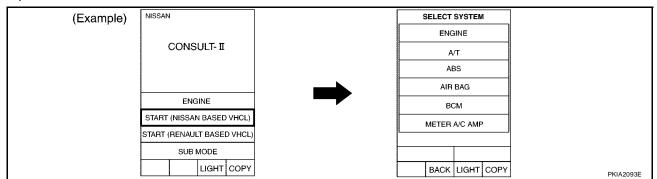
JUNCTION (SMJ)

BKWA0029E

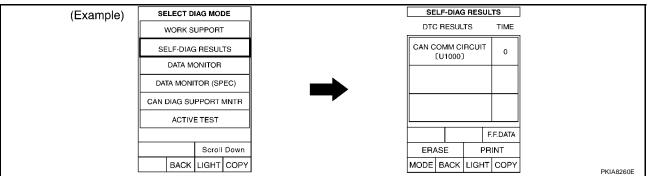
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Work Flow

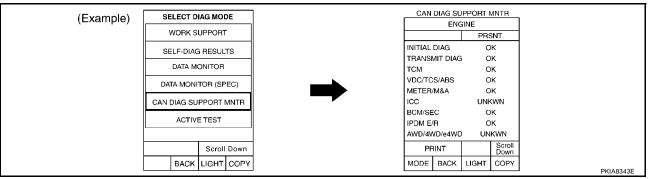
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



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



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



- Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to LAN-118, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-118">LAN-118</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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-120</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)"

## **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 SY	/STEM screen	Initial	Transmit			Red	ceive diagno	osis		
022201 0		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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_
	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_
	No indication	_	UNKWN	UNKWN		_	UNKWN		_	_
	No indication	_	UNKWN	UNKWN		_	UNKWN		_	_
	No indication	_	UNKWN	UNKWN		_	UNKWN		_	_
Symptoms:	No indication	Attach		UNKWN			UNKWN		_	_

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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 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 ABS CAN DIAG SUPPORT MNTR	Attach copy of IPDM E/R CAN DIAG SUPPORT MNTR	

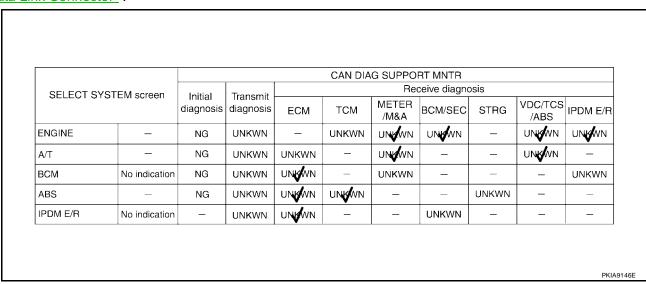
## **CHECK SHEET RESULTS (EXAMPLE)**

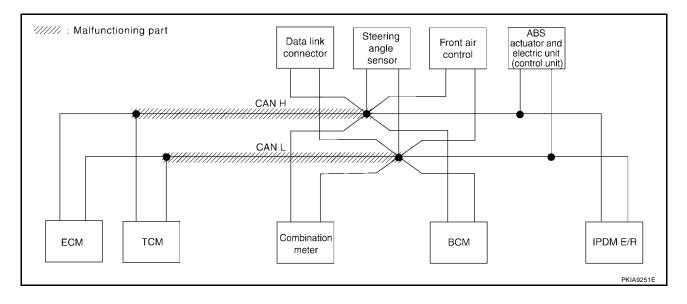
#### NOTE:

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

#### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-131</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.





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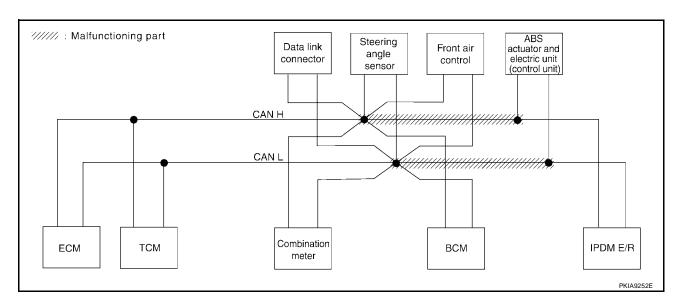
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-132</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

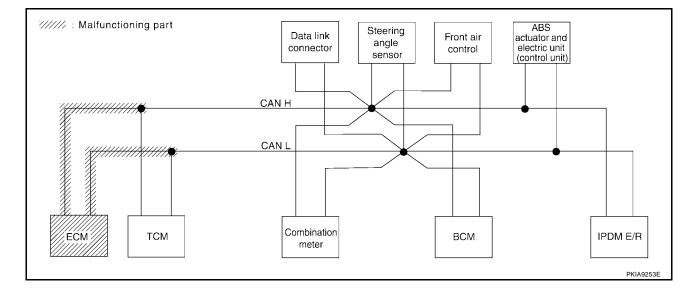
					CAN DIA	G SUPPO	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLEGI O	TO TENT SOLOGIT	diagnosis	I I	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE			UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNK/WN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK/WN
ABS	_	NG	UNKWN	<b>UNIX</b> WN	UNKWN	_	_	NNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 3
Check ECM circuit. Refer to <u>LAN-133</u>, "ECM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO I O	TOTEW SOICE	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/I
ENGINE	_	140		_	UNKWN	UNKWN	UNI <b>W</b> N	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNI <b>W</b> N	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	<b>UNKWN</b>	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNIOWN	_	_	UNKWN	_	_	_



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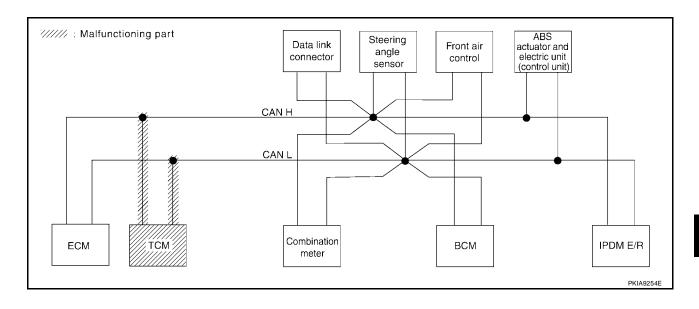
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Case 4 Check TCM circuit. Refer to <u>LAN-134, "TCM Circuit Check"</u> .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYS	TEM screen	Initial	Transmit			Re	ceive diagno	osis		
JEEEOT 010	TEW Screen	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE			UNKWN	_	UNIXWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNIVAN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UN <b>K</b> ₩N	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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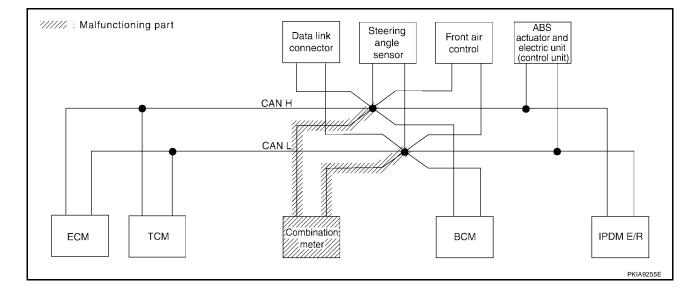
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Case 5
Check combination meter circuit. Refer to <u>LAN-134</u>, "Combination Meter Circuit Check".

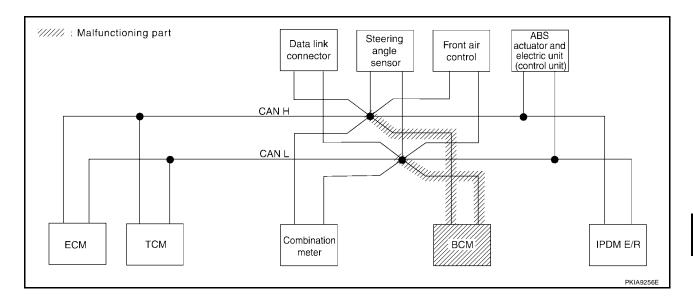
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	TEM screen	Initial	Transmit			Red	ceive diagno	osis		
CLLOT OTO	LIVI SCIEGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE			UNKWN	_	UNKWN	UNIMAN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNK/WN	_	_	_	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-135</u>, "BCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT S	/STEM screen	Initial	Transmit			Red	ceive diagno	osis		
02220.0	0.2		diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	<b>NNR</b> MN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	<b>NAMAN</b>	_	_	_



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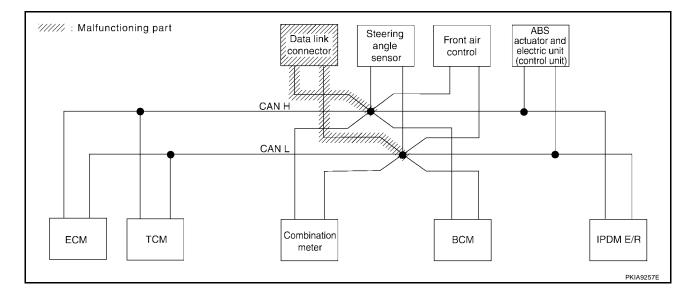
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Case 7
Check data link connector circuit. Refer to <u>LAN-135</u>, "<u>Data Link Connector Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SY	/STEM screen	Initial	Transmit			Re	ceive diagno	osis		
OEEEO TO T	OTEM GOICEN	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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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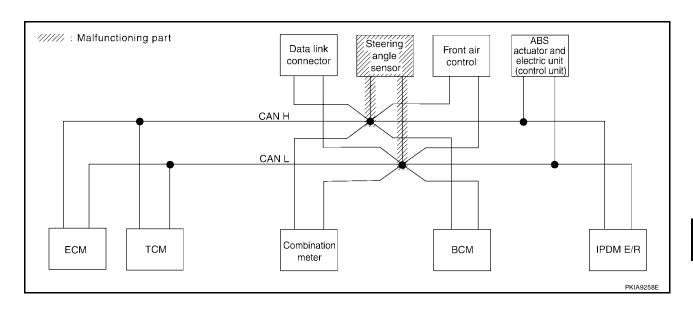
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Case 8

Check steering angle sensor circuit. Refer to <u>LAN-136</u>, "Steering Angle Sensor Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT S	YSTEM screen	1-14:-1	T			Re	ceive diagno	osis		
SELECT S	131 LIW SCIEEN	Initial diagnosis	Transmit 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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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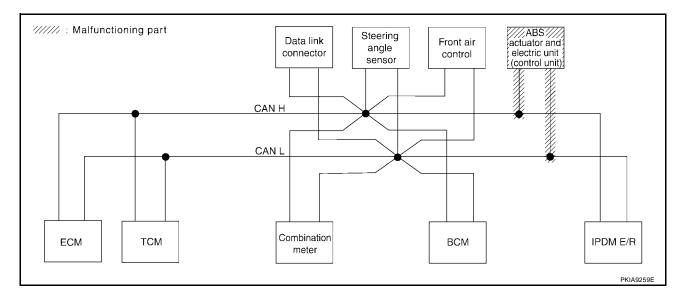
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Case 9

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-136</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYS	STEM screen	Initial	Transmit			Re	ceive diagno	osis		
GELEGITOT				ECM	тсм	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
ABS	_	W	UNK WN	UNIX/WN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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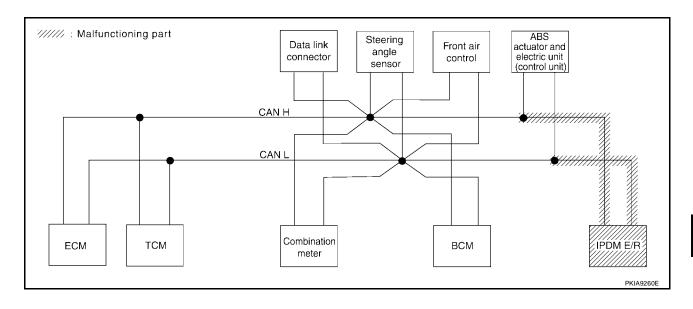
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Case 10
Check IPDM E/R circuit. Refer to LAN-137, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SV	STEM screen	Initial	Transmit			Red	ceive diagno	osis		
GELEOT OF	OTEM SCIEBIL	diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	- NG		UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UN <b>K</b> WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNIXWN
ABS	_	NG	UNKWN	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-138">LAN-138</a>, "CAN Communication Circuit Check"</a> .

	CAN DIAG SUPPORT MNTR										
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis							
				ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNION	UNWWN	η <b>νκ</b> ⁄ων	_	UNK WN	UNI <b>W</b> WN	
A/T	_	NG	UNKWN	UNKWN	_	UNIWN	_	_	Ω <b>ΝΚ</b> /WΝ	_	
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	
ABS	_	W	UNIMN	UNKWN	UN <b>K</b> ₩N	_	_	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-138</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

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

PKIA9157E

#### Case 13

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-138</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

	CAN DIAG SUPPORT MNTR										
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis							
OLLLO1 O101	LW solden			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	<b>NUKW</b> N	_	UNIXWN	_	_	UNKWN	_	
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	UNKWN	
ABS	_	NG	UNKWN	<b>NAK</b> WN	UNKWN	_	_	NNK 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

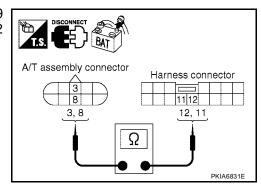
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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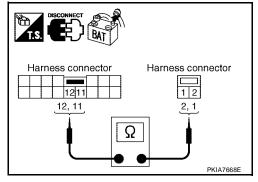
# 3. CHECK HARNESS FOR OPEN CIRCUIT

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

12 (W) - 2 (W) 11 (R) - 1 (R) : Continuity should exist.: Continuity should exist.

#### OK or NG

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



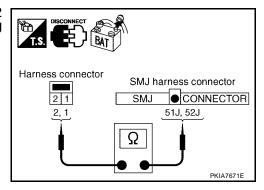
# 4. CHECK HARNESS FOR OPEN CIRCUIT

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

2 (W) - 51J (W) 1 (R) - 52J (R) : Continuity should exist. : Continuity should exist.

#### OK or NG

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



# 5. CHECK HARNESS FOR OPEN CIRCUIT

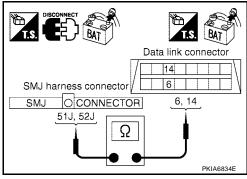
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) 52J (R) - 14 (R) : Continuity should exist.: Continuity should exist.

## OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-117, "Work Flow"</u>.

NG >> Repair harness.



UKS00212

# 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.

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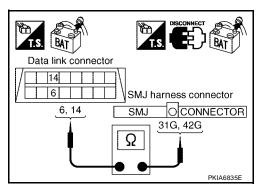
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

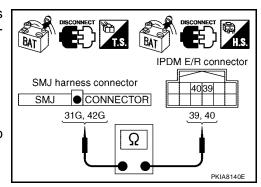
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-117</u>, "Work Flow".

NG >> Repair harness.



UKS00213

#### **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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# $\overline{2}$ . Check harness for open circuit

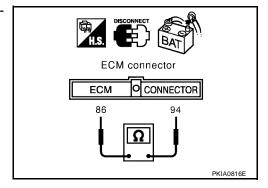
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

94 (W) - 86 (R) : Approx. 108 - 132 $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



UKS00214

#### **TCM Circuit Check**

# 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

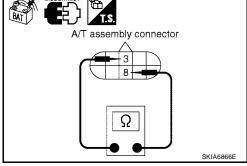
- 1. Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

3 (W) - 8 (R) : 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.

NG >> Repair terminal or connector. UKS00215

# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

: Approx. 54 - 66 $\Omega$ 

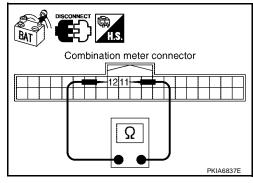
#### OK or NG

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 (W) and 40 (R).

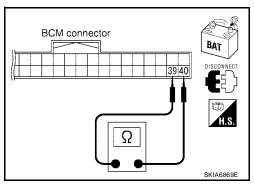
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK :

>> Replace BCM. Refer to <u>BCS-25</u>, "Removal and Installation of <u>BCM"</u>.

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



UKS00217

## **Data Link Connector Circuit Check**

# 1. CHECK CONNECTOR

- 1. 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 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. 54 - 66
$$\Omega$$

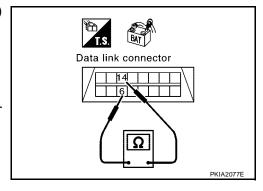
#### OK or NG

OK >

>> Diagnose again. Refer to LAN-117, "Work Flow".

NG

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



UKS00218

# **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 (W) and 4 (R).

**3 (W) - 4 (R)** : Approx. 54 - 
$$66\Omega$$

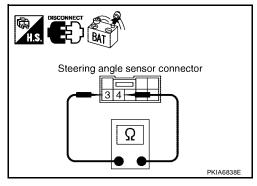
#### OK or NG

OK

>> Replace steering angle sensor.

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



# 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.
- 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.

# $\overline{2}$ . 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 (W) and 15 (R).

: Approx. 54 -  $66\Omega$ 

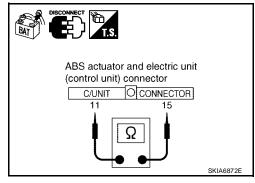
#### OK or NG

OK

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

NG >> Repair harness between ABS actuator and electric unit

(control unit) and harness connector E152.



UKS0021A

## **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

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

: Approx. 108 - 132 $\Omega$ 

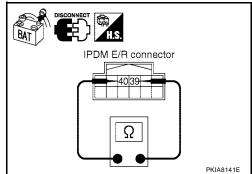
#### OK or NG

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
- 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.

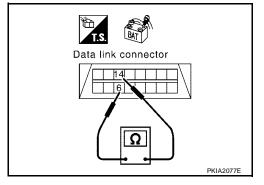
# 2. CHECK HARNESS FOR SHORT CIRCUIT

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

6 (W) - 14 (R) : 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 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-139</u>, "ECM/ <u>IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.

# Data link connector 14 6, 14 PKIA2079E

# 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".

Revision: January 2005 LAN-138 2004 Titan

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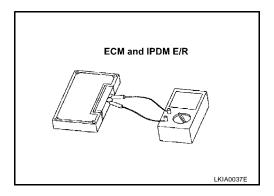
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# Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- 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		



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# **CAN SYSTEM (TYPE 5)**

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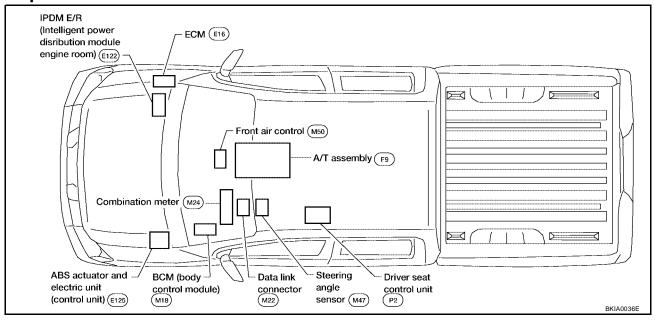
# **System Description**

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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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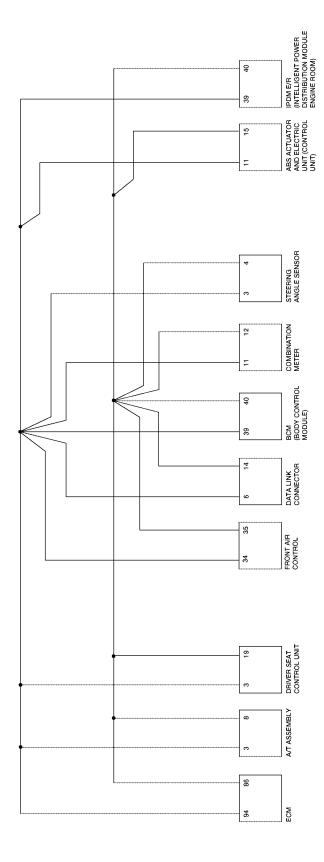
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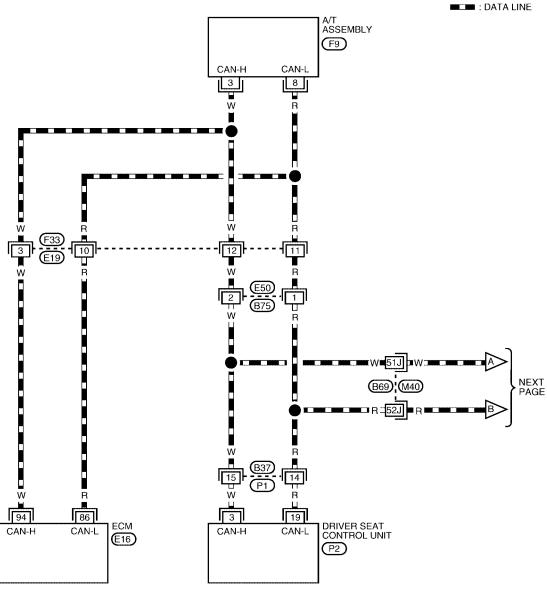
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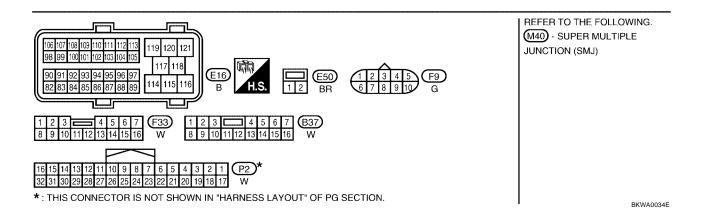
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Wiring Diagram - CAN -

# LAN-CAN-13







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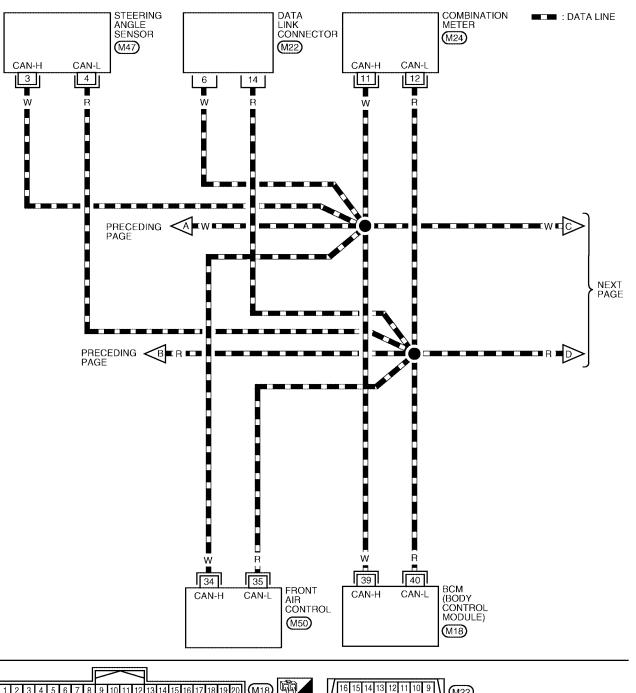
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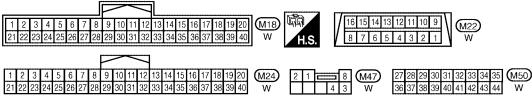
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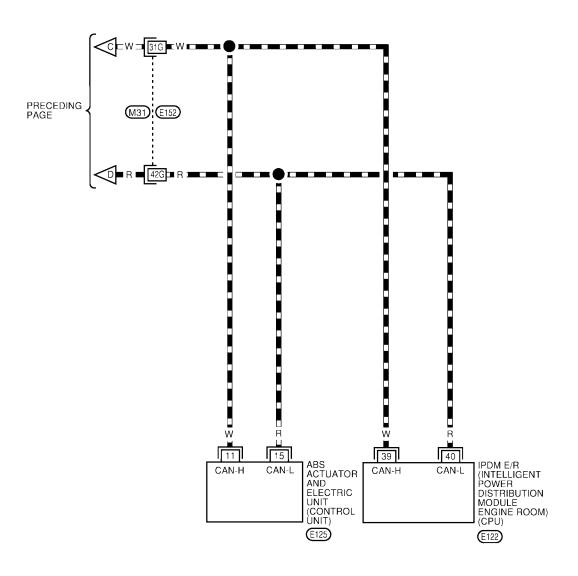


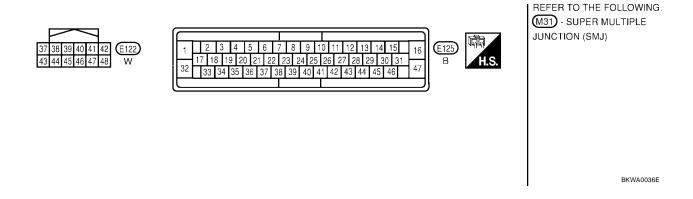


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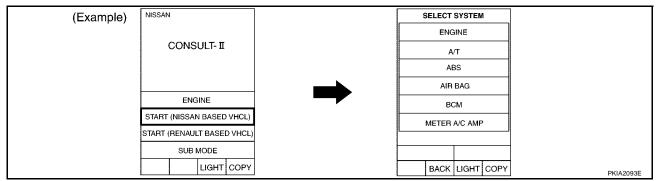
: DATA LINE



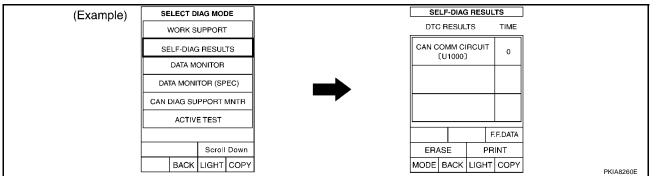


Work Flow

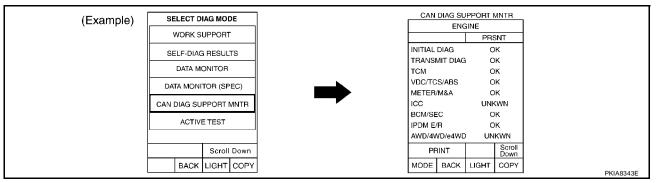
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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-146</u>, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-146</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-148</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

Revision: January 2005 LAN-145 2004 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				
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS	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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_
		Attach SELECT	copy of SYSTEM			Attact	n copy of T 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 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)**

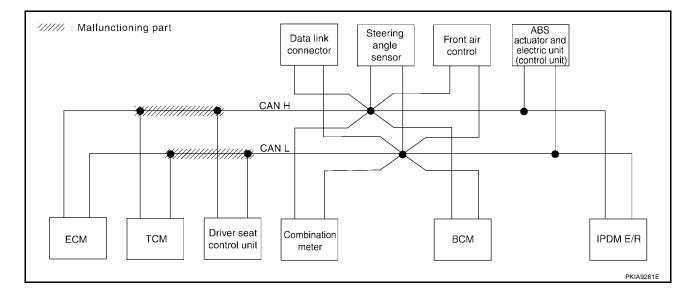
#### NOTE:

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

#### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-161</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	EIVI GOICCII	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNWWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNION	_	_	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	-	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	-	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	-	_	-



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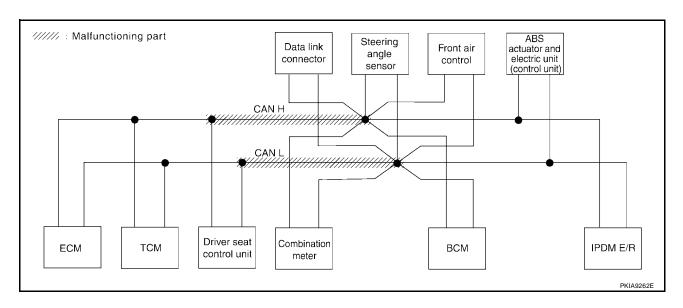
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-162</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagno	osis		
022201 0101	LIVI GOICCIT	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNI <b>S</b> WN	UNIXWN	_	nukwu	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNI <b>W</b> N	_	-	UNK WN	_
AUTO DRIVE POS.	No invication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
всм	No indication	NG	UNKWN	∩ <b>NK</b> WN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	-	UNKWN	_	_	_

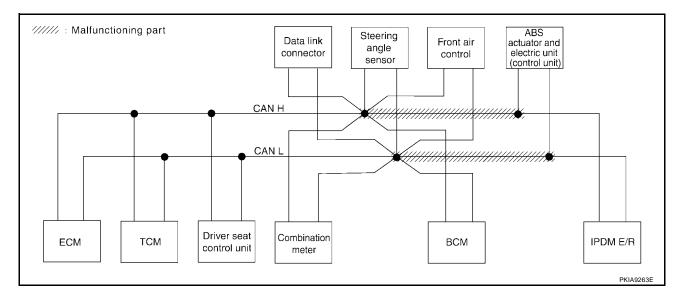


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Case 3
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-163, "Circuit Check Between Data Link Connector and IPDM E/R"</u>.

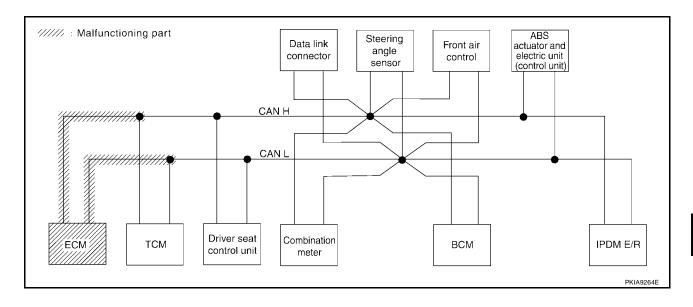
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	EW SOLCOL	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	n <b>uk</b> wu	UNK WN
A/T	-	NG	UNKWN	UNKWN	_	UNKWN	_	_	UN <b>₩</b> WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	U <b>NK</b> WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 4
Check ECM circuit. Refer to LAN-164, "ECM Circuit Check".

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	LIVI SCIECTI	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	_	UNK WN	UNI <b>W</b> WN	UNI <b>W</b> WN	_	n <b>uk</b> wu	Π <b>ИΚ</b> (ΜИ
A/T	_	NG	UNKWN	NUKWN	_	UNKWN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
всм	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_



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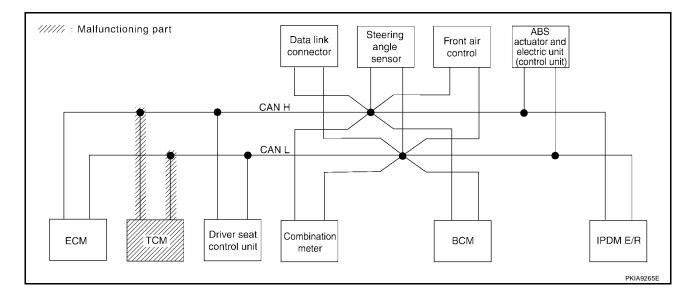
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Case 5
Check TCM circuit. Refer to <u>LAN-164, "TCM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTGT	LIWI SCIECTI	diagnosis		ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNK/WN	_	UNWWN	_	-	UNK/WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	-	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	1	_	_



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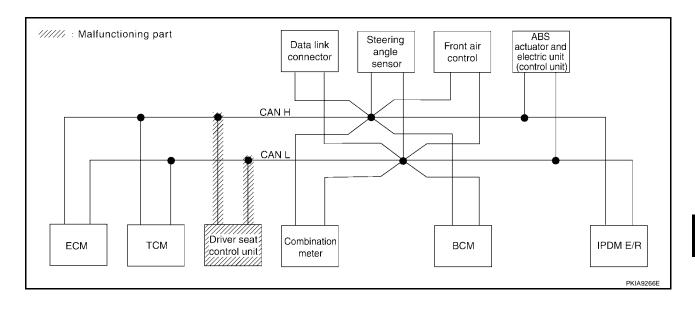
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-165</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagno	osis		
022201 0101	LIVI SCICCII	diagnosis	diagnosis	ECM	TCM	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	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

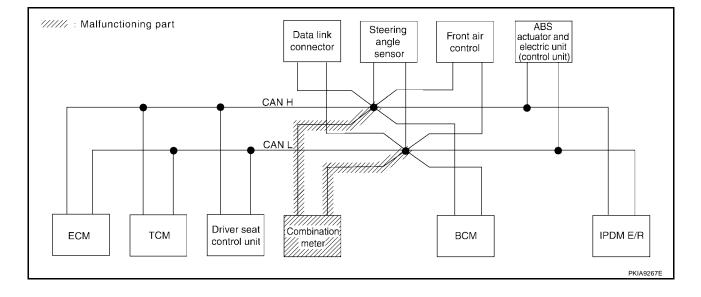


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Case 7
Check combination meter circuit. Refer to <u>LAN-165</u>, "Combination Meter Circuit Check".

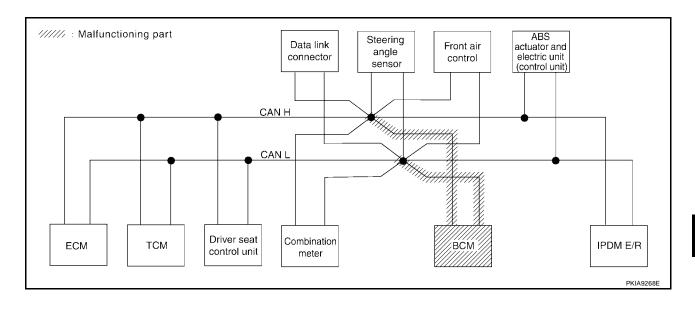
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	LIVI SCICCII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UN <b>W</b> WN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNI <b>W</b> NN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNIVWN	UNKWN	-	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNI <b>W</b> WN	_	-	_	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-166, "BCM Circuit Check"</u>.

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
0222010101	LIVI SCICCII	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UN <b>W</b> WN	-	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNI <b>W</b> WN	_	_	-
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK WN	_	_	_



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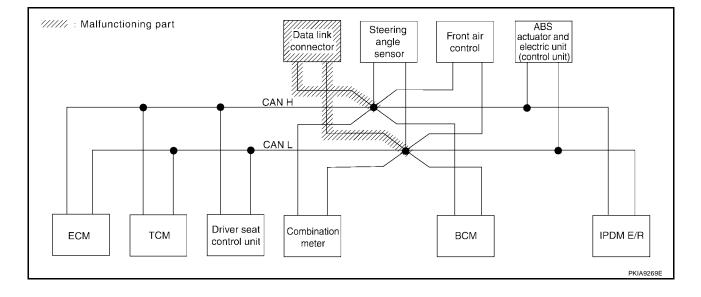
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Case 9
Check data link connector circuit. Refer to <u>LAN-166, "Data Link Connector Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	LIVI SCICCII	diagnosis	diagnosis	ECM	TCM	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	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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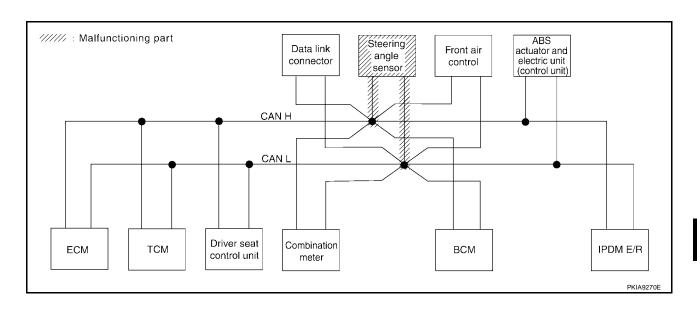
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Case 10

Check steering angle sensor circuit. Refer to <u>LAN-167</u>, "Steering Angle Sensor Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	LIVI SCIECTI	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	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNI <b>W</b> WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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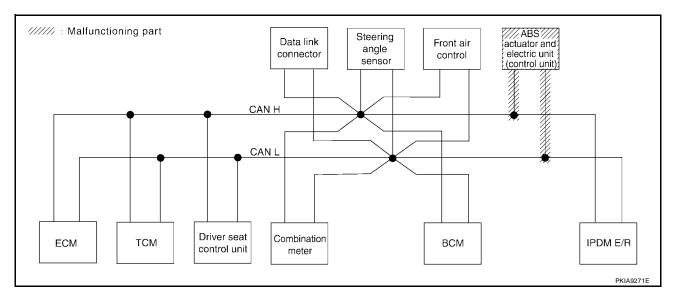
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Case 11

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-167</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagno	osis		
022201 0101	LIVI SCICCII	diagnosis		ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	Π <b>ΛΚ</b> ΜΝ	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
ABS	_	<b>W</b>	UNIMAN	UNKWN	UNKWN	-	_	UNI <b>S</b> WN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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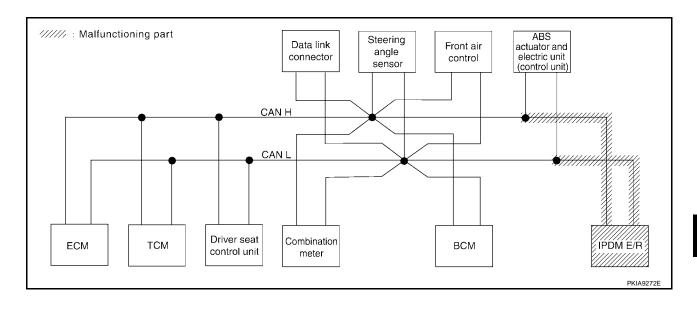
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Case 12
Check IPDM E/R circuit. Refer to <u>LAN-168</u>, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
022201 0101	LIVI SCIECTI	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	Π <b>ИΚ</b> ₩И
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	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 13

Check CAN communication circuit. Refer to  $\underline{\mathsf{LAN-168}}, \\ "\mathsf{CAN} \ \mathsf{Communication} \ \mathsf{Circuit} \ \mathsf{Check}" \ .$ 

					CAN DIA	G SUPPO	RT MNTR					
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis								
OLLLOT GTOT	LIVI SCIECTI	diagnosis		ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UNK WN	UN <b>W</b> WN	UN <b>W</b> WN	_	UNK WN	∩ <b>NK</b> WN		
A/T	_	NG	UNKWN	UNK WN	_	UN <b>W</b> WN	_	_	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_	_		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN		
ABS	_	<b>₩</b>	UNION	UNK/WN	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 <u>LAN-169</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT GTOT	LIVI SCICCII	diagnosis		ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	n <b>uk</b> wu	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	_	_	-
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

#### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-169, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagno	osis		
022201 0101	LIVI SOLCOII	diagnosis		ECM	ТСМ	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	_	UNWWN	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	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

- 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 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

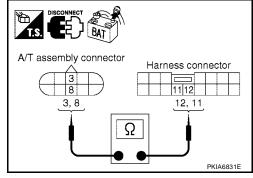
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

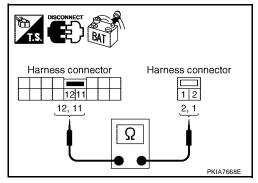
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R)

: 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

2 (W) - 15 (W) 1 (R) - 14 (R)

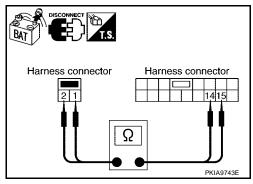
: Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-145, "Work Flow".

NG >> Repair harness.



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

UKS0021G

### 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 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

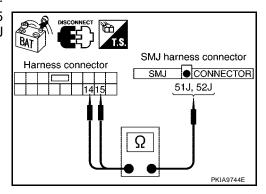
- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : Continuity should exist. 14 (R) - 52J (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3. NG

>> Repair harness.



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

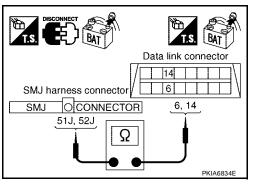
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-145</u>, "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

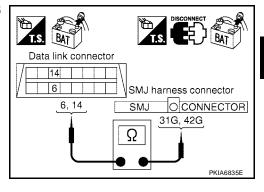
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (W), 14 (R) and harness connector M31 terminals 31G (W), 42G (R).

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

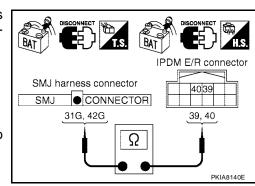
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-145, "Work Flow".

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

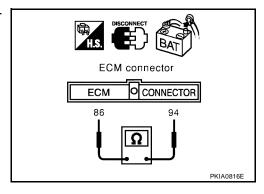
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: 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.
- 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 (W) and 8 (R).

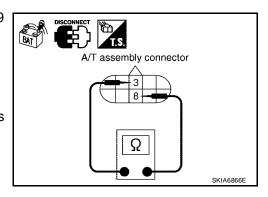
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

NG

OK >> Replace A/T assembly.

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



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**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 (W) and 19 (R).

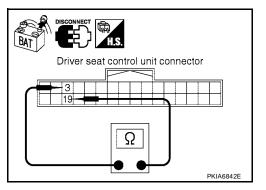
: Approx. 54 - 66 $\Omega$ 

#### 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.
- 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 (W) and 12 (R).

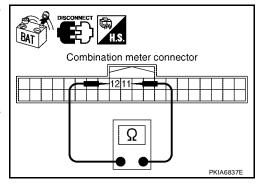
: Approx. 54 -  $66\Omega$ 

#### 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.
- 2. Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

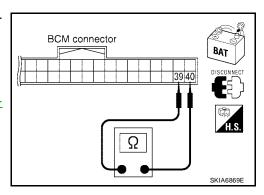
39 (W) - 40 (R)

: Approx. 54 -  $66\Omega$ 

OK or NG

OK >> Replace BCM. Refer to BCS-25, "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

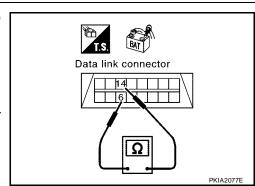
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. **54 - 66** $\Omega$ 

OK or NG

OK >> Diagnose again. Refer to <u>LAN-145, "Work Flow"</u>.

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



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### **Steering Angle Sensor Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal. 2.
- 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.
- Check resistance between steering angle sensor harness connector M47 terminals 3 (W) and 4 (R).

: Approx. 54 - 66 $\Omega$ 

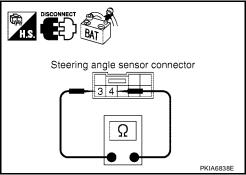
#### OK or NG

OK

>> Replace steering angle sensor.

NG

>> Repair harness between steering angle sensor 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

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

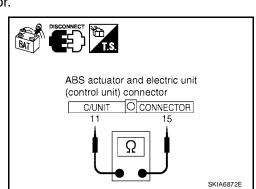
: Approx. 54 - 66 $\Omega$ 

#### 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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

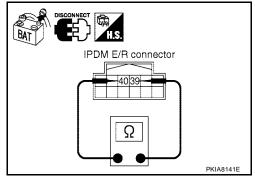
#### OK or NG

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
- 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.

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# 2. CHECK HARNESS FOR SHORT CIRCUIT

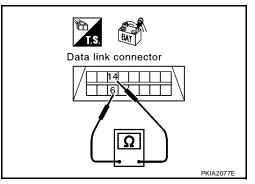
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



### 3. CHECK HARNESS FOR SHORT CIRCUIT

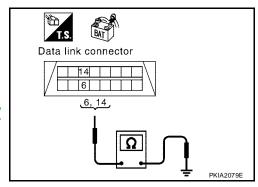
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-169</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 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

ECM and IPDM E/R

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

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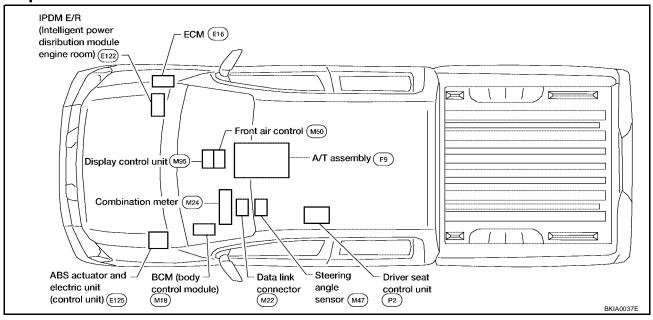
### **System Description**

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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.

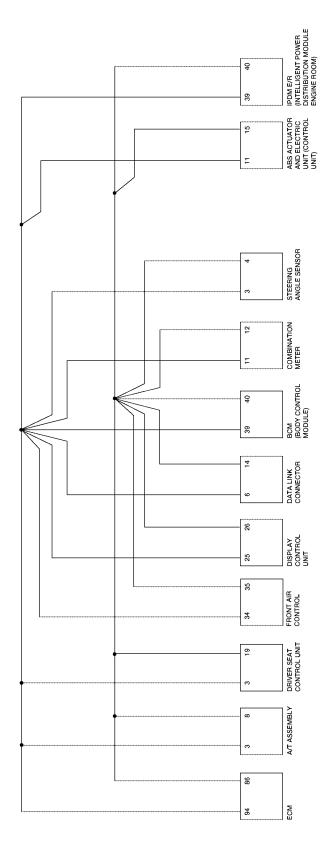
### **Component Parts and Harness Connector Location**

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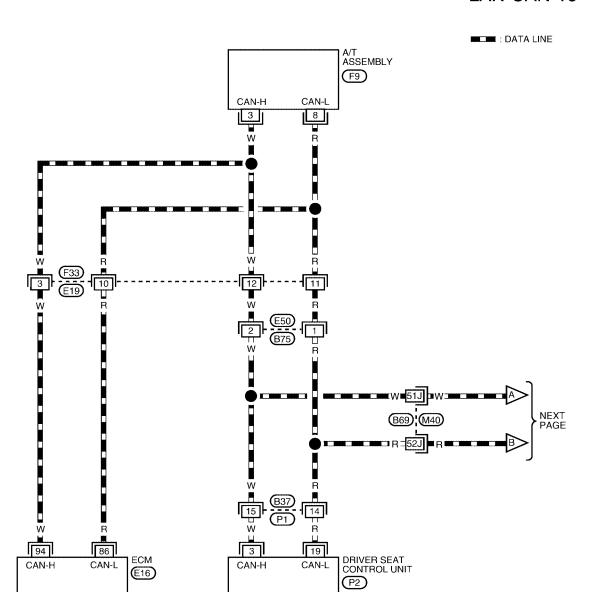
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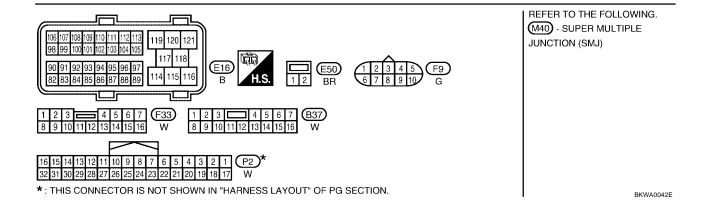
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Wiring Diagram - CAN -

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### LAN-CAN-16





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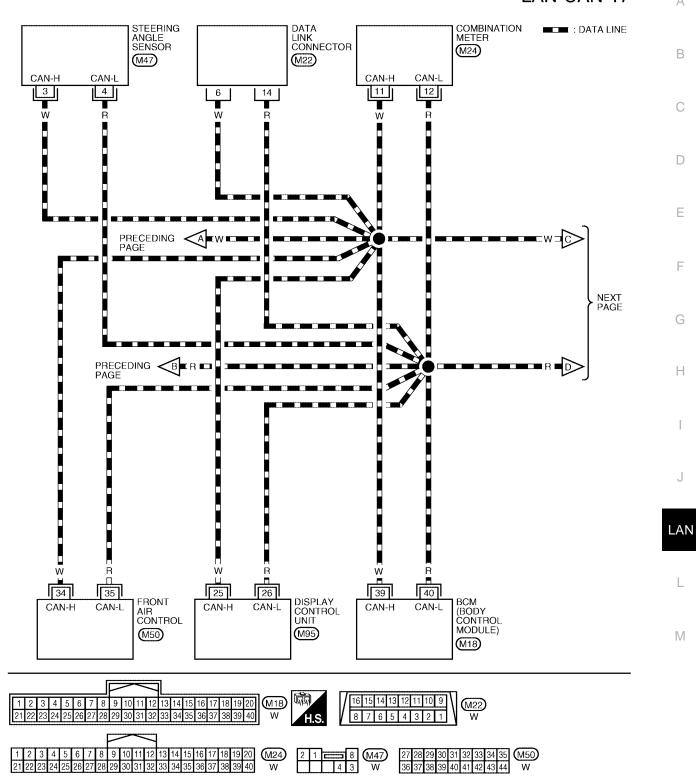
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### LAN-CAN-17



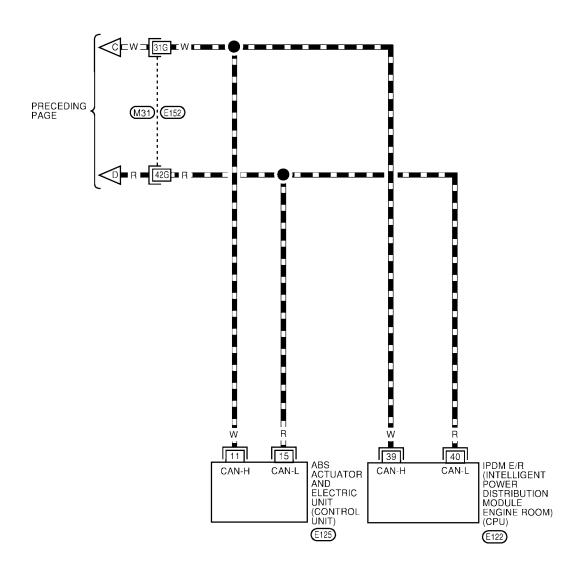
BKWA0141E

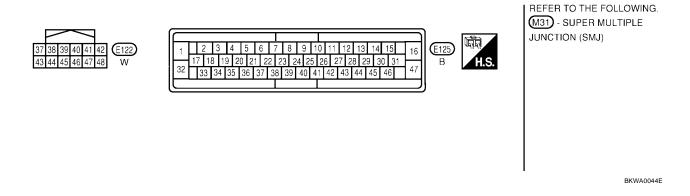
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### LAN-CAN-18

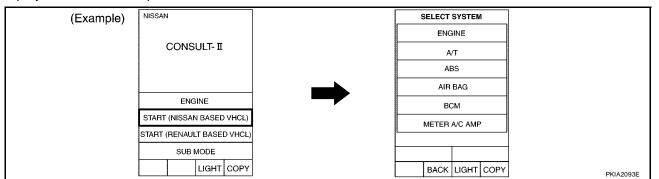
■□■ : DATA LINE



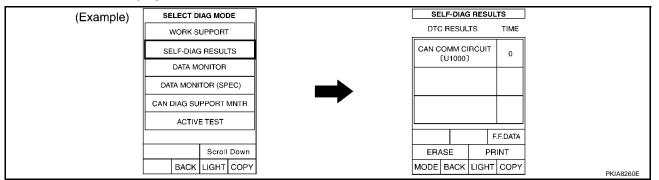


**Work Flow** 

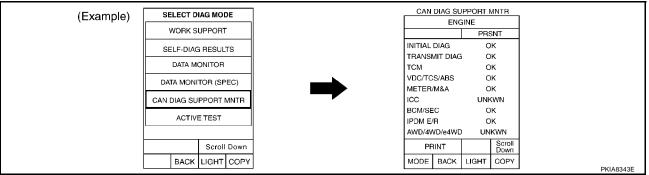
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



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



Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", 3. "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-177, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-177, "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 AV-149, "CAN Communication Line Check".
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to LAN-177, "CHECK SHEET" .

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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-177</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-149">AV-149</a>, "CAN Communication Line Check".
- 9. According to the check sheet results (example), start inspection. Refer to <u>LAN-179</u>, "CHECK SHEET <u>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.

SELECT SYSTE					CA		PPORT MN	11 I			
ENGINE						11 21/10 00	Receive of				
		Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
VT	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN
	_	NG	UNKWN	UNKWN	_	UNKWN	1	ĺ	_	UNKWN	_
UTO 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
BCM N	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	1	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_
Symptoms :											
		Δ	Attach copy of Attach copy of SELECT SYSTEM								
		SE	_ECT SYS <sup>-</sup>	TEM		SE	LECT SYS	TEM			
			CANI	dis	Attach copy play contro PORT MON	of I unit IITOR checl	k sheet				

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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 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)**

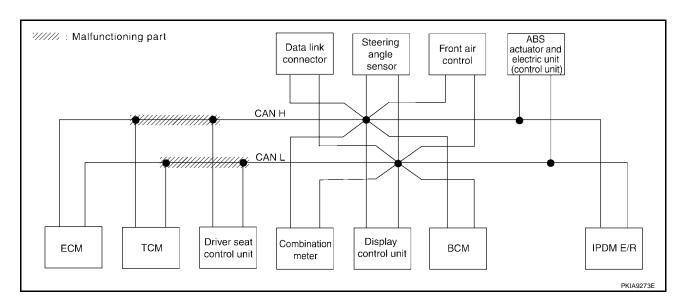
#### NOTE:

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-194</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	liagnosis			
022201 0101	LIVI SOLCOII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	∩ <b>ИК</b> МИ	UNK <b>W</b> N	_	_	UNK WN	Π <b>ΝΚ</b> ⁄ΛΝ
A/T	_	NG	UNKWN	UNKWN	_	∩ <b>NK</b> WN	_	_	_	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKAN	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN TRC 3	_	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNI <b>W</b> WN	_	UNKWN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_	_



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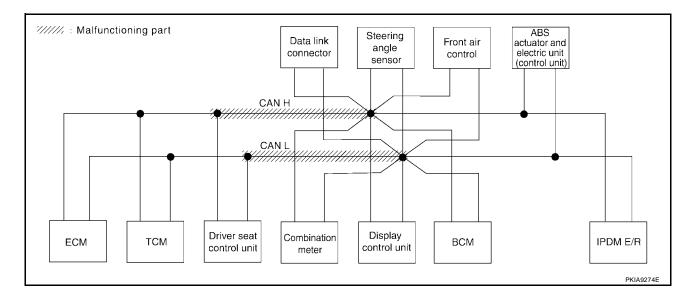
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-195</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIW GOTGOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	UNK WN	_	-	Π <b>ΝΚ</b> ΜΝ	UNK\\
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ∕WN	_	_	_	UNK/WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN IRC 3	_	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNIMWN	_	UNKWN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNIXWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK/WN		_	UNKWN	_	_	-	_



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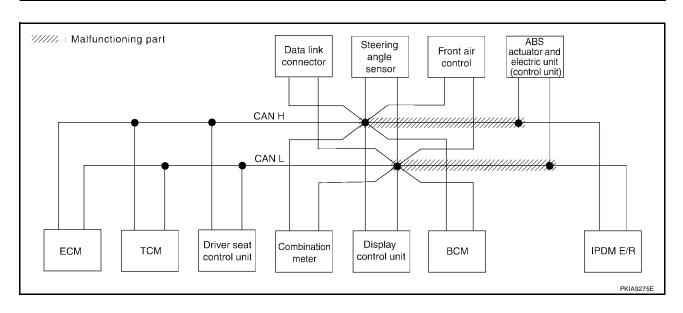
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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-196</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

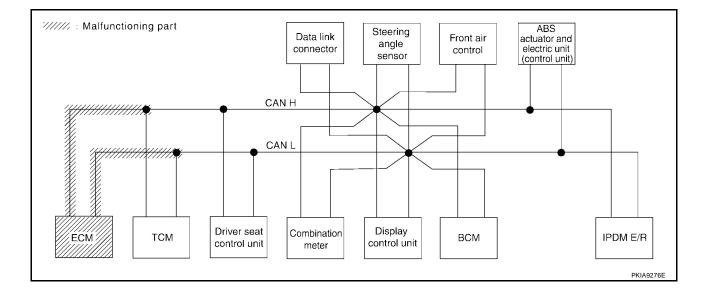
					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive o	liagnosis			
022201 0101	ZIVI GGI GGI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	Π <b>ΝΚ</b> ΜΝ	UN <b>K</b> ∕VN
A/T	_	NG	UNKWN	UNKWN	_	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	_	CANCERC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNK WN
ABS	_	NG	UNKWN	UNIXWN	UNKWN	_	_	UNIXWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



LAN

Case 4
Check ECM circuit. Refer to <u>LAN-197, "ECM Circuit Check"</u>.

					CA	N DIAG SU	PPORT MN				
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIW GOTGOTT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	η <b>νκ</b> ⁄ων	_	UNK WN	∩ <b>ИК</b> МИ	UNK WN	_	_	Π <b>ИΚ</b> ΜИ	UN <b>K</b> ∕VN
A/T	_	NG	UNKWN	∩ <b>M</b> MN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN RC 3	_	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNIXWN	_	UNKWN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNIXWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication		UNKWN	UNK/WN	_	_	UNKWN	_	_	_	_



# **CAN SYSTEM (TYPE 6)**

[CAN]

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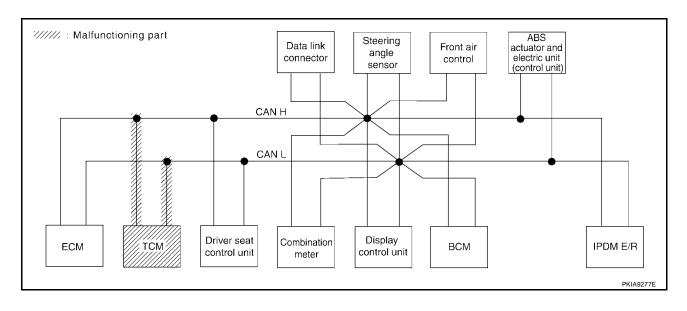
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Case 5
Check TCM circuit. Refer to <u>LAN-197</u>, "TCM Circuit Check" .

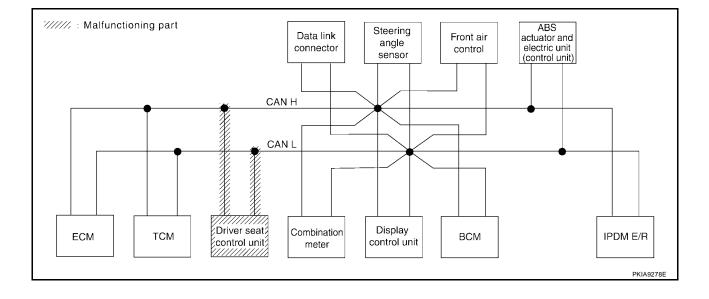
					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive o	liagnosis			
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	∩ <b>ик</b> /wи	_	∩ <b>иК</b> {\w}и	_	_	_	UNIXWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	Ω <b>ΝΚ</b> ⁄ΜΝ	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
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



LAN

Case 6
Check driver seat control unit circuit. Refer to <u>LAN-198</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
		diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	-	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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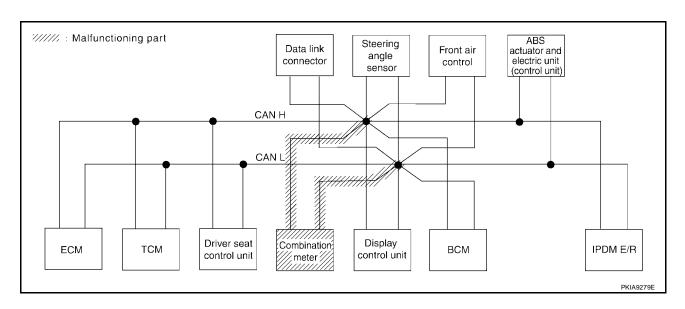
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Case 7
Check combination meter circuit. Refer to <u>LAN-198</u>, "Combination Meter Circuit Check" .

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	liagnosis			
022201 0101	ZIVI GGI GGI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	∩ <b>иК</b> МИ	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UN <b>K</b> ₩N	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN ORC 5	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNK/WN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

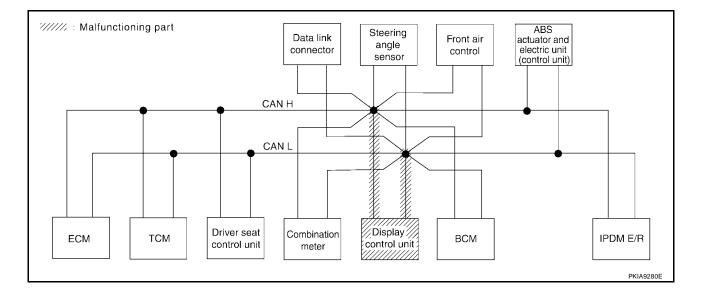


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Case 8
Check display control unit circuit. Refer to <u>LAN-199</u>, "<u>Display Control Unit Circuit Check"</u>.

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
022201 0101	LIVI SOFCOTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/
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 RC 3	_	CANORC 5	CANORC 2	_	CANATRC 4	_	CANORC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



# **CAN SYSTEM (TYPE 6)**

[CAN]

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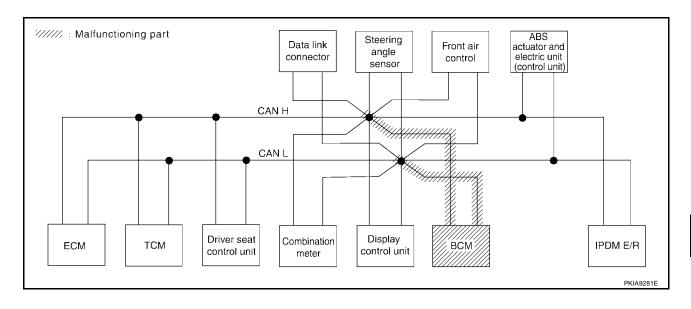
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Case 9
Check BCM circuit. Refer to <u>LAN-199</u>, "BCM Circuit Check" .

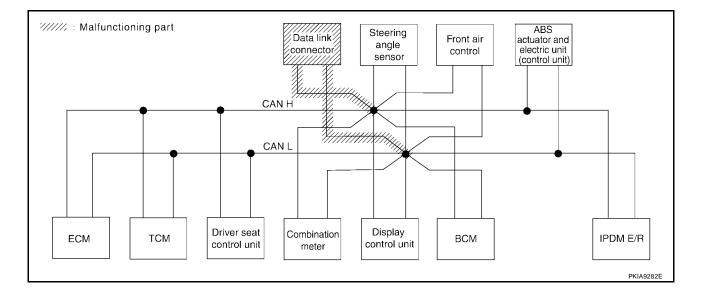
					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive o	liagnosis			
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNIMU	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNI 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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	NNKWN	_	_	_	_



LAN

Case 10
Check data link connector circuit. Refer to LAN-200, "Data Link Connector Circuit Check".

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIW GOTGOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	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	_	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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



# **CAN SYSTEM (TYPE 6)**

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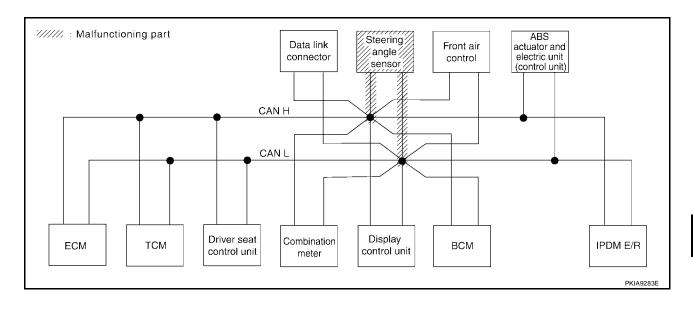
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Case 11
Check steering angle sensor circuit. Refer to <u>LAN-200</u>, "Steering Angle Sensor Circuit Check".

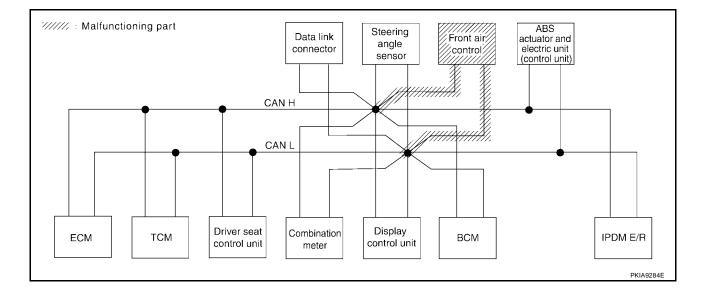
					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	liagnosis			
022201 0101	LIVI SOFCOTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	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
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-201</u>, "Front Air Control Circuit Check".

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIW GOTGOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	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	_	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	_	CANORC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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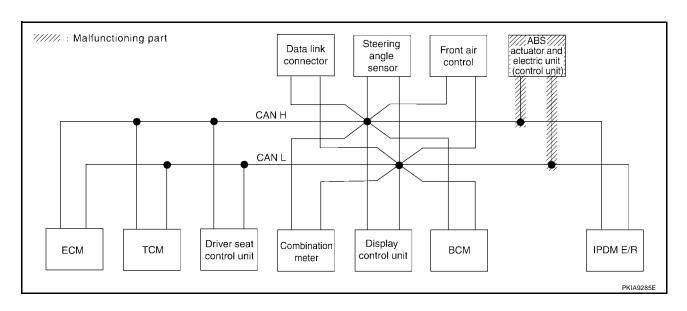
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Case 13

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-201</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

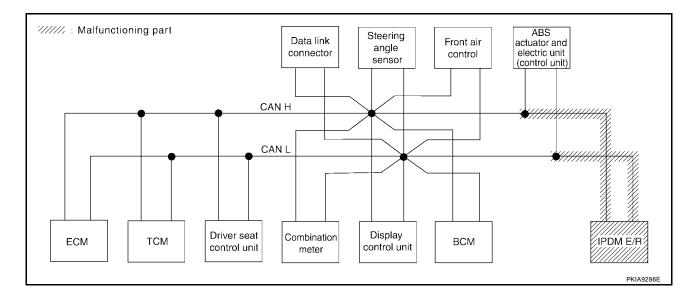
					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIVI SOLCOII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK/WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
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
ABS	_	N	UNKWN	U <b>NK</b> WN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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Case 14
Check IPDM E/R circuit. Refer to <u>LAN-202</u>, "IPDM E/R Circuit Check" .

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	liagnosis			
0222010101	ZIVI GOIGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	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	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_	CANORC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UN <b>W</b> WN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



# **CAN SYSTEM (TYPE 6)**

[CAN]

Case 15

Check CAN communication circuit. Refer to LAN-202, "CAN Communication Circuit Check" .

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
		diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNK WN	_	Ω <b>ΝΚ</b> ⁄⁄ΩΝ	∩N <b>K</b> WN	UN <b>K</b> ₩N	_	_	Π <b>ИΚ</b> ΜИ	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	∩ <b>νΚ</b> ⁄νν	_	Ω <b>ΝΚ</b> ⁄⁄ΝΝ	_	_	_	UNK <b></b> ₩N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CANAIRC 1	CAN ARC 3	_	CANORC 5	CANORC 2	_	CANORC 4	_	CANORC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ABS	-	NØ	UNK/WN	UNK/WN	UNKWN	_	_	UNK WN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

#### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-203, "IPDM E/R Ignition Relay Circuit Check"}}$ .

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	liagnosis			
022201 0101	LIN GOIGGII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	_	Π <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
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

Revision: January 2005 LAN-193 2004 Titan

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#### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-203</u>, "IPDM E/R Ignition Relay Circuit Check".

					CA	N DIAG SU	PPORT MN	ITR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
022201 0101	LIW COTOCIT	diagnosis		ECM	TCM	METER /M&A	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	∩ <b>ИК</b> \\M	_	UNK WN	_	_	_	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
ABS	_	NG	UNKWN	UNIXWN	UNKWN	_	_	UNK WN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

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

UKS0023H

PKIA9190E

### 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

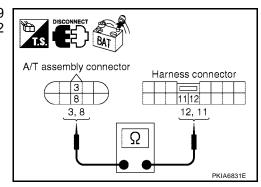
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

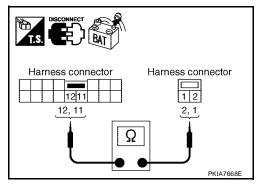
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

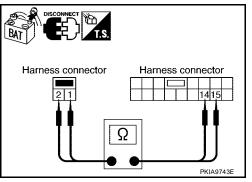
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-175, "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.
- 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 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : C 14 (R) - 52J (R) : C

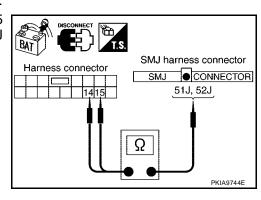
: Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

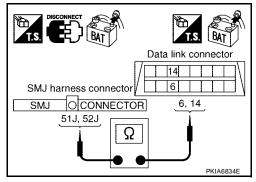
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-175, "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.

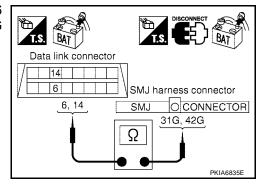
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

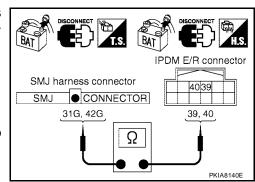
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-175</u>, "Work Flow".

NG >> Repair harness.



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**ECM Circuit Check** 

# 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 (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

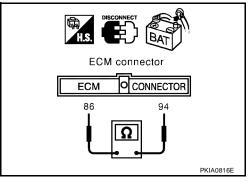
- Disconnect ECM connector.
- Check resistance between ECM harness connector E16 termi-2. nals 94 (W) and 86 (R).

: **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

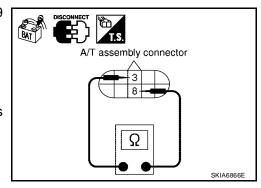
- Disconnect A/T assembly connector. 1.
- Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

: 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.
- 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 (W) and 19 (R).

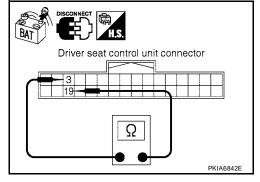
: Approx. 54 - 66 $\Omega$ 

#### 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

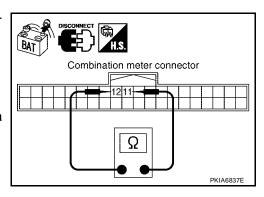
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (W) and 12 (R).

: 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.
- Disconnect the negative battery terminal. 2.
- 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

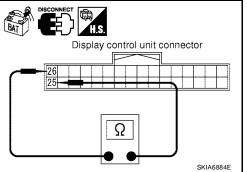
- Disconnect display control unit connector. 1.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (W) and 26 (R).

: 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

- 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

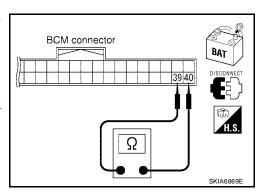
- Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-25, "Removal and Installation of BCM".

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



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**LAN-199** Revision: January 2005 2004 Titan

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

### 1. CHECK CONNECTOR

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

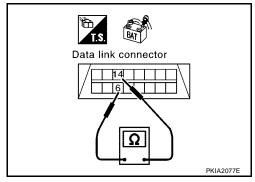
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Approx. 54 - 
$$66\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to <u>LAN-175, "Work Flow"</u>.

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.
- 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

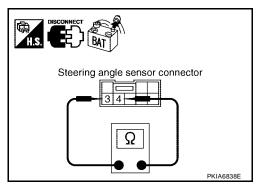
- 1. Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M47 terminals 3 (W) and 4 (R).

**3 (W) - 4 (R)** : Approx. 
$$54 - 66\Omega$$

#### OK or NG

OK >> Replace steering angle sensor.
NG >> Repair harness between steerir

>> 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. 2.
- 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 (W) and 35 (R).

: Approx. 54 - 66 $\Omega$ 

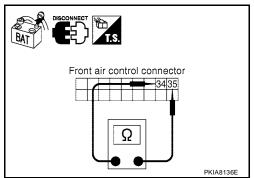
#### OK or NG

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

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

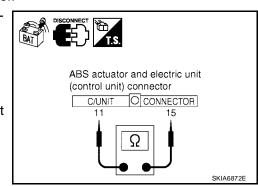
: Approx. 54 - 66 $\Omega$ 

#### 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

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- 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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

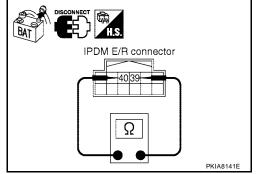
#### OK or NG

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

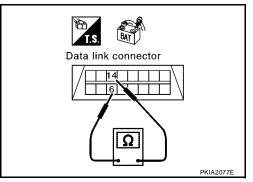
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

> 6 (W) - 14 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

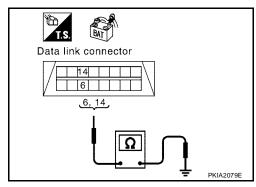
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

> 6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-203, "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 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" .

#### 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

ECM and IPDM E/R LKIA0037F

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# **CAN SYSTEM (TYPE 7)**

PFP:23710

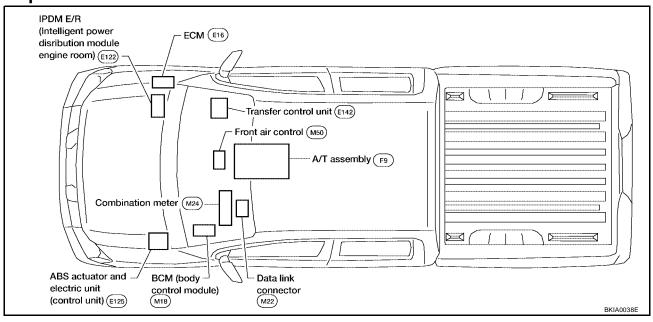
# **System Description**

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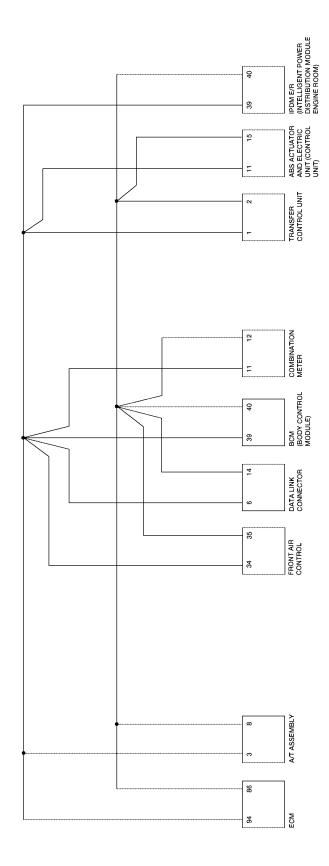
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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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Schematic UKS001FP



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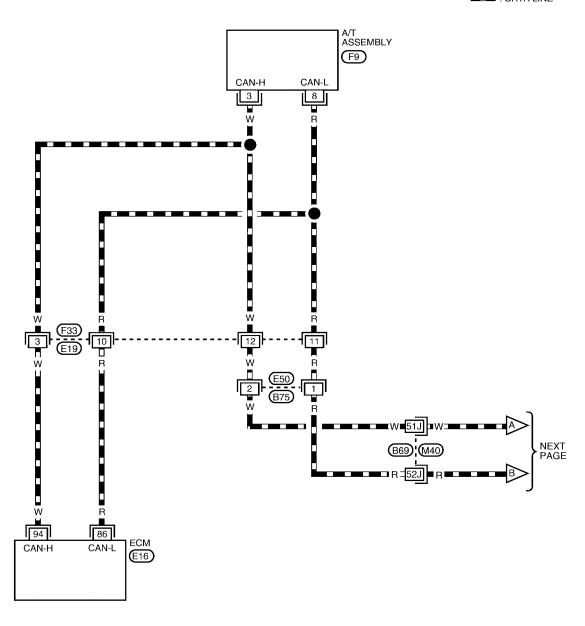
BKWA0142E

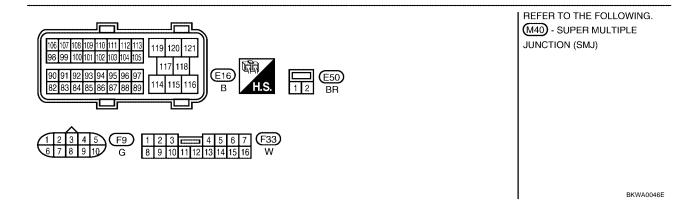
Wiring Diagram - CAN -

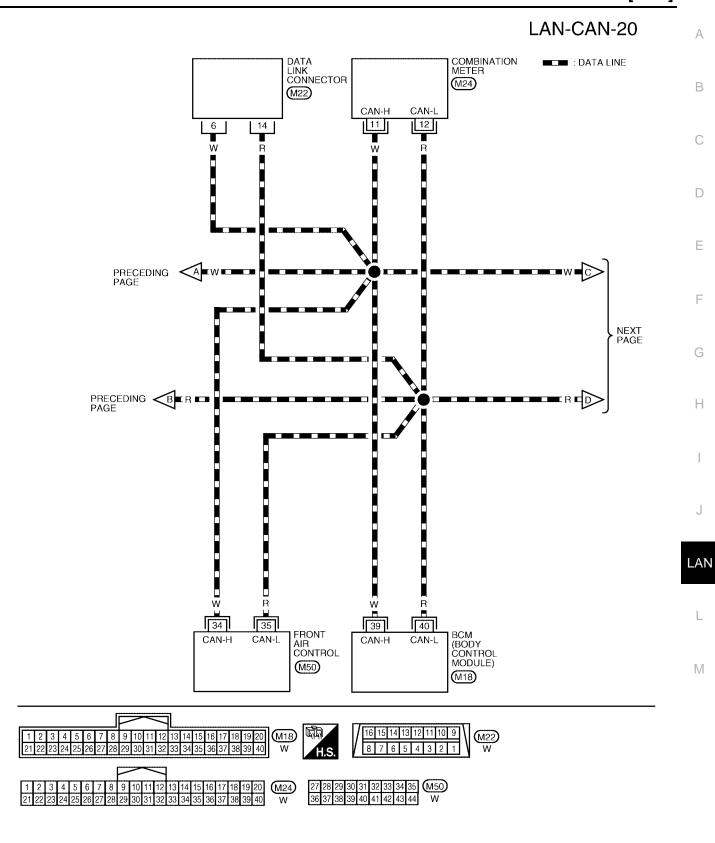
UKS001FQ

# LAN-CAN-19

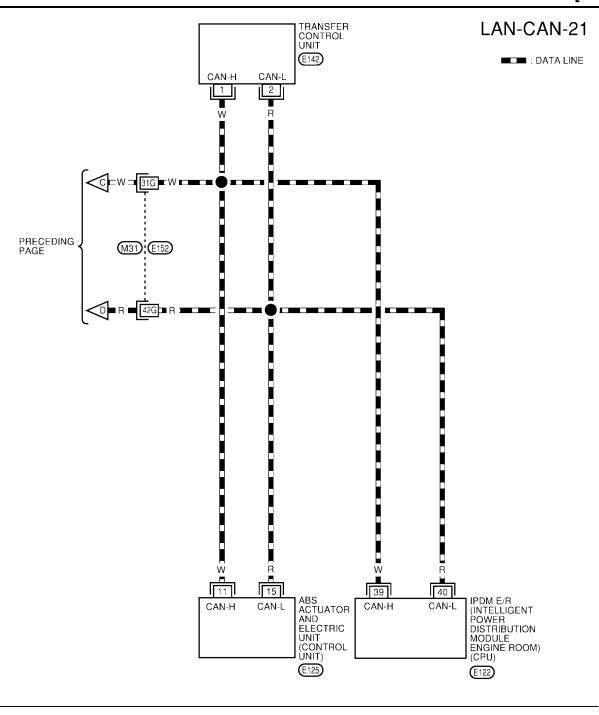
DATA LINE

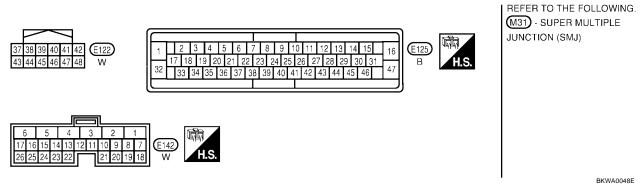






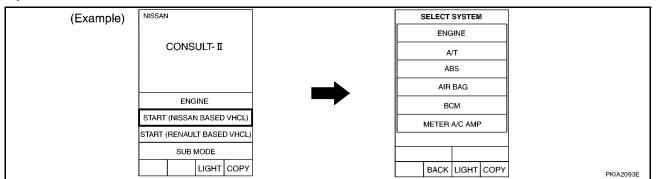
BKWA0143E



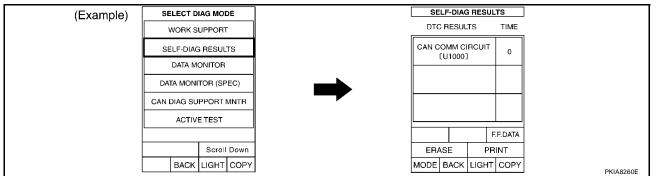


Work Flow

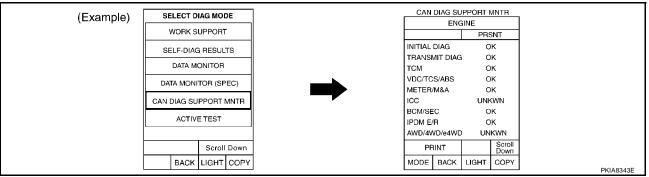
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "BCM", "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", "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-210, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-210">LAN-210</a>, "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-212</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)"

Revision: January 2005 LAN-209 2004 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				
SELECT SYSTE	EM 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	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	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 BCM 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
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 ALL MODE AWD/4WD 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)**

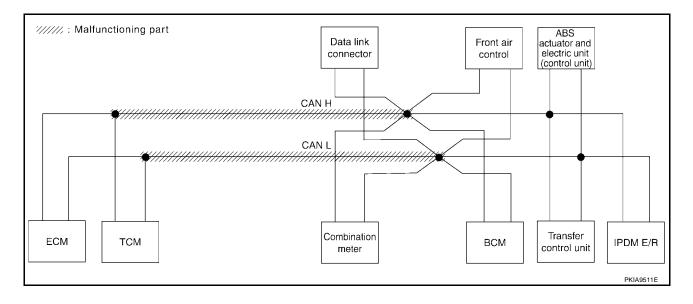
#### NOTE:

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

#### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-223</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis						
OLLEGI GIGI	LIW Screen	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNION	UNK WN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNWWN	_	UN <b>W</b> WN	_	_
всм	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	Π <b>ИΚ</b> /ΜИ	UNK WN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNIXWN	_	-	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_



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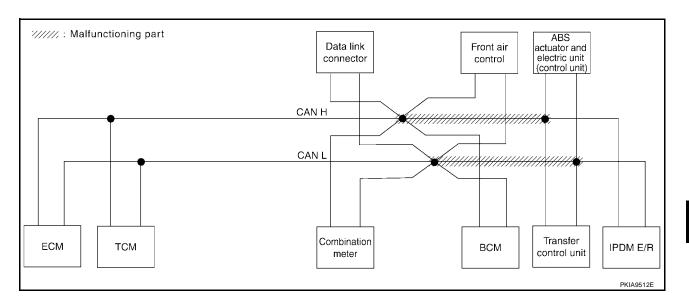
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-224</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

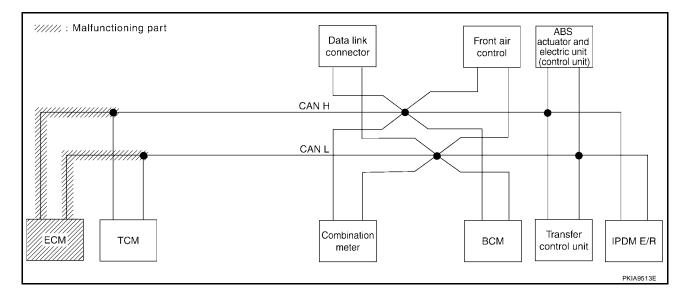
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagn	osis		
3222313131	2111 0010011			ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	_	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK WN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNIXWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK\WN	UNK/WN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNION	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	



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Case 3
Check ECM circuit. Refer to <u>LAN-225</u>, "ECM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
GELEGI GIGI	EN SOICEN	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNK WN	_	UNK WN	UNI <b>W</b> N	UNK WN	UNK WN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
BCM	No indication	NG	UNKWN	<b>NNKWN</b>	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	∩ <b>NK</b> WN	UNKWN	_	_	_	UNKWN	=
ABS	_	NG	UNKWN	UNION	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

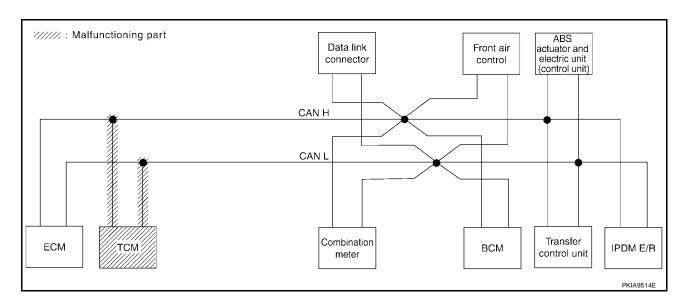


# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 4 Check TCM circuit. Refer to <u>LAN-226</u>, "TCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagn	osis		
5222010101	55.6611	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN		UNK WN	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	UNK <b>W</b> N	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UN <b>K</b> ₩N	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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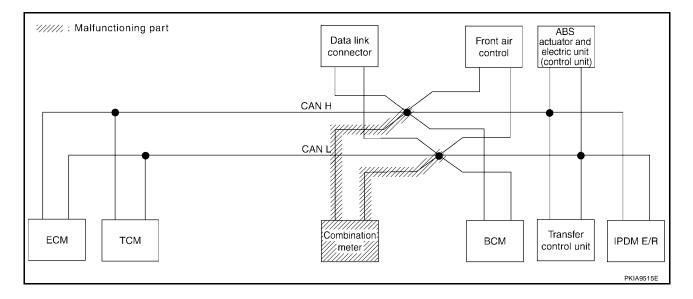
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Case 5
Check combination meter circuit. Refer to <u>LAN-226</u>, "Combination Meter Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Re	ceive diagn	osis		
GEEGI GIGI	EN SOICCH	diagnosis	l	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	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
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	-
ABS	-	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

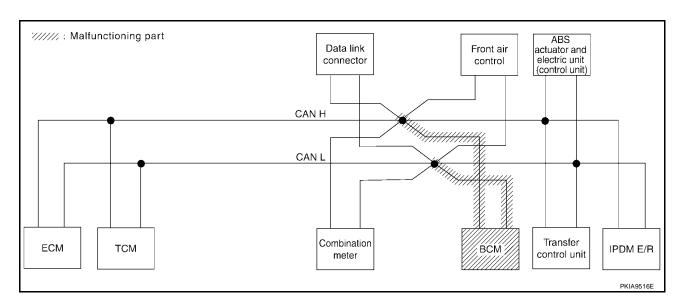


# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 6
Check BCM circuit. Refer to <u>LAN-227</u>, "BCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM 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	I	NG	UNKWN	1	UNKWN	UNKWN	UNK WN	UNKWN	_	UNKWN
A/T		NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UN <b>K</b> ₩N	_	_	_



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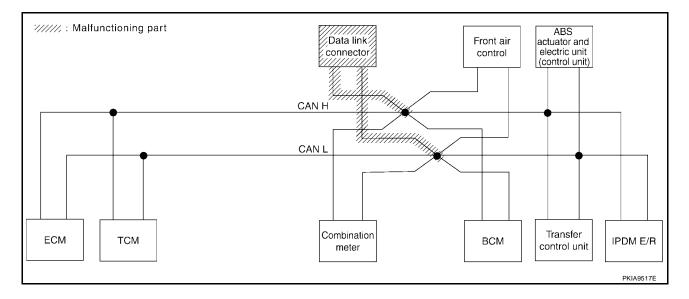
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Case 7
Check data link connector circuit. Refer to <u>LAN-227, "Data Link Connector Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial diagnosis   Transmit diagnosis   ECM   TCM   METER/   BCM/SEC   AWD/4WD   VDC/TCS   IPDM   M8.5   BCM/SEC   AWD/4WD   VDC/TCS   IPDM   M8.5   AWD/4WD   VARS   IPDM   AWD   VARS   IPDM   AWD   VARS   IPDM   AWD   VARS   IPDM   IPDM								
GELEGI GIGI	EN SOICCH	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
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	-

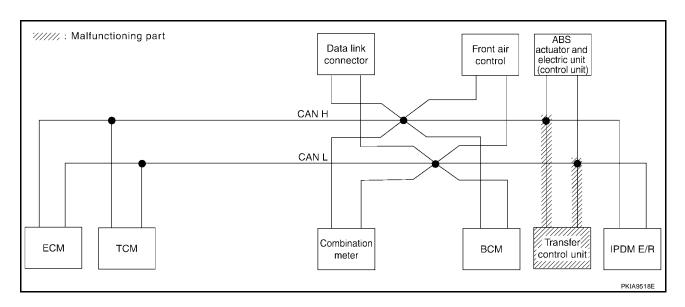


# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 8
Check transfer control unit circuit. Refer to <u>LAN-228</u>, "Transfer Control Unit Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagn	osis		
		diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	1	NG	UNKWN		UNKWN	UNKWN	UNKWN	UNK WN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK <b>∕</b> NN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	-	NG	UNK WN	UNK WN	UNK/WN	_	_	_	UNK/WN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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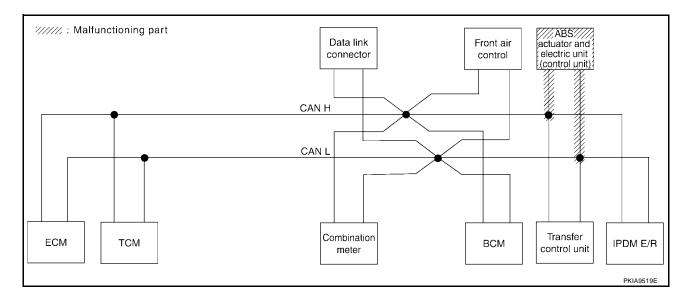
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Case 9

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-228</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
CELEOT GTOT	EN SOICCH	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
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNK/WN	_
ABS	-	N	UNK WN	UNK/WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

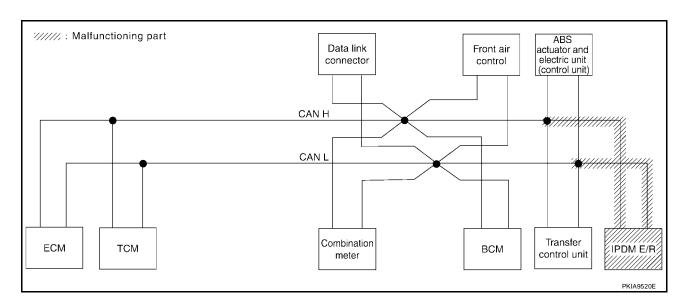


# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 10 Check IPDM E/R circuit. Refer to <u>LAN-229</u>, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	ceive diagn	osis		
3222313131	2111 0010011	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN		UNKWN	UNKWN	UNKWN	UNKWN	_	UNI WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	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-230">LAN-230</a>, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
GELEGI GIGI	ELECT SYSTEM screen		diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNK WN	_	UNK/WN	UNIOWN	UNK WN	UNK WN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNYWN	_	UNK/WN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	-	NG	UNK <b>∕</b> WN	∩ <b>NK</b> WN	UNK WN	_	_	_	UNK/WN	_
ABS	-	N/E	UNIONN	UNIMAN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

#### Case 12

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-230, "IPDM E/R Ignition Relay Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Re	ceive diagn	osis		
GELECT GTOT	LIW SCIECTI	diagnosis	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
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK/WN	_	_	_	UNK/WN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

#### Case 13

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-230</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				ceive diagn			
CELEOT OF OT	EIVI SOICCII	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
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK <b>Y</b> VN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	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.

- 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

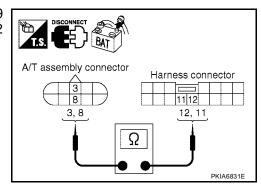
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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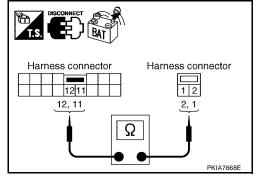
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- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : Continuity should exist.: Continuity should exist.

OK or NG

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



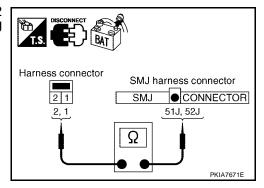
# 4. CHECK HARNESS FOR OPEN CIRCUIT

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

2 (W) - 51J (W) 1 (R) - 52J (R) : Continuity should exist. : Continuity should exist.

OK or NG

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



# 5. CHECK HARNESS FOR OPEN CIRCUIT

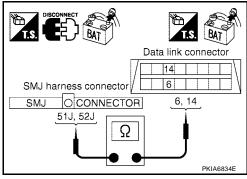
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) 52J (R) - 14 (R) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-209</u>, "Work Flow".

NG >> Repair harness.



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

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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 M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

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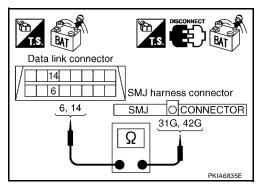
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

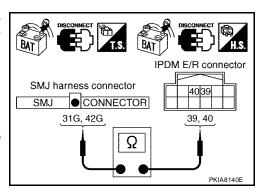
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-209, "Work Flow".

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.

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# $\overline{2}$ . Check harness for open circuit

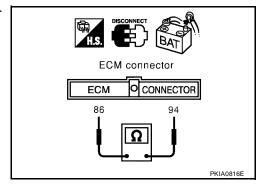
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

94 (W) - 86 (R) : Approx. 108 - 132Ω

#### 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.
- 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 (W) and 8 (R).

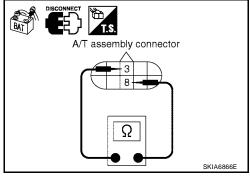
**3 (W) - 8 (R)** : Approx. 54 - 66 $\Omega$ 

#### 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.
- 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.

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

: Approx. 54 -  $66\Omega$ 

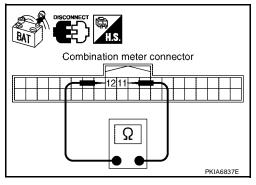
#### OK or NG

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 (W) and 40 (R).

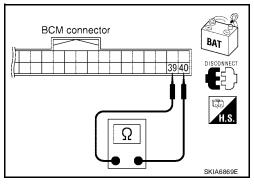
: Approx. 54 -  $66\Omega$ 

#### OK or NG

OK :

>> Replace BCM. Refer to <u>BCS-25</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.
- 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.

Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. 54 - 66
$$\Omega$$

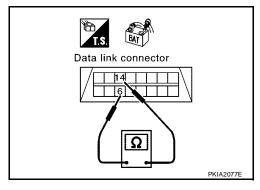
#### OK or NG

OK :

>> Diagnose again. Refer to LAN-209, "Work Flow".

NG

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



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### **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

- 1. Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

**1 (W) - 2 (R)** : Approx. 
$$54 - 66\Omega$$

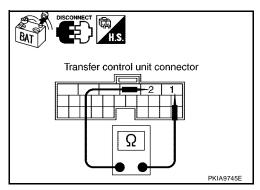
#### OK or NG

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

- Turn ignition switch OFF.
- 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.

- 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 (W) and 15 (R).

: Approx. 54 -  $66\Omega$ 

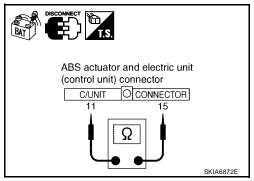
#### OK or NG

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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

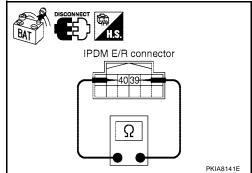
#### OK or NG

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
- 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.

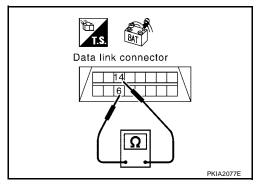
# 2. CHECK HARNESS FOR SHORT CIRCUIT

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

> 6 (W) - 14 (R) : 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 (W), 14 (R) and ground.

> : Continuity should not exist. **6 (W) - Ground** 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-231, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.

# Data link connector 14 [6] 6, 14

# IPDM E/R Ignition Relay Circuit Check

UKS001G4

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".

**LAN-230** Revision: January 2005 2004 Titan

# **CAN SYSTEM (TYPE 7)**

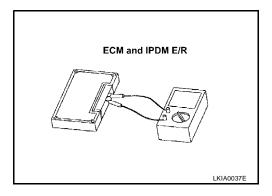
[CAN]

UKS001G5

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 8)**

PFP:23710

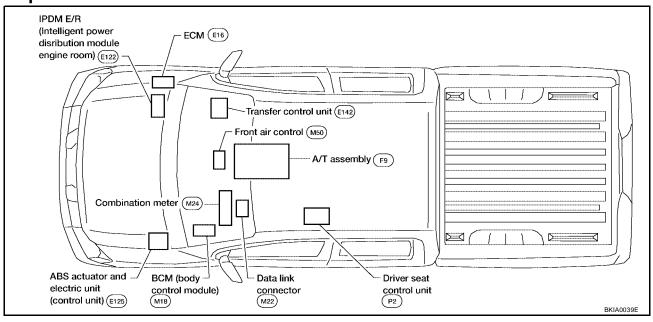
# **System Description**

UKS001G6

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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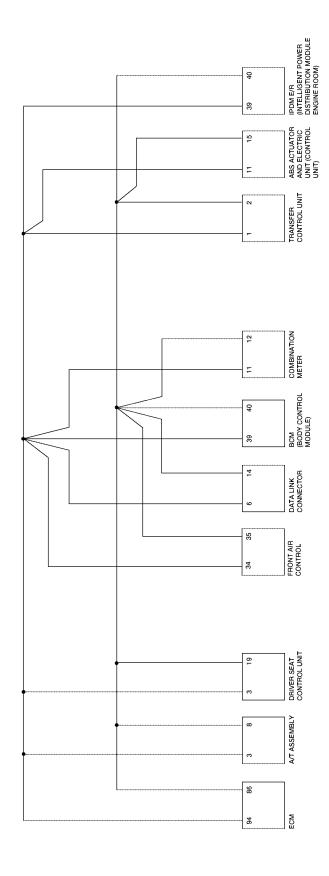
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Schematic UKS001G8



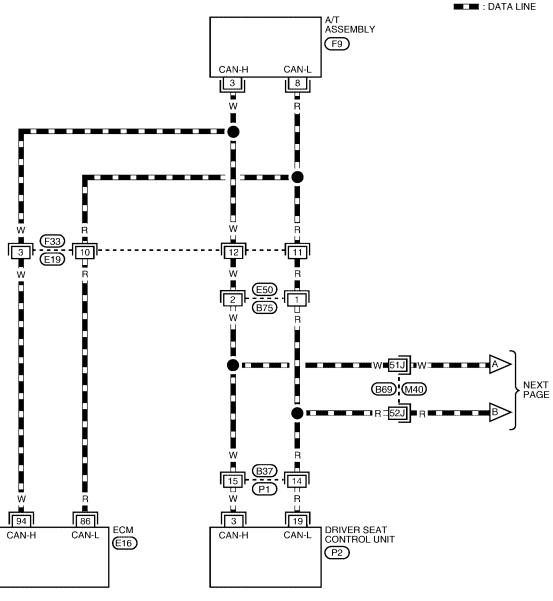
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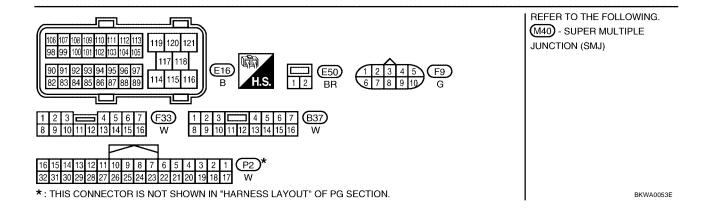
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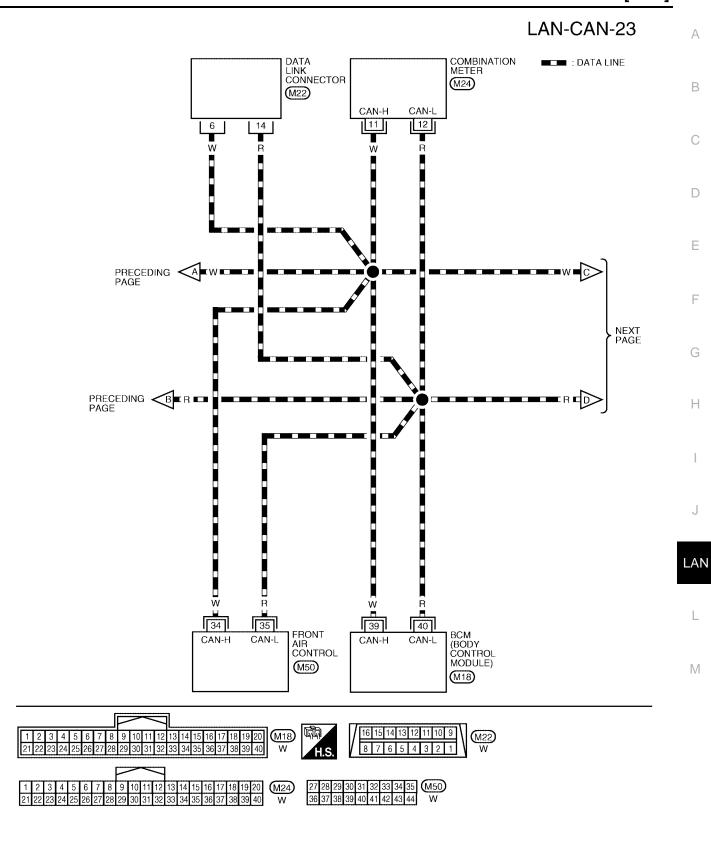
BKWA0144E

Wiring Diagram - CAN -

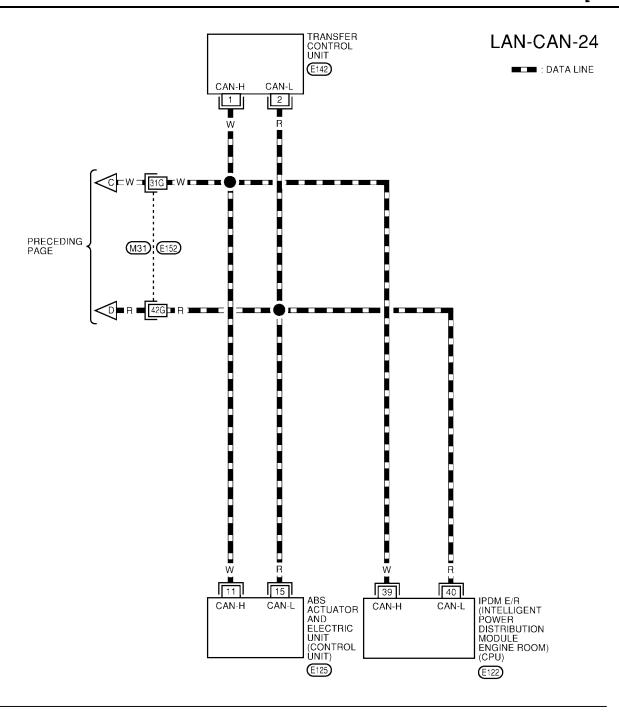
# LAN-CAN-22

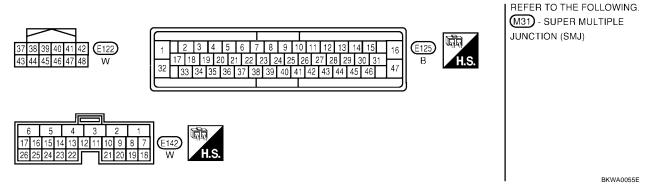






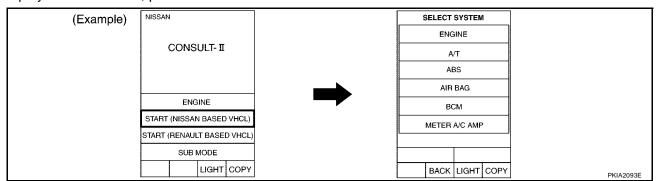
BKWA0145E



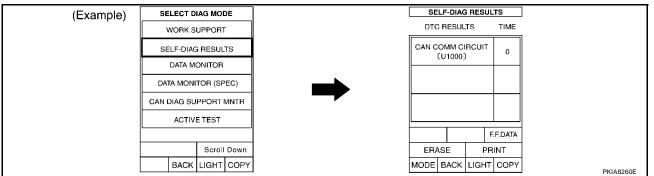


Work Flow

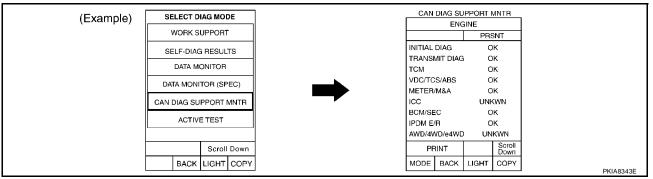
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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-238, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-238">LAN-238</a>, "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-240</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

Revision: January 2005 LAN-237 2004 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		1	Re	ceive diagn			
		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
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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NC								
ADO	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R Symptoms:	No indication		UNKWN	UNKWN		_	UNKWN		-	_
IPDM E/R										

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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 ALL MODE AWD/4WD 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	
ALL MODE AWD/4WD	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

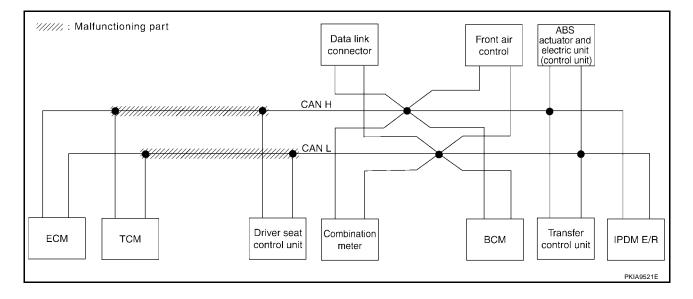
#### NOTE:

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-253</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
CLLLOT GTOT	LIVI GOICCIT	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK/WN	UNWWN	UNKANN	_	UNKAN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	υν <b>κ</b> ⁄νν	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/VN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UN <b>KW</b> N	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKANN	пикули	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKVN	_	_	UNKWN	_	_	_



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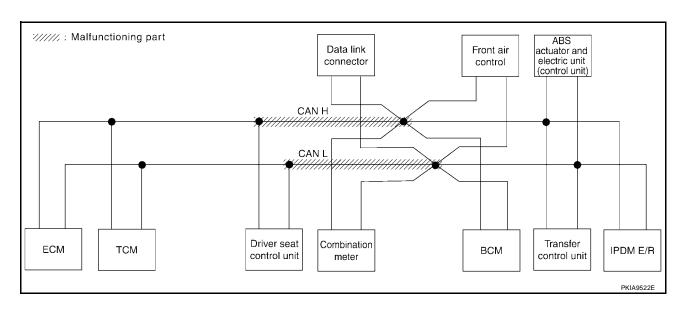
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-254</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

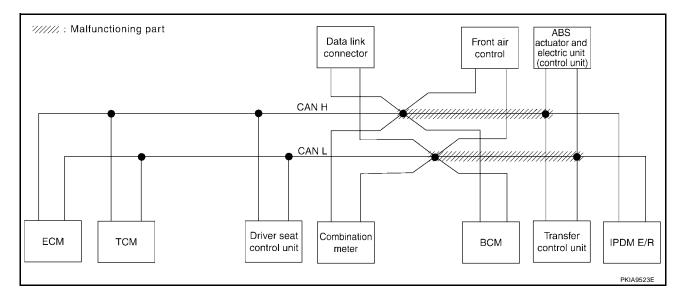
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYSTI	FM screen	Initial	Transmit			Red	ceive diagn	osis		
OLLLOT GTOTI	LIVI SCIECTI	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNK/VN	UNWWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ∕WN	_	UNKIVN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
ВСМ	No indication	NG	UNKWN	UN <b>KW</b> N	_	UNKWN	_	-	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK <b>W</b> N	пикули	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNK/WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_



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Case 3
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-255, "Circuit Check Between Data Link Connector and IPDM E/R"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
OLLLOT GTOT	EIVI SOICEIT	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	η <b>νκ</b> ⁄ων	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	nukwu
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

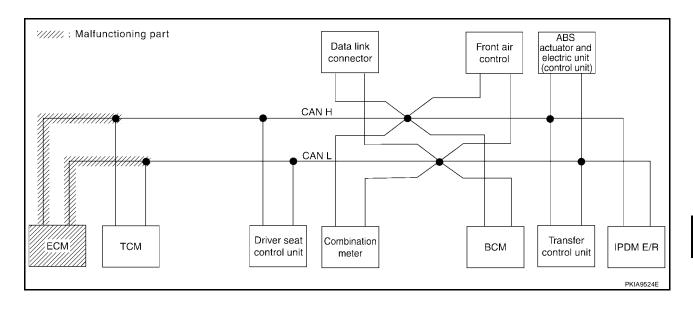


# **CAN SYSTEM (TYPE 8)**

[CAN]

Case 4
Check ECM circuit. Refer to LAN-256, "ECM Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM scraan	Initial	Transmit			Re	ceive diagn	osis		
SELECT STOT	LIW SCIECT	diagnosis	diagnosis	ECM	ТСМ	N UNKWN UNKWN UNKWN —		VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNK WN	_	UNK WN	UNK WN	UNKWN	UNK <b>Y</b> VN	_	UNK/VN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UN <b>KW</b> N	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK <b>W</b> N	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UN <b>K</b> ₩N	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKAN	_	_	UNKWN	_	_	_



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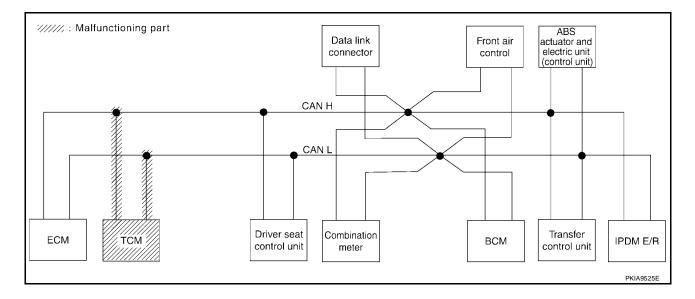
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Case 5
Check TCM circuit. Refer to <u>LAN-256, "TCM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
GELEOT GTOT	LIVI 30/00/	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNK/WN	_	UNK WN	_	UN <b>K</b> ₩N	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKVN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>иК</b> ⁄МИ	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

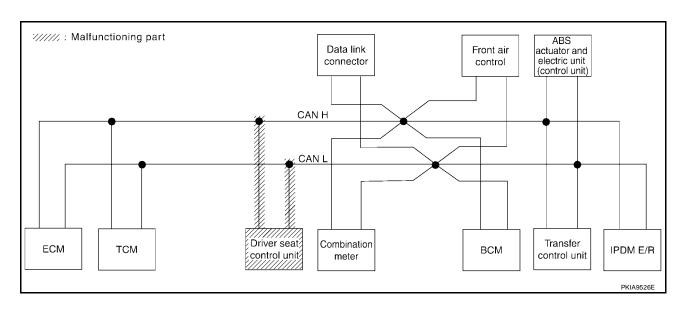


# **CAN SYSTEM (TYPE 8)**

[CAN]

Case 6
Check driver seat control unit circuit. Refer to <u>LAN-257, "Driver Seat Control Unit Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
OLLLOT GTOT	LIVI SOFCCIT	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
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 7
Check combination meter circuit. Refer to <u>LAN-257</u>, "Combination Meter Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Re	ceive diagn	osis		
SELECT STOTI	LIVI SCIECTI	diagnosis	Transmit 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
A/T	_	NG	UNKWN	UNKWN	_	∩ <b>иК</b> \\\	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNK/WN	_	-	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

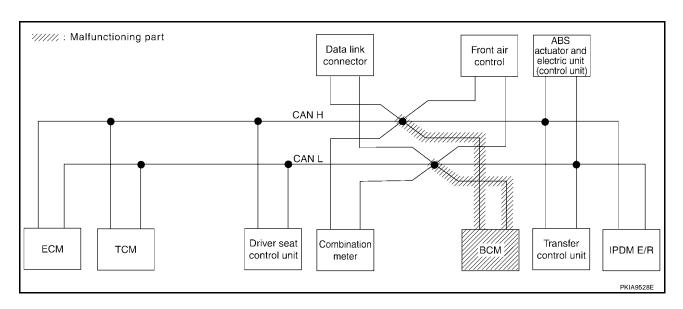
"/////,: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H Driver seat Combination Transfer ECM TCM всм IPDM E/R control unit control unit meter PKIA9527E

# **CAN SYSTEM (TYPE 8)**

[CAN]

Case 8 Check BCM circuit. Refer to <u>LAN-258</u>, "BCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
CEEEOT GTGT	EIW SOICCIT	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK WN	_	_	_



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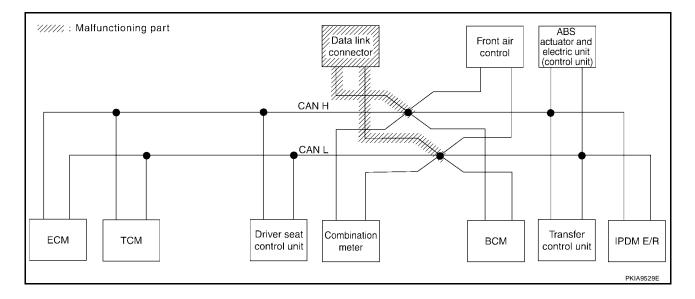
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Case 9
Check data link connector circuit. Refer to <u>LAN-258</u>, "<u>Data Link Connector Circuit Check</u>" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
022201 0101	LIVI SOICCIT	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
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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



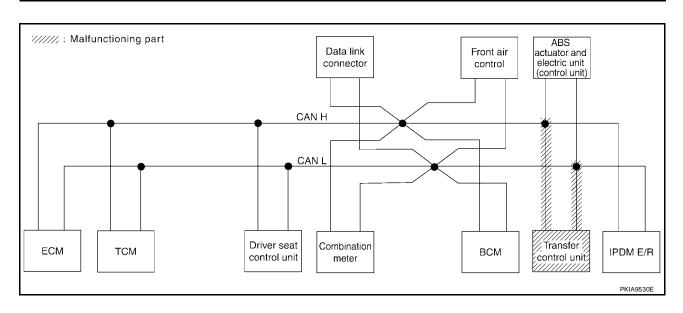
# **CAN SYSTEM (TYPE 8)**

[CAN]

Case 10

Check transfer control unit circuit. Refer to LAN-259, "Transfer Control Unit Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
GELEOT GTOT	LIVI SCIECTI	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UN <b>K</b> ₩N	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>иК</b> ⁄МИ	_	_	-	∩ <b>NK</b> WN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_	_



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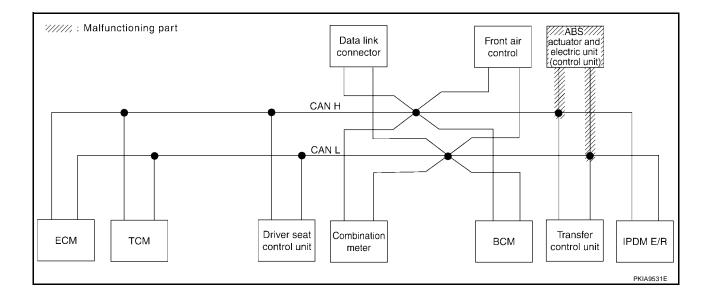
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Case 11

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-259</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
CEEEOT GTOT	LIVI SOFCCIT	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
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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UN <b>K</b> ₩N	_
ABS	_	NØ	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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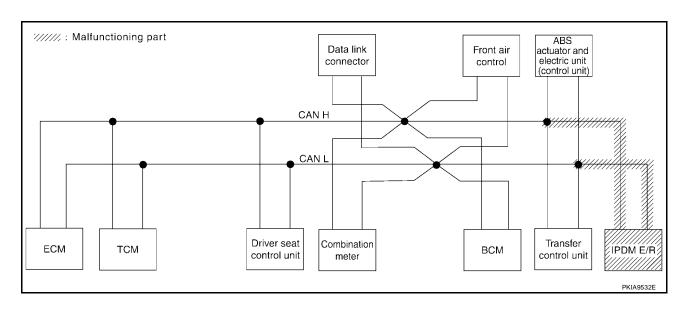
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Case 12
Check IPDM E/R circuit. Refer to LAN-260, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Re	ceive diagn	osis		
OLLLOT GTOT	LIW SOICEIT	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	_	UNIVAN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UN <b>A</b> WN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNKWN	-
ABS	_	NG	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-260">LAN-260</a>, "CAN Communication Circuit Check"</a> .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
SELECT STST	LIVI SCIECTI	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	_	UNK WN	UNK/VN	UNWWN	UNK <b>A</b> VN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	-	UN <b>K</b> ₩N	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKAN	UNKAN	UN <b>K</b> ₩N	_	_	_	∩ <b>ИК</b> МИ	_
ABS	_	<b>V</b> €	UNKWN	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-261, "IPDM E/R Ignition Relay Circuit Check".

	CAN DIAG SUPPORT MNTR									
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis						
				ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	Π <b>νΚ</b> ⁄ΛΝ	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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>иК</b> ⁄МИ	_	_	_	∩ <b>NK</b> WN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	UNKWN	_	_	_

#### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-261</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
022201 0101	LIVI SOFCCIT	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
A/T	_	NG	UNKWN	UNK/WN	_	UNK WN	_	η <b>νκ</b> ⁄ων	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

Circuit Check Between TCM and Driver Seat Control Unit

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 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

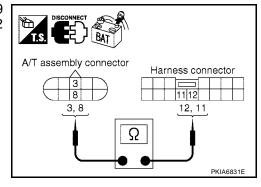
8 (R) - 11 (R)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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Revision: January 2005 LAN-253 2004 Titan

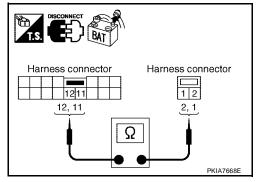
## 3. CHECK HARNESS FOR OPEN CIRCUIT

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

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

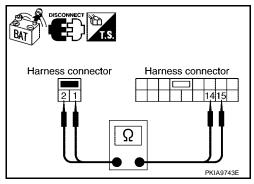
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-237, "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 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

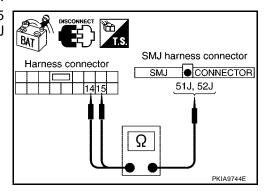
15 (W) - 51J (W) 14 (R) - 52J (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR OPEN CIRCUIT

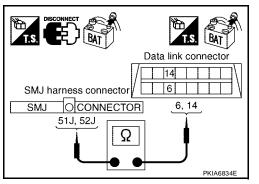
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-237, "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

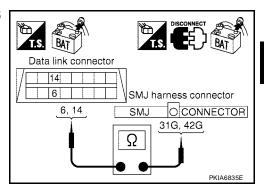
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (W), 14 (R) and harness connector M31 terminals 31G (W), 42G (R).

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

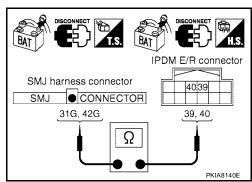
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-237, "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.
- 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

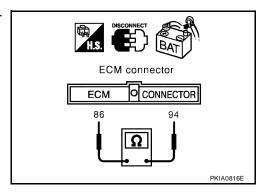
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: Approx. 108 - 132 $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



#### UKS001GF

# 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

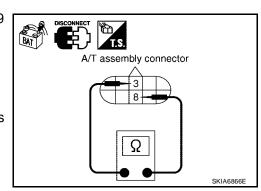
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

: 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 (W) and 19 (R).

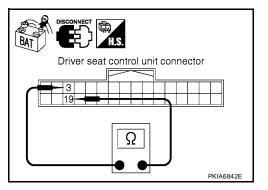
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

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



#### UKS001GH

## **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- 1. 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.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

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

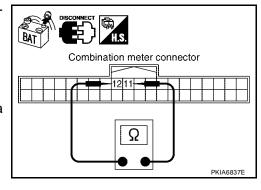
: Approx. 54 -  $66\Omega$ 

#### 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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- 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. 1.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

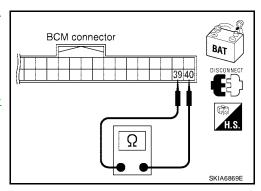
39 (W) - 40 (R)

: Approx. 54 - 66 $\Omega$ 

OK or NG

OK >> Replace BCM. Refer to BCS-25, "Removal and Installation of BCM".

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



## **Data Link Connector Circuit Check**

1. CHECK CONNECTOR

Turn ignition switch OFF.

- 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

1.

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

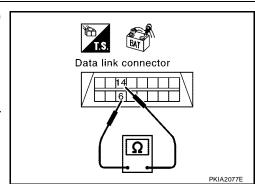
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

> 6 (W) - 14 (R) : Approx. 54 - 66 $\Omega$

OK or NG

OK >> Diagnose again. Refer to LAN-237, "Work Flow".

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



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### **Transfer Control Unit Circuit Check**

## 1. CHECK CONNECTOR

- 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 (W) and 2 (R).

: Approx. 54 - 66 $\Omega$ 

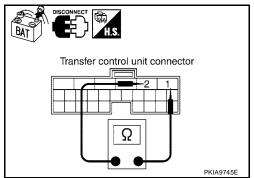
### OK or NG

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**

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

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

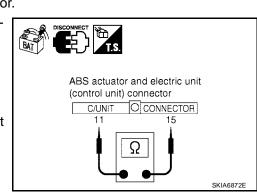
: Approx. 54 - 66 $\Omega$ 

#### 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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

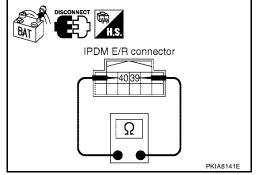
#### OK or NG

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
- 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

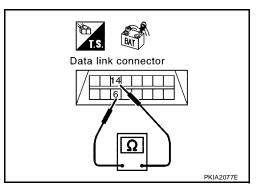
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

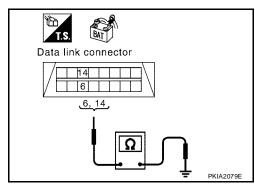
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-261, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



#### UKS001GP

IPDM E/R Ignition Relay Circuit Check

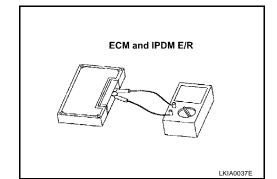
Check the following. If no malfunction is found, replace the IPDM E/R.

- 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 9)**

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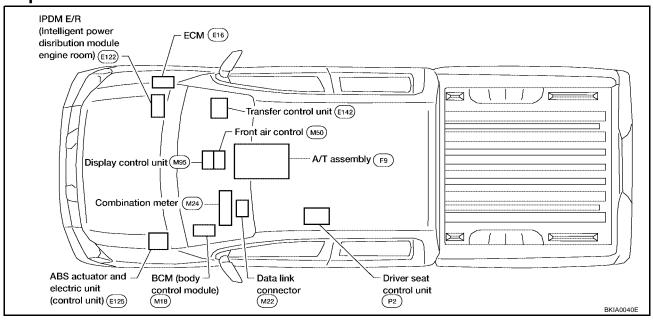
## **System Description**

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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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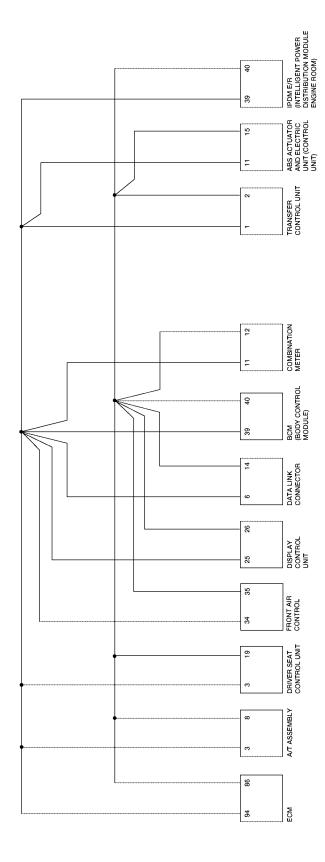
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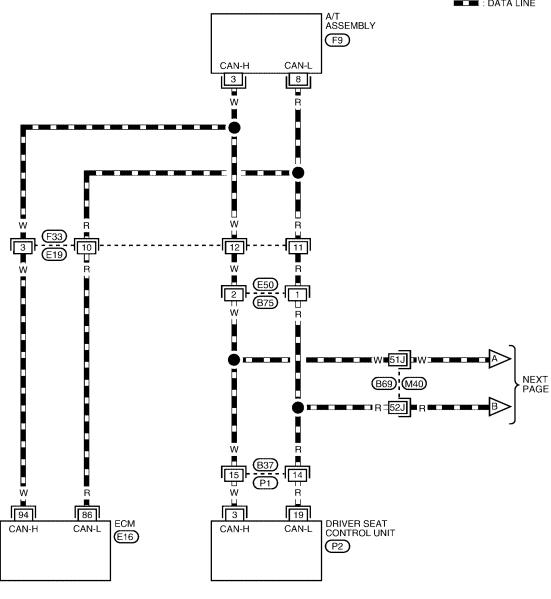
M

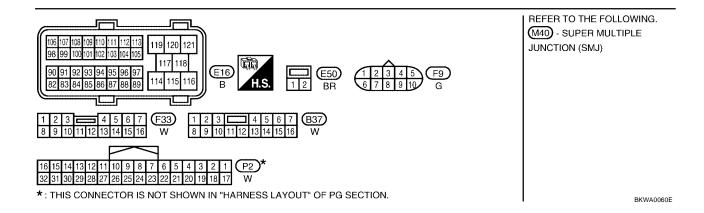
BKWA0146E

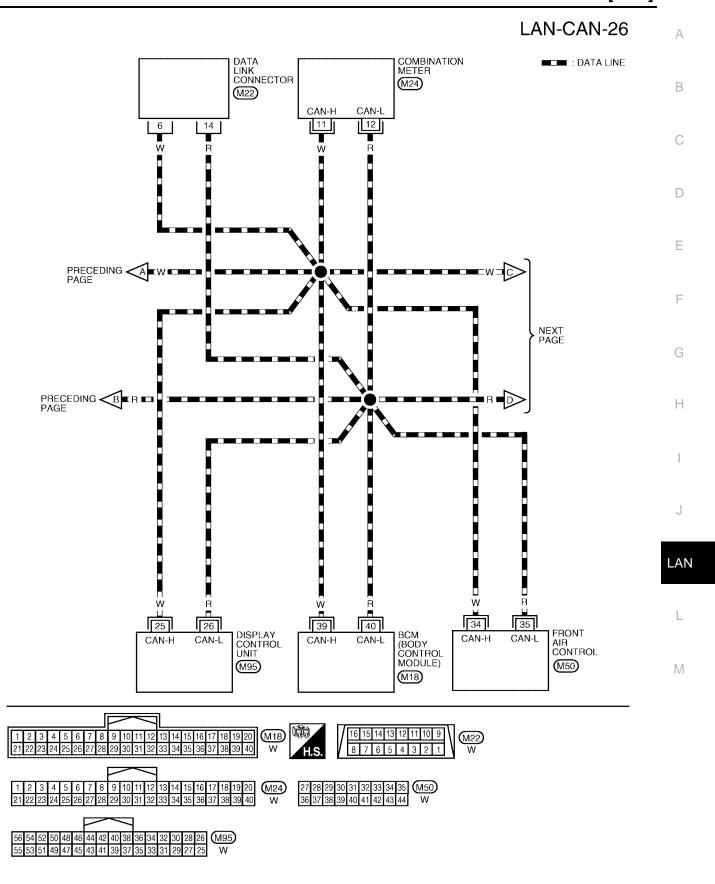
Wiring Diagram - CAN -

## LAN-CAN-25

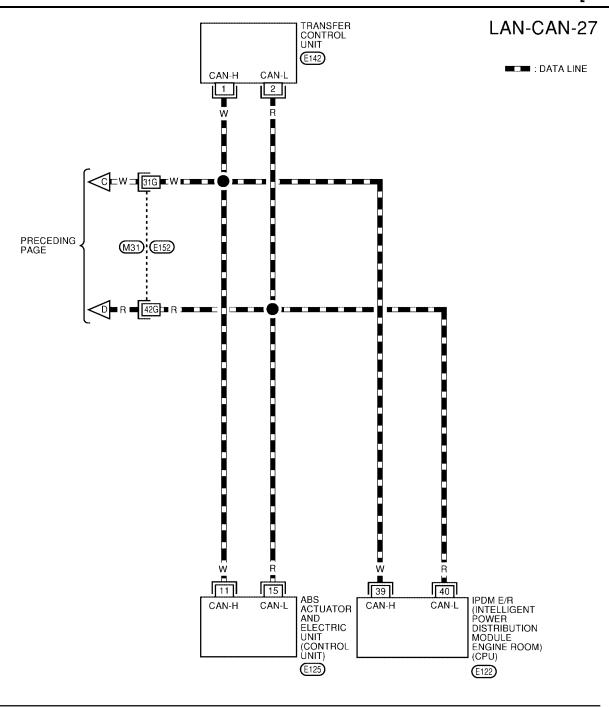


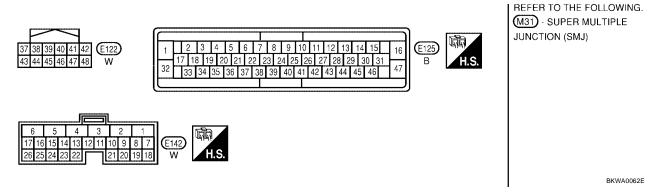






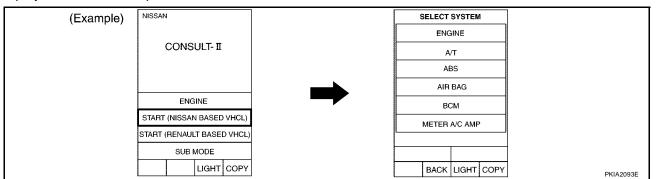
BKWA0147E



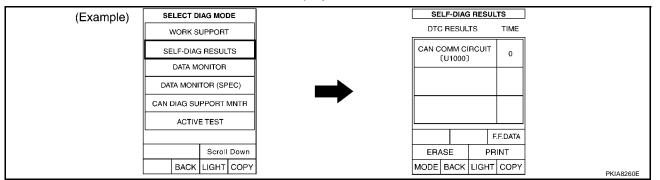


**Work Flow** 

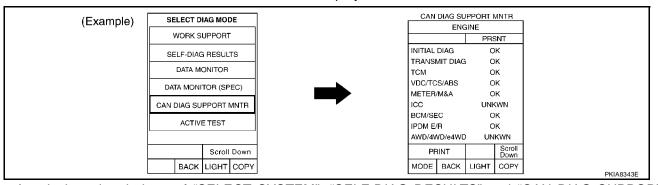
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



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



Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", 3. "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-269, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-269, "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 AV-149, "CAN Communication Line Check".
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to LAN-269, "CHECK SHEET" .

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## **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-269</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-149">AV-149</a>, "CAN Communication Line Check".
- 9. According to the check sheet results (example), start inspection. Refer to <a href="LAN-271"><u>LAN-271</a>, "CHECK SHEET RESULTS (EXAMPLE)"</u>.

## **CAN SYSTEM (TYPE 9)**

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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.

				1	CAN DIA		RT MNTR				
SELECT SYST	EM screen	Initial	Transmit			Red METER	eive diagr		AMD/AMD	VDC/TCS	
		diagnosis	diagnosis	ECM	TCM	/M&A	/SEC	control	/e4WD	VDC/TCS /ABS 	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	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	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_		UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	-	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_
			h copy of T SYSTEM	М			Attach cop				
			CAN DIA	Attı displa NG SUPPC	ach copy o ay control PRT MONI	unit	k sheet				

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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	
ALL MODE AWD/4WD	ABS	IPDM E/R	
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 AUTO DRIVE POS. CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of	
ALL MODE AWD/4WD	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

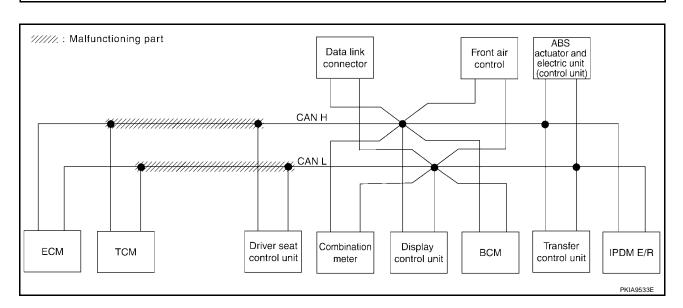
#### NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" 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-286</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

					CAN DIA	G SUPPO	RT MNTR							
SELECT SYST	FM screen	Initial	Transmit		Receive diagnosis									
OLLLOT GTOT	LIVI SCICCII	diagnosis		ECM	тсм	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UN <b>K</b> ₩N	_	UNK WN			
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	=	_	UNK WN	_	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	n <b>νκ</b> ⁄ων	UNKWN	UNKWN	_	_	-	_			
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CARC 3	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC 1			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN			
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	_	_	UNKWN	_			
ABS	_	NG	UNKWN	UNK WN	_	_	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_			



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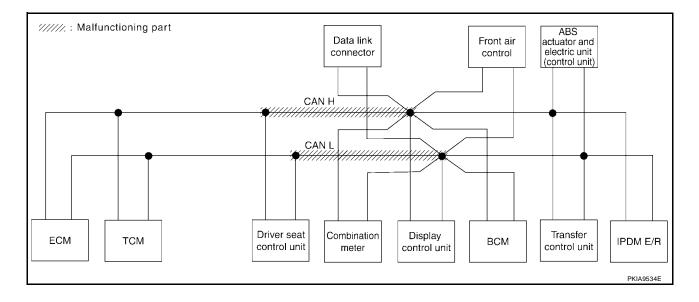
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Case 2
Check harness between driver seat control unit and data link connector. Refer to <u>LAN-287</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

					CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit			Red	eive diagr	nosis			
0222010101	2111 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNIKWN	UNK WN	_	UNK/WN	_	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	_	_	UNK/WN	-	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	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
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNK WN	-	_	-	_	UNKWN	_
ABS	-	NG	UNKWN	UNK VN	_	_	_	-	_	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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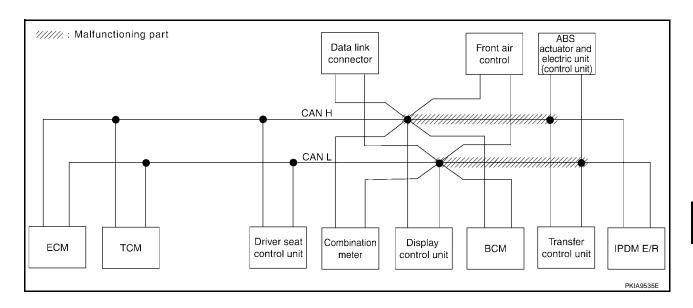
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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-288</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

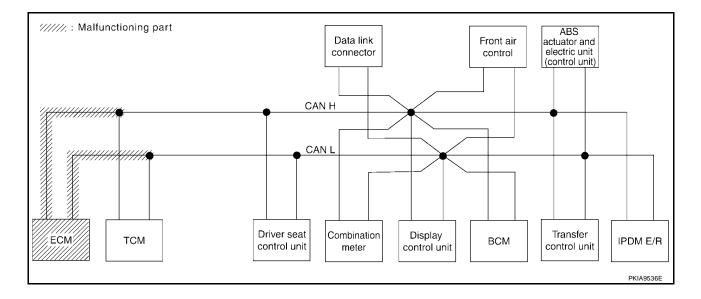
					CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagr	iosis			
022201 0101		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN	_	∩ <b>N</b> MN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UN <b>K</b> ₩N	_	_
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 CAC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	_	UNK WN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK/WN	UNI WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKAN	_	_	_		_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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Case 4
Check ECM circuit. Refer to <u>LAN-289</u>, "ECM Circuit Check" .

					CAN DIA	G SUPPOI	RT MNTR							
SELECT SYST	FM screen	Initial	Transmit		Receive diagnosis									
0222010101		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I			
ENGINE	_	NG	∩ <b>NK</b> WN	_	Π <b>Μ</b> ΜΝ	UNI <b>W</b> WN	UNKWN	_	UN <b>K</b> ₩N	_	UNK WN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	_	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	ı	-	ı	_			
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	UNKWN	_	UNKWN	ı	I	_	_	UNKWN			
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	İ	ı	_	UNKWN	_			
ABS	_	NG	UNKWN	nu <b>k</b> wu	_	_	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_			

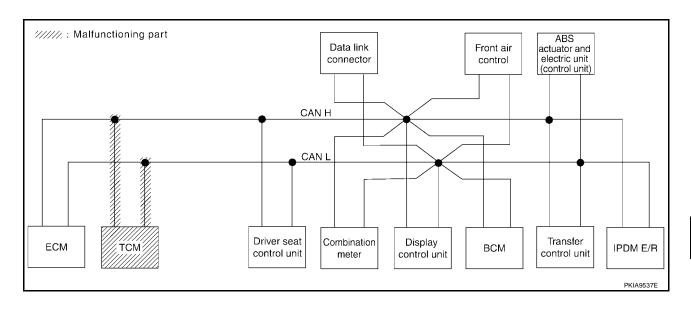


## **CAN SYSTEM (TYPE 9)**

[CAN]

Case 5
Check TCM circuit. Refer to <u>LAN-289</u>, "TCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit		Receive diagnosis								
0222010101	2141 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	_	UNKWN	_	UNKWN		
A/T	_	NG	UNKWN	UNK/WN	_	Π <b>ΝΚ</b> /ΜΝ	_	_	n <b>uk</b> {wu	_	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNI <b>W</b> WN	UNKWN	UNKWN	-	_	-	ı		
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	ı	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNIONN	_	_	_	_	UNKWN	ı		
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	_	_	-		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		



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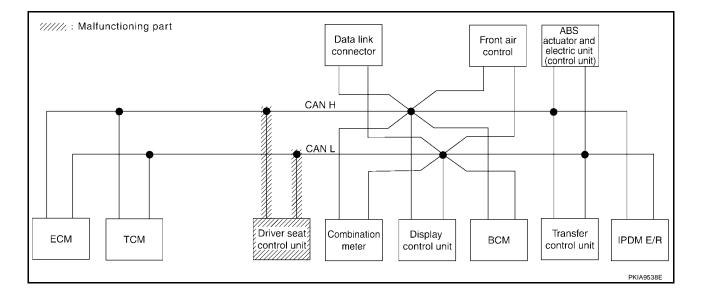
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-290</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

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



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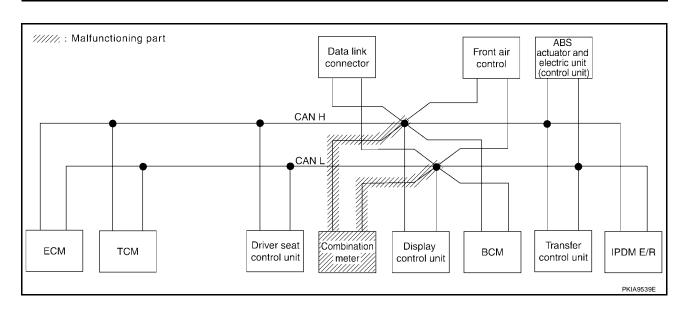
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Case 7
Check combination meter circuit. Refer to <u>LAN-290</u>, "Combination Meter Circuit Check" .

		1			CAN DIAG	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagr	iosis			
02220101011		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	Ω <b>ΝΚ</b> ⁄⁄ΝΝ	UNKWN	_	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	Π <b>ΜΚ</b> ΛΝ	_	_	UNKWN	_	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNI <b>K</b> WN	UNKWN	_	-	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CAC 5	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	-	UNK/WN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	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-291</u>, "<u>Display Control Unit Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagr	nosis			
0222010101	2141 0010011		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	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 CRC 1	CAN CARC 3	_	CAN CAC 5	CANORC 2	CAN CAC 4	_	_	CAN CAC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	_	_	-	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

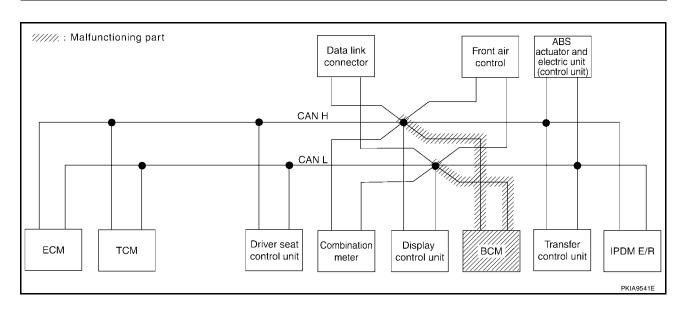
/////.: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Display control unit Driver seat Combination Transfer ECM TCM всм IPDM E/R control unit control unit meter PKIA9540E

## **CAN SYSTEM (TYPE 9)**

[CAN]

Case 9
Check BCM circuit. Refer to <u>LAN-291</u>, "BCM Circuit Check" .

					CAN DIA	G SUPPOI	RT MNTR					
SELECT SYST	FM screen	Initial	Initial Transmit	Receive diagnosis								
0222010101	2111 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK\\	_	UNKWN	1	UNKWN	
A/T	Ī	NG	UNKWN	UNKWN	ı	UNKWN	Ι	-	UNKWN	ı	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNK/WN	-	_	ı	_	
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	_	ı	CAN CIRC 1	
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	ı	-	_	I	UNKWN	
ALL MODE AWD/4WD	ı	NG	UNKWN	UNKWN	UNKWN	_	ı	_	_	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN		_	_	_	_		_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK WN	_	_	_	_	



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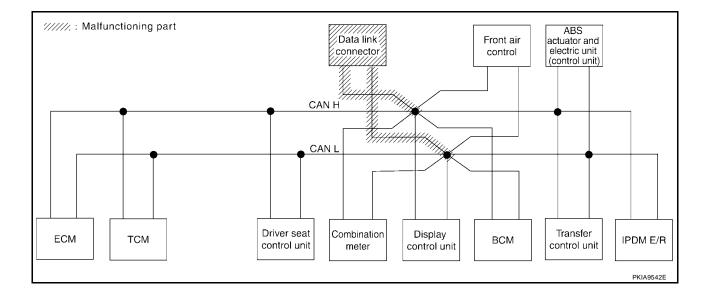
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Case 10
Check data link connector circuit. Refer to LAN-292, "Data Link Connector Circuit Check".

					CAN DIA	G SUPPO	RT MNTR					
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis								
0222010101	LIW 00/00/1	diagnosis			TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	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	İ	_	-	_	
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	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	-	



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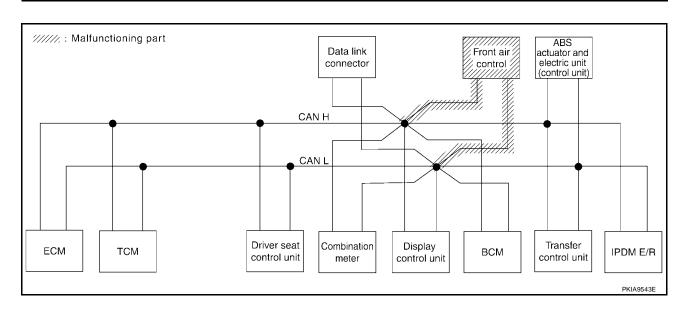
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Case 11
Check front air control circuit. Refer to <u>LAN-292</u>, "Front Air Control Circuit Check".

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis									
022201 0101	2141 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	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 CAC 4	_	_	CAN CIRC		
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_		
ABS	_	NG	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-293</u>, "Transfer Control Unit Circuit Check".

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
0222010101		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNIXWN	_	UNKWN		
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	n <b>nk</b> {\mathbb{\pi}}\n	_	_		
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		
ALL MODE AWD/4WD	_	NG	UNIXWN	UNK WN	UNI <b>W</b> WN	_	_	_	_	UN <b>K</b> ₩N	_		
ABS	_	NG	UNKWN	UNKWN	ı	_	_	_	_	_	_		
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 Display Transfer ECM TCM всм IPDM E/R control unit control unit control unit meter PKIA9544E

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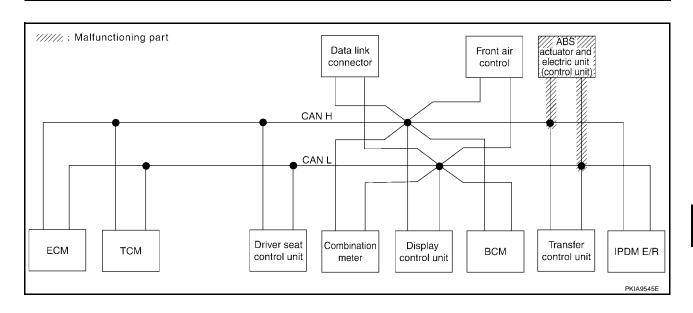
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Case 13

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-293</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	EM screen	Initial	nitial Transmit	Receive diagnosis									
322231 3131	2141 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	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	-	_	ı	ı		
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	_	_	_	ı	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UN <b>W</b> WN	_		
ABS	_	N€	UNK WN	UN <b>K</b>	_	_	_	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		



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Case 14
Check IPDM E/R circuit. Refer to <u>LAN-294</u>, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
0222010101	2141 0010011	diagnosis		1	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	UNKWN	_	υ <b>κ</b> ₩ν	
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	_	_	CANORC	
ВСМ	No indication	NG	UNKWN	UNKWN		UNKWN	-	_	_	_	UNK WN	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	
ABS	_	NG	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 Display Transfer ECM TCM всм IPDM E/R control unit control unit control unit meter PKIA9546E

## **CAN SYSTEM (TYPE 9)**

[CAN]

Case 15

Check CAN communication circuit. Refer to LAN-294, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit		Receive diagnosis								
SEEEOT STOT		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	∩ <b>N</b> MN	_	UNK WN	UN <b>W</b> WN	UNKWN	_	UNKWN		Π <b>ΝΚ</b> (ΜΝ		
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	UNK WN	-	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-	_		
Display control unit	_	CAN COMM	CANORC 1	CAN CARC 3	_	CAN CARC 5	CAN CAC 2	CAN CAC 4	_	-	CAN CARC 7		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	ı	UNKWN		
ALL MODE AWD/4WD	_	NG	UN <b>K</b> /VN	UNK/WN	UN <b>K</b> ₩N	-	_	_	_	UNK WN	_		
ABS	_	NE	UNKVN	UNK VN	-	_	_	_	_	-	-		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		

Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-295}}$ , "IPDM E/R Ignition Relay  $\underline{\text{Circuit Check}}$ ".

					CAN DIA	G SUPPO	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
022201 0101	LIVI GOTOGIT	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UN <b>K</b> WN	UNKWN	UNKWN	_	UNKWN		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		
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNK WN	_		
ABS	_	NG	UNKWN	UNKWN	_	_	_	=	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		

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#### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-295</u>, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPOI	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
0222010101	2111 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	_	UNKWN		
A/T	_	NG	UNKWN	UNK WN	_	Π <b>Μ</b> ΜΝ	_	_	n <b>nk</b> {wν	_	_		
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		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_		
ABS	_	NG	UNKWN	UNK WN	_	_	_	_	_	-	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		

### Circuit Check Between TCM and Driver Seat 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

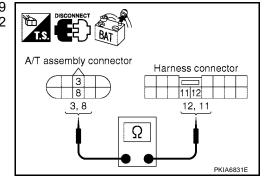
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

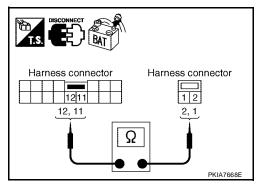
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

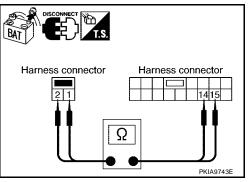
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-267, "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.
- 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

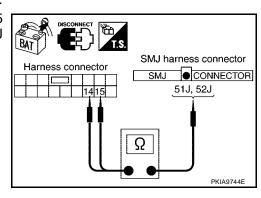
- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : Continuity should exist. 14 (R) - 52J (R) : Continuity should exist.

## OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

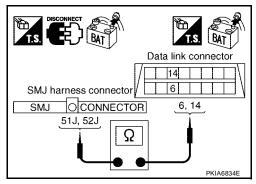
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-267, "Work Flow"</u>.

NG >> Repair harness.



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

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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 M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

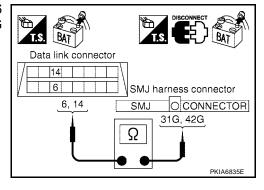
## 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

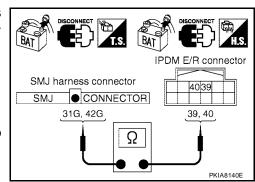
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-267</u>, "Work Flow".

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

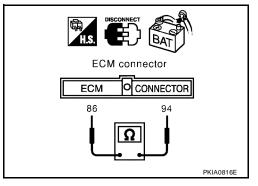
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: 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.
- 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 (W) and 8 (R).

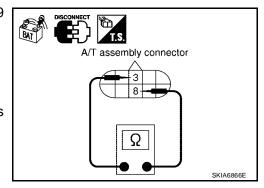
: Approx. 54 -  $66\Omega$ 

#### OK or NG

NG

OK >> Replace A/T assembly.

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



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

## 1. CHECK CONNECTOR

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- 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.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (W) and 19 (R).

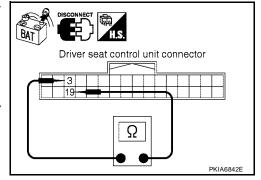
: Approx. 54 - 66 $\Omega$ 

#### 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

- 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 (W) and 12 (R).

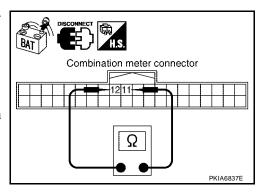
11 (W) - 12 (R)

: 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.
- Disconnect the negative battery terminal. 2.
- 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

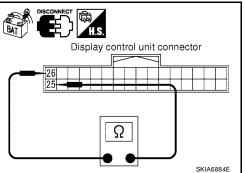
- Disconnect display control unit connector. 1.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (W) and 26 (R).

: 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

- 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

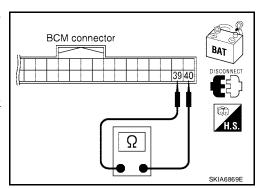
- Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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

CHECK CONNECTOR

- 1. 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

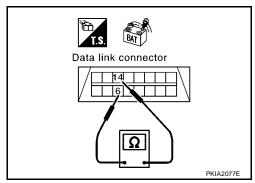
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Approx. 54 - 
$$66\Omega$$

### OK or NG

OK >> Diagnose again. Refer to <u>LAN-267</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

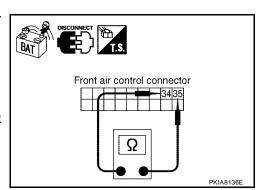
- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (W) and 35 (R).

**34 (W) - 35 (R)** : 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.
- 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 (W) and 2 (R).

: Approx. 54 - 66 $\Omega$ 

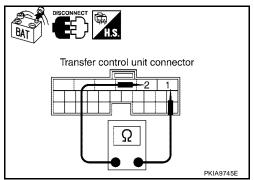
## OK or NG

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**

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

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

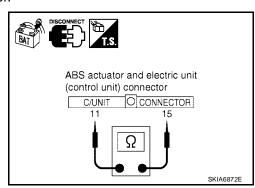
: Approx. 54 - 66 $\Omega$ 

### 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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**LAN-293** Revision: January 2005 2004 Titan

UKS001HA

## **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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

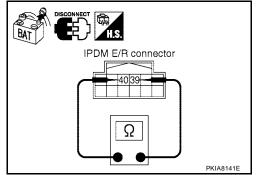
### OK or NG

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
- 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

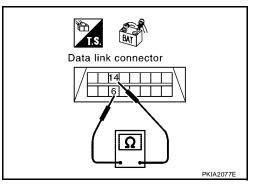
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

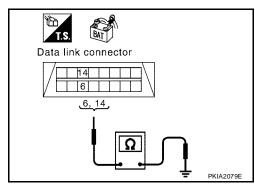
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-295, "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

ECM and IPDM E/R

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## **CAN SYSTEM (TYPE 10)**

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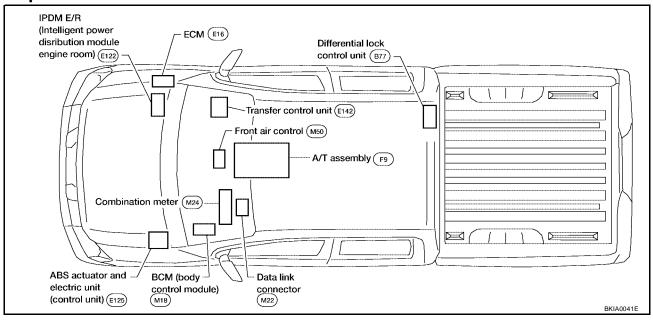
## **System Description**

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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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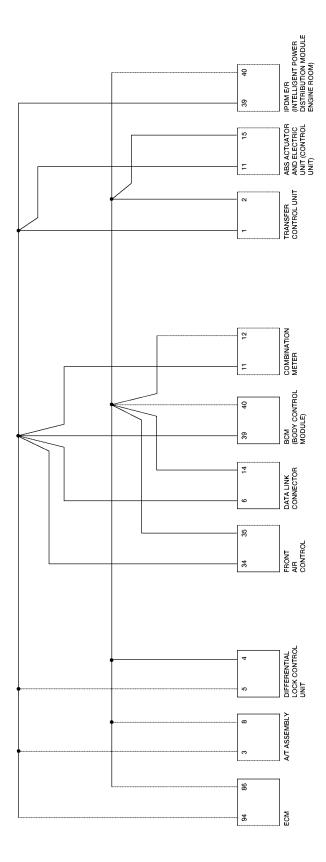
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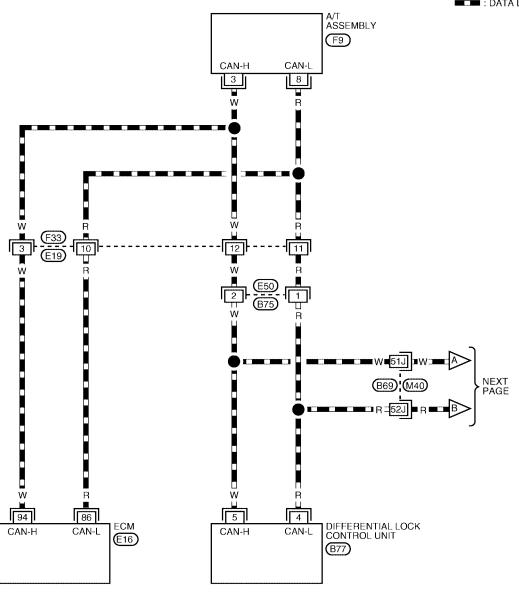
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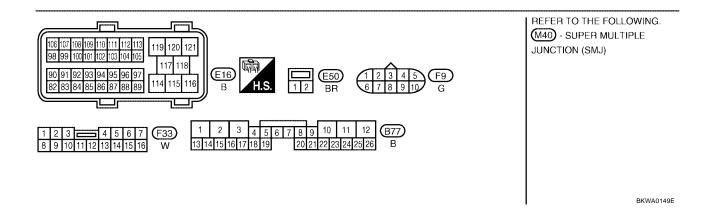
Wiring Diagram - CAN -

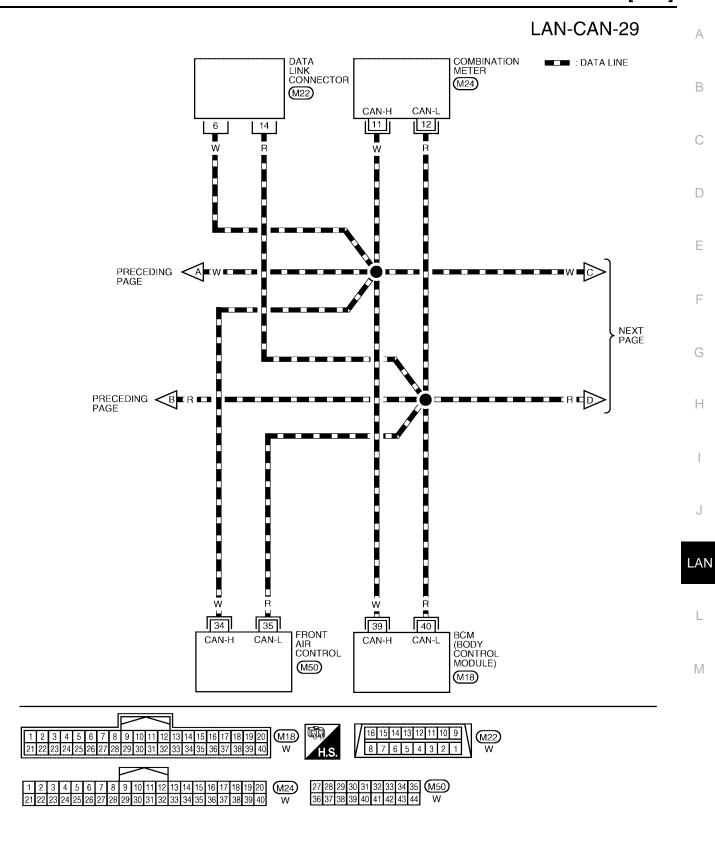
IKC004HH

## LAN-CAN-28

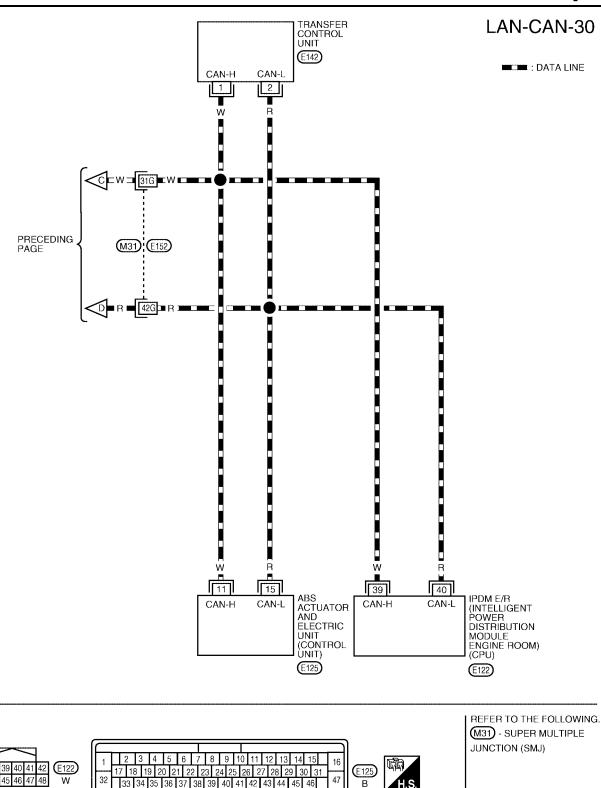
: DATA LINE

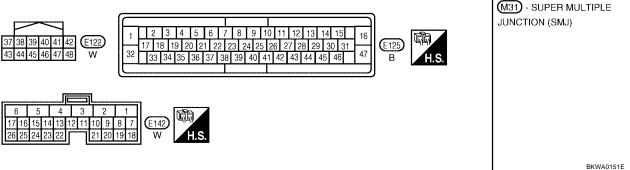






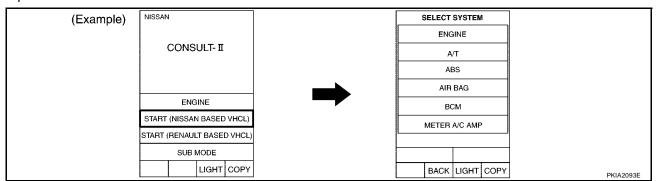
BKWA0150E



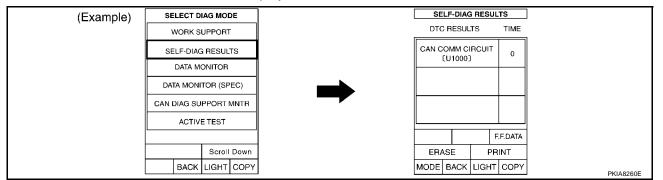


Work Flow

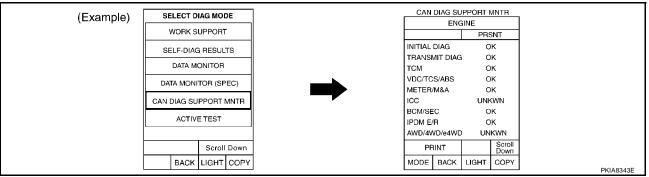
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "BCM", "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", "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-302, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-302</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-304</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)"

Revision: January 2005 LAN-301 2004 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.

	!	-	1			CAN DIA	G SUPPOR				
SELECT SYSTI	EM screen	Initial	Transmit	<u> </u>		<del></del>		diagnosis			<del></del>
		diagnosis		ECM	ТСМ	DIFF LOCK	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	
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	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

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	
ALL MODE AWD/4WD	ABS	IPDM E/R	
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	DIFF LOCK	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	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

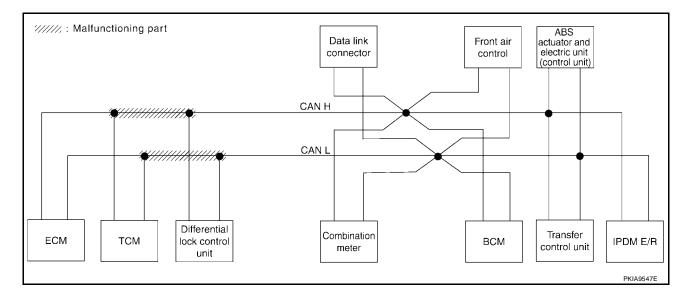
### NOTE:

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

### Case 1

Check harness between TCM and differential lock control unit. Refer to <u>LAN-317</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN DIA	G SUPPOR				
SELECT SYST	EM screen	Initial	Transmit					diagnosis			
		diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNK WN	UNKWN	Π <b>ΝΚ</b> ΜΝ	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNK/WN	_	∩ <b>NK</b> WN	UNIWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	_	_	_	-	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNK <b>W</b> N	_	_	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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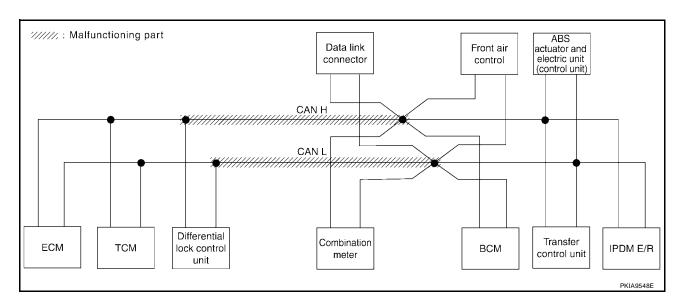
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Case 2

Check harness between differential lock control unit and data link connector. Refer to <u>LAN-318</u>, "Circuit Check <u>Between Differential Lock Control Unit and Data Link Connector"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit					diagnosis			
		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	UN <b>K</b> ₩N	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UN <b>K</b> ₩N	_	UNKWN	UNIONN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	NNR WN	UNK WN	_
всм	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UN <b>K</b> ₩N	UNK WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	_	_	_

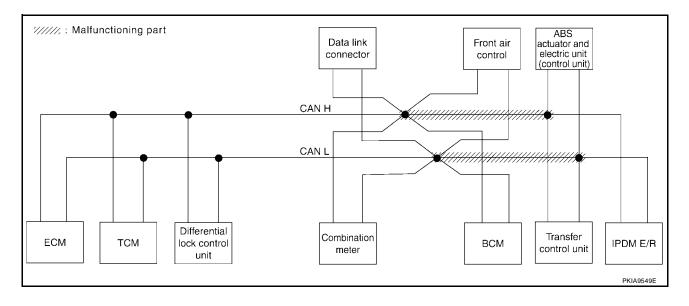


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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-319</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
3222313131		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	∩ <b>νΚ</b> ⁄γν	∩ <b>NK</b> WN	UNK WN
A/T	-	NG	UNKWN	UNKWN	_		UNKWN	_	Π <b>ИΚ</b> ⁄ΜИ	UNIMN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNAWN	UNK WN	_
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK/WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UN <b>K</b> WN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_		_	UNKWN	_	_	_



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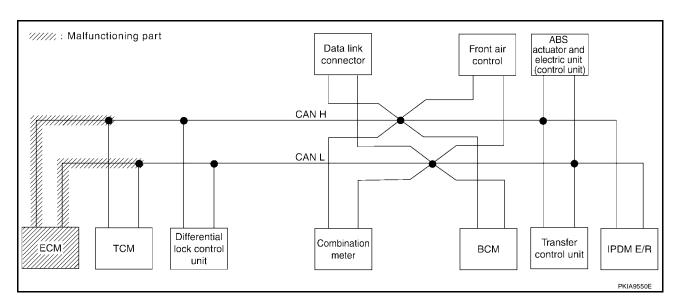
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Case 4
Check ECM circuit. Refer to LAN-320, "ECM Circuit Check".

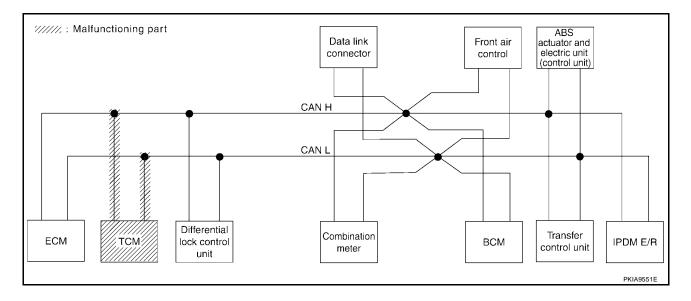
						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
OLLLO1 OTOT	LIVI SOLCOIT	diagnosis	diagnosis	ECM	TCM	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UN <b>K</b> WN	_	∩ <b>ИК</b> МИ	_	Π <b>ΝΚ</b> ΑΝ	UNK WN	UN <b>K</b> ₩N	UNK WN	UNKWN
A/T	_	NG	UNKWN	<b>UNKWN</b>	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNK\WN	_	_	_	_	UNKWN	UNKWN	_
BCM	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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Case 5
Check TCM circuit. Refer to <u>LAN-320, "TCM Circuit Check"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	1	NG	UNKWN	_	UNK WN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	=	UNK WN	_	UN <b>K</b> ₩N	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/VN	UNKWN	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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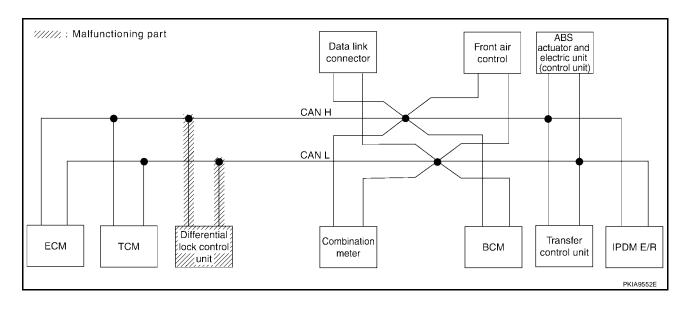
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Case 6

Check differential lock control unit circuit. Refer to LAN-321, "Differential Lock Control Unit Circuit Check".

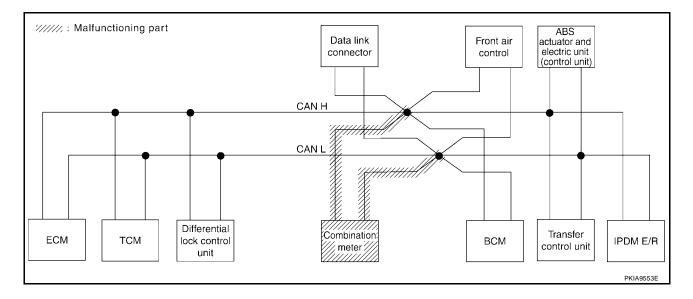
						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
OLLLOT GTOT	LIVI SOLCCIT	diagnosis	diagnosis	ECM	TCM	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNK WN	UNK/WN	_	_	_	_	UNKWN	UNK VN	_
всм	No indication	NG	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 7
Check combination meter circuit. Refer to <u>LAN-321</u>, "Combination Meter Circuit Check".

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit					diagnosis			
3222313131	ZIVI GOLGGII	diagnosis	diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	_	UNKWN	1	Π <b>ΜΚ</b> ΜΝ	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	-	∩ <b>NR</b> WN	_	UNKWN	UNKWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	_	-	_	_	UNKWN	UNKWN	-
всм	No indication	NG	UNKWN	UNKWN	_	_	UNK/WN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	ı	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_

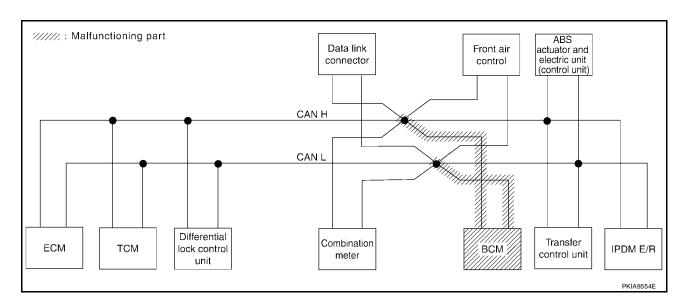


## **CAN SYSTEM (TYPE 10)**

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Case 8
Check BCM circuit. Refer to <u>LAN-322</u>, "BCM Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM scroon	Initial	Transmit				Receive	diagnosis			
OLLLOT GTOT	LIVI SOLCCII	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	UNK WN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
BCM	No indication	NG	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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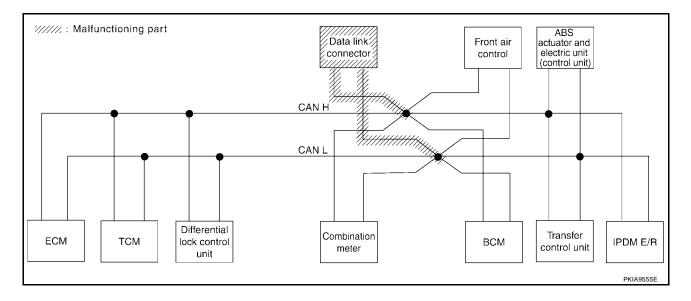
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Case 9
Check data link connector circuit. Refer to LAN-322, "Data Link Connector Circuit Check".

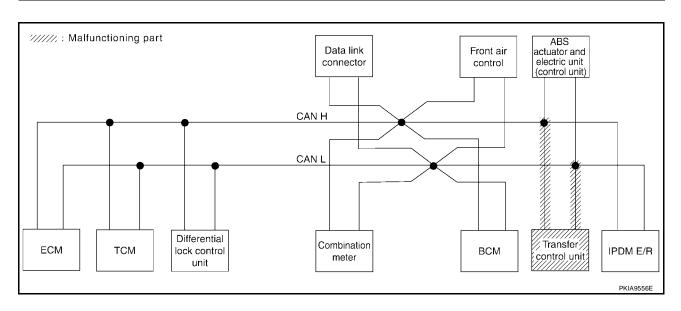
						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit					diagnosis			
3222313131	ZIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	_	UNKWN	1	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	_	-	_	_	UNKWN	UNKWN	-
всм	No indication	NG	UNKWN	UNKWN	_	ı	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN		_	_	_	UNKWN	_
ABS	ı	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



Case 10

Check transfer control unit circuit. Refer to LAN-323, "Transfer Control Unit Circuit Check" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											
		Initial diagnosis	Transmit diagnosis	Receive 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	∩ <b>NK</b> WN	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UN <b>K</b> ₩N	UNKWN	-		
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKAN	UNKWN	-		
BCM	No indication	NG	UNKWN	UNKWN	_	_	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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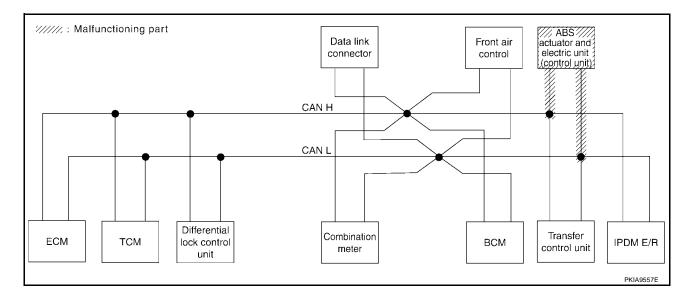
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Case 11

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-323</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM screen		Initial	Transmit	Receive 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	UNK WN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_	
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNK VN	_	
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNK WN	_	
ABS	_	N	UNKWN	UNK WN	UNK WN	UN <b>K</b> WN	_	_	UNKWN	_	_	
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	



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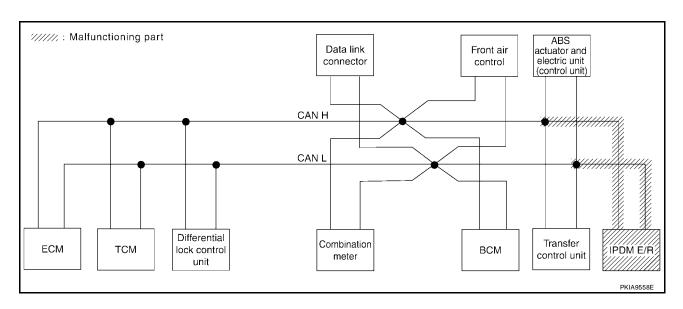
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Case 12
Check IPDM E/R circuit. Refer to LAN-324, "IPDM E/R Circuit Check" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR										
		Initial diagnosis	Transmit diagnosis	Receive diagnosis								
				ECM	TCM	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK WN	
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_	
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_	
BCM	No indication	NG	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 13

Check CAN communication circuit. Refer to LAN-324, "CAN Communication Circuit Check" .

		CAN DIAG SUPPORT MNTR											
SELECT SYSTEM screen		Initial	Transmit diagnosis	Receive diagnosis									
		diagnosis		ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	-	NG	UNKWN	_	Π <b>ИΚ</b> {ΜΝ	_	UNK WN	UNKWN	Π <b>ΜΑ</b> ΜΝ	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNK WN	_	_	UNK/WN	_	UNKWN	UNI			
DIFF LOCK	_	NG	Π <b>ИΚ</b> ΜИ	UNK/WN	_	_	_	_	UNK\WN	UNK/WN	_		
всм	No indication	NG	UNKWN	UNKWN	-	-	UNKWN	_	_	_	UNKWN		
ALL MODE AWD/4WD	-	NG	UNK WN	UNKWN	UNK/WN	-	_	_	-	UNKWN	_		
ABS	-	NE	UN <b>A</b> WN	UN <b>W</b> NN	UNKVN	UNKWN	_	_	UN <b>∳</b> WN	_	-		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_		

### Case 14

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-325, "IPDM E/R Ignition Relay Circuit Check" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											
		Initial diagnosis	Transmit diagnosis	Receive diagnosis									
				ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UN <b>K</b> ₩N	_	UNKWN	UNKWN	UNKWN	UNKVN	UNKWN		
A/T	-	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_		
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNK VN	_		
всм	No indication	NG	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	_	_	_		

### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-325, "IPDM E/R Ignition Relay Circuit Check".

SELECT SYSTEM screen			CAN DIAG SUPPORT MNTR										
		Initial diagnosis	Transmit	Receive diagnosis									
			1	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	UN <b>K</b> ₩N	_	_	UNK WN	_	Π <b>ИΚ</b> (ΜИ	UNKWN	_		
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_		
всм	No indication	NG	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

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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

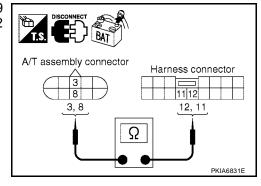
8 (R) - 11 (R)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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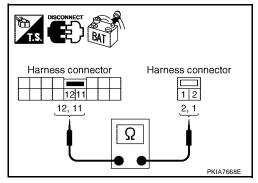
# 3. CHECK HARNESS FOR OPEN CIRCUIT

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

12 (W) - 2 (W) 11 (R) - 1 (R) : Continuity should exist.: Continuity should exist.

### OK or NG

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



## 4. CHECK HARNESS FOR OPEN CIRCUIT

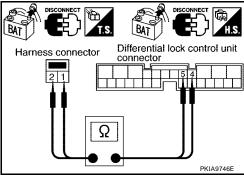
- 1. Disconnect differential lock control unit connector.
- Check continuity between harness connector B75 terminals 2 (W), 1 (R) and differential lock control unit harness connector B77 terminals 5 (W), 4 (R).

2 (W) - 5 (W) 1 (R) - 4 (R) : Continuity should exist. : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-301, "Work Flow".

NG >> Repair harness.



## Circuit Check Between Differential Lock 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 differential lock control unit connector and harness connector B69.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (W), 4 (R) and harness connector B69 terminals 51J (W), 52J (R).

5 (W) - 51J (W)

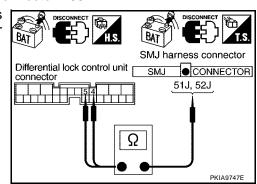
: Continuity should exist.

4 (R) - 52J (R) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

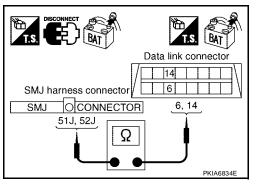
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-301</u>, "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

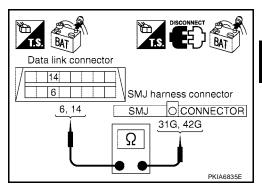
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (W), 14 (R) and harness connector M31 terminals 31G (W), 42G (R).

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

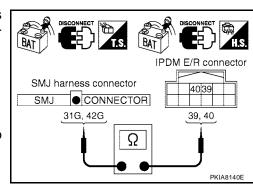
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

## OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-301, "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

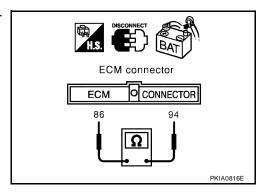
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: 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.
- 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

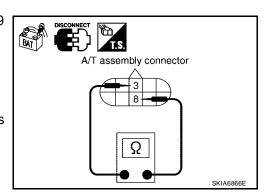
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

: 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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## **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.
- Check resistance between differential lock control unit harness connector B77 terminals 5 (W) and 4 (R).

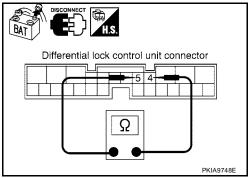
: Approx. 54 - 66 $\Omega$ 

## OK or NG

NG

OK

- >> Replace differential lock control unit.
- >> Repair harness between differential lock control unit and harness connector B75.



## **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- 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

- Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (W) and 12 (R).

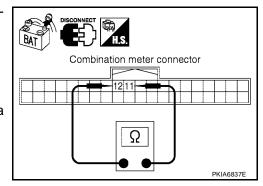
: Approx. 54 - 66 $\Omega$ 

### 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

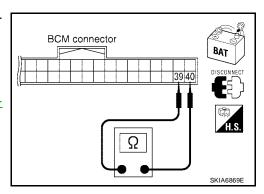
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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.
- 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

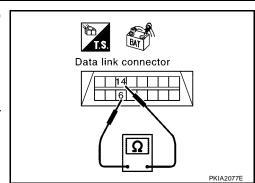
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. **54 - 66**
$$\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to <u>LAN-301</u>, "Work Flow".

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



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## **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

- 1. Disconnect transfer control unit connector.
- 2. Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

: Approx. 54 - 66 $\Omega$ 

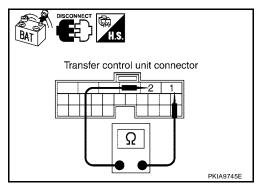
## OK or NG

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

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 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 (W) and 15 (R).

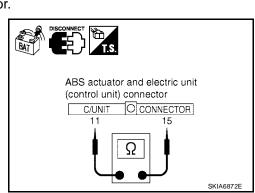
: Approx. 54 - 66 $\Omega$ 

### 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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

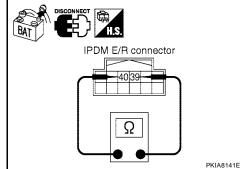
### OK or NG

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
- 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.

[CAN]

# 2. CHECK HARNESS FOR SHORT CIRCUIT

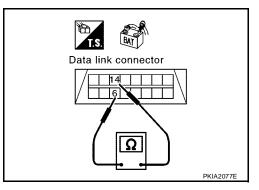
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



### 3. CHECK HARNESS FOR SHORT CIRCUIT

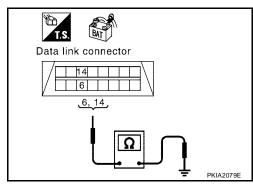
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-325, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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### IPDM E/R Ignition Relay Circuit Check

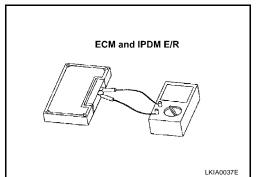
Check the following. If no malfunction is found, replace the IPDM E/R.

- 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 11)**

PFP:23710

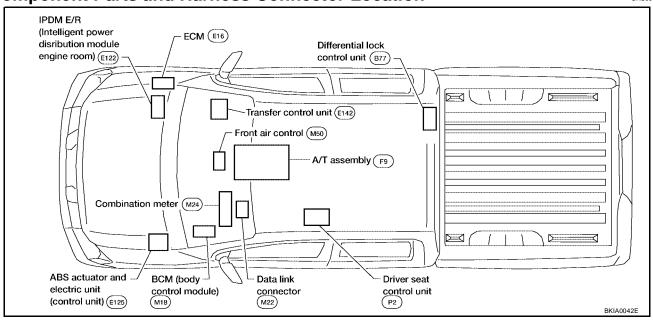
### **System Description**

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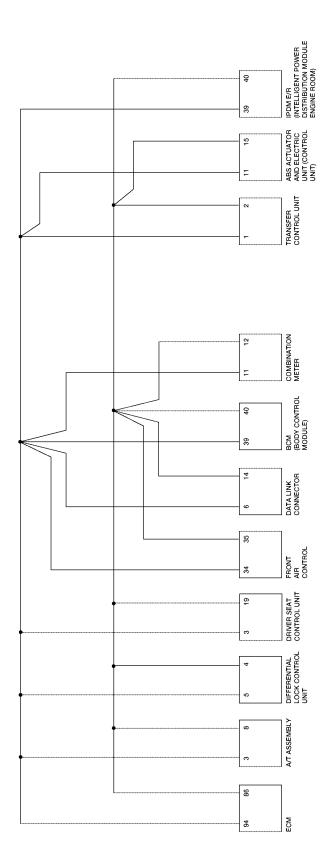
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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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Schematic UKS001HZ



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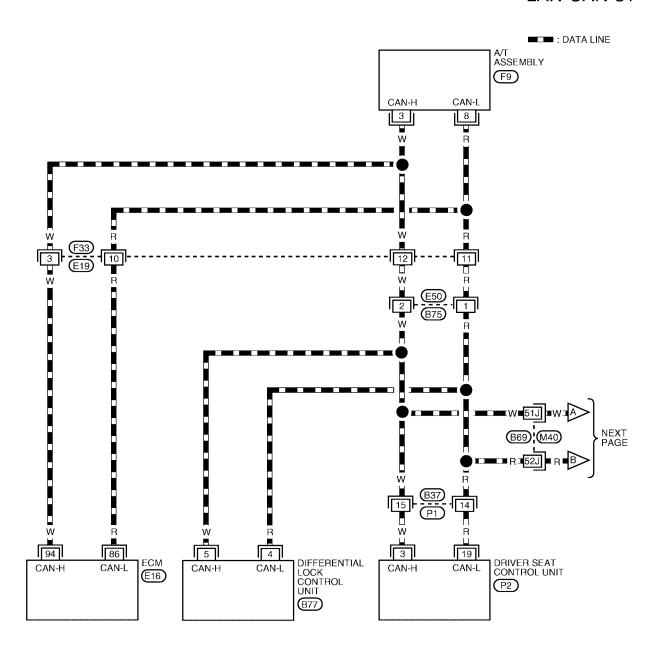
M

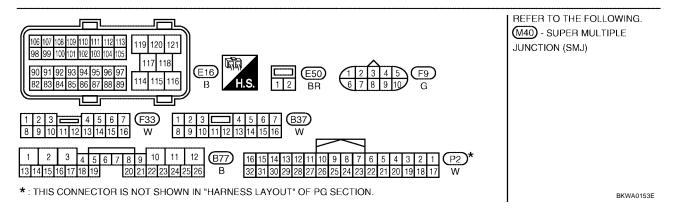
BKWA0152E

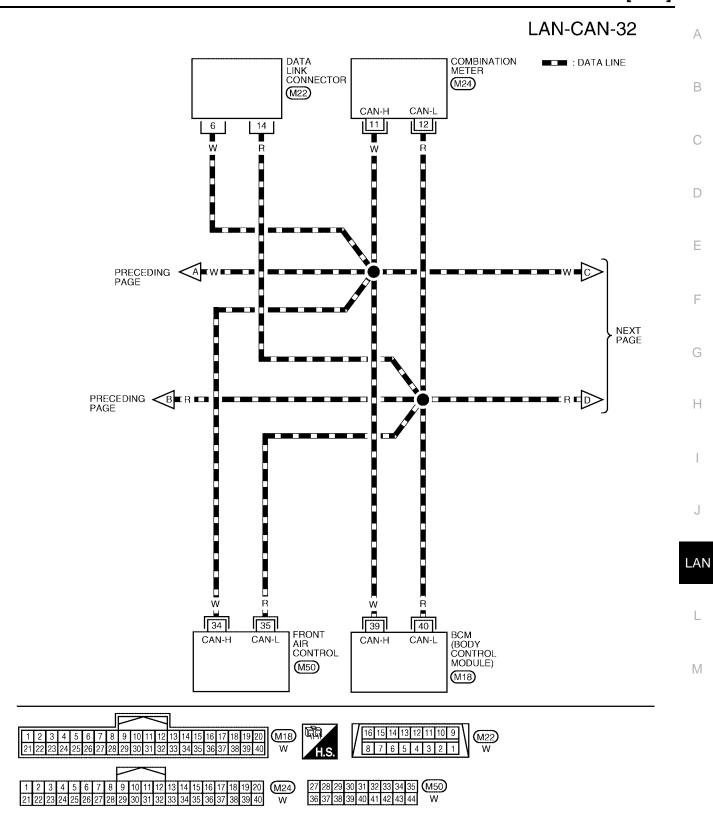
Wiring Diagram - CAN -

I IKSOO1 IO

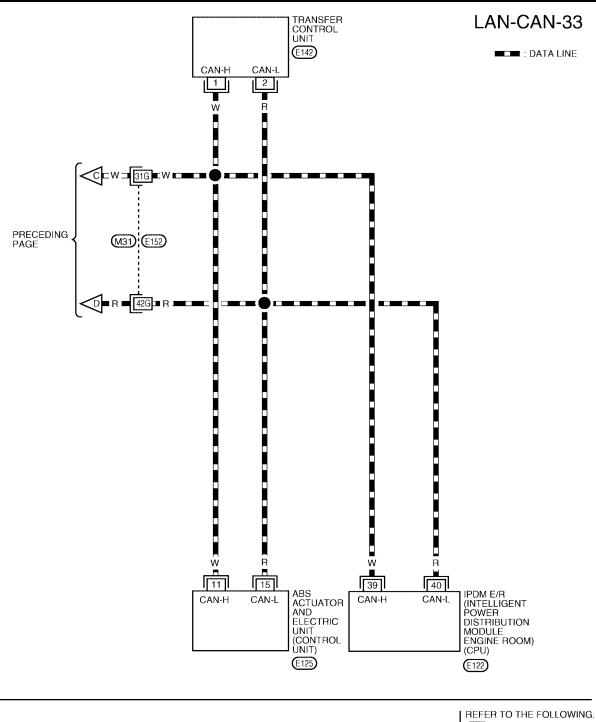
#### LAN-CAN-31

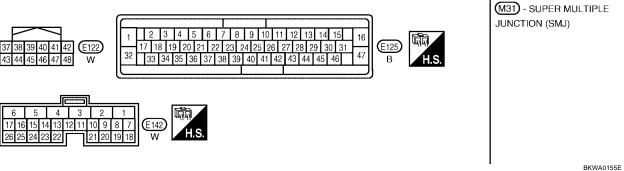






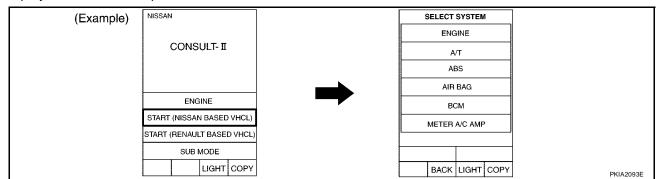
BKWA0154E



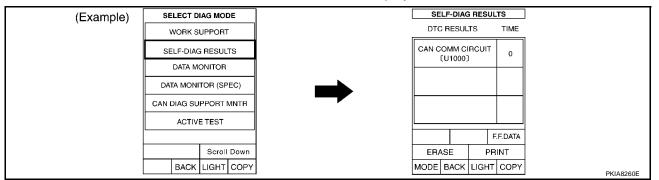


Work Flow

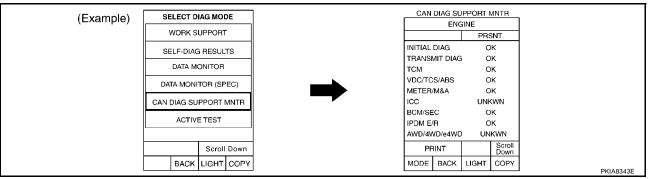
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "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", "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-332, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-332</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-334</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.

		I				CAN DIA	G SUPPO	AT_MNTR_			
SELECT SYSTE	EM screen	Initial	Transmit					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	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKW
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	1	Ī –	_		UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	
IPDM E/R	No indication	_	UNKWN	UNKWN		_ <sup>1</sup>	_	UNKWN		_ '	_

Symptoms :			

Attach copy of SELECT SYSTEM

Attach copy of SELECT SYSTEM

Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	DIFF LOCK	AUTO DRIVE POS.
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of BCM 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
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of	Attach copy of	Attach copy of
	A/T	DIFF LOCK	AUTO DRIVE POS.
	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
BCM	ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR

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

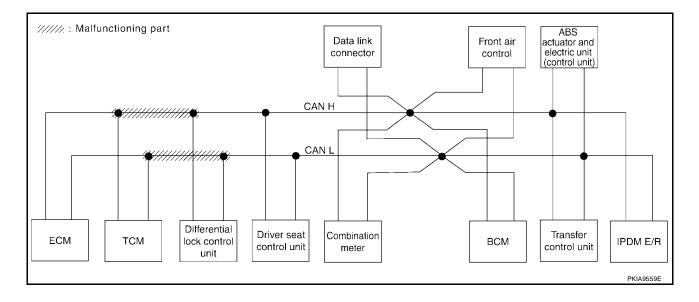
#### NOTE:

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 differential lock control unit. Refer to <u>LAN-349</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Tronomit					diagnosis			
SELECT STOT	LIVI SCIECTI	diagnosis	Transmit diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN		UNI <b>W</b> WN	UNKWN	UNKWN	UNKWN	Π <b>Μ</b> Μν
A/T	_	NG	UNKWN	UNKWN	_	_	UNK WN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNK WN	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNNWN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UN <b>K</b> ∕WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	-	_	UNKWN	_	_	_



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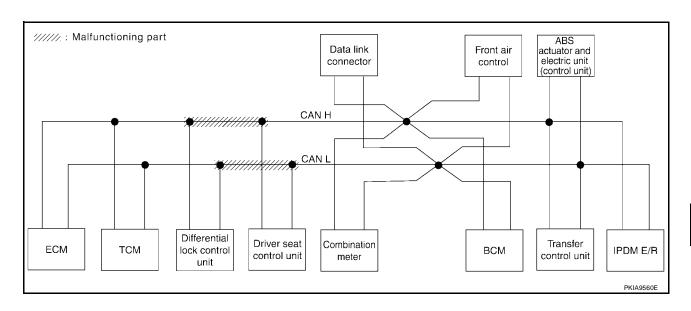
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Case 2

Check harness between differential lock control unit and driver seat control unit. Refer to <u>LAN-350</u>, "Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit".

						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	2111 301 331		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNIXWN	UN <b>K</b> WN	UNKWN	UNKWN	∩ <b>M</b> MN
A/T	_	NG	UNKWN	UNKWN	_	_	∩ <b>NR</b> WN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	-	_	UNK WN	UNK <b>∕</b> WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNIONN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	<b>UNK</b> WN	_	_	UNKWN	_	-	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNK WN	_	_	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-351</u>, "Circuit Check

Between Driver Seat Control Unit and Data Link Connector".

						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
OLLEGI GIGI	LIVI SOLCOIT		diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNION	UN <b>K</b> WN	UNIKWN	UNKWN	<b>NNK</b> WN
A/T	_	NG	UNKWN	UNKWN	_	_	∩ <b>иК</b> ⁄МИ	_	UNIKWN	UNIVWN	_
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	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNK WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_

/////: Malfunctioning part ABS actuator and Data link Front air electric unit connector control (control unit) CAN H CAN L Differential Driver seat Combination Transfer ECM TCM lock control BCM IPDM E/R control unit meter control unit unit PKIA9561E

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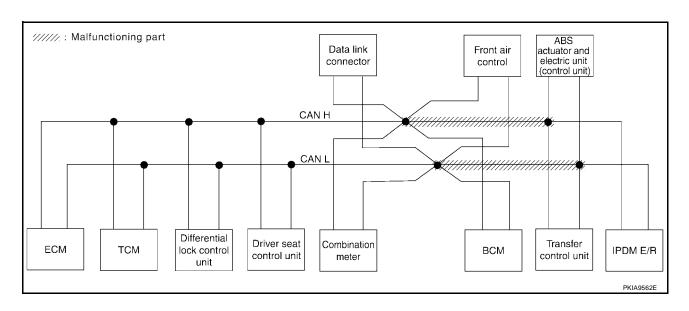
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Case 4

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-351</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

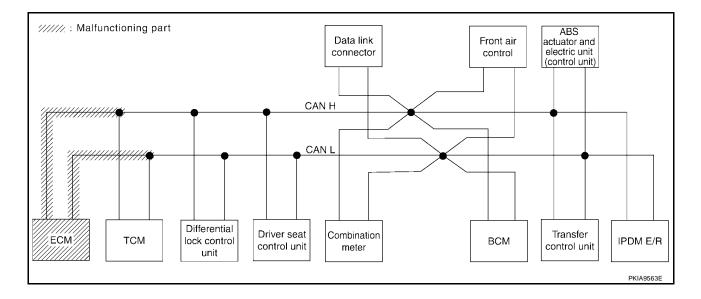
						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	2111 301 331		diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	<b>NMANN</b>	UNIVWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	1	_	-	_	UNK WN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UN <b>K</b> ₩N
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	NNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	_	-	_



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Case 5 Check ECM circuit. Refer to <u>LAN-352</u>, "ECM Circuit Check" .

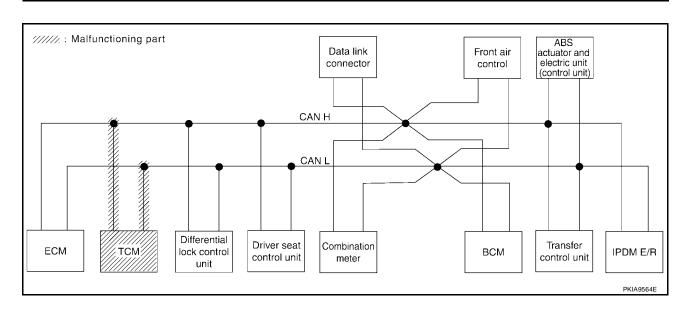
						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
OLLLOT GTOT	LIVI SOLCOIT			ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNK WN	_	∩ <b>NR</b> WN	_	UNIXWN	UN <b>K</b> WN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UN <b>K</b> WN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNK WN	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	Π <b>ИΚ</b> /WИ	_	_	UNKWN	_	_	-	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_



Case 6

Check TCM circuit. Refer to LAN-353, "TCM Circuit Check" .

İ						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
02220101011	2141 301 301		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNK WN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	_	UN <b>K</b> ₩N	_	UN <b>K</b> ₩N	UNKWN	_
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	_	-	_	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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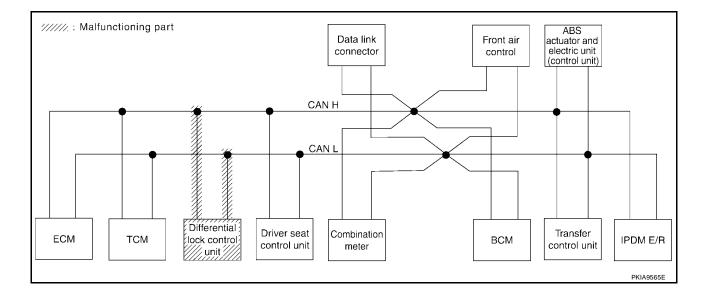
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Case 7
Check differential lock control unit circuit. Refer to <u>LAN-353</u>, "<u>Differential Lock Control Unit Circuit Check"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
0222010101		diagnosis	diagnosis	ECM	тсм	DIFF LOCK	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	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	-	UNKWN	UNK/WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	-
всм	No indication	NG	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	_	_	_



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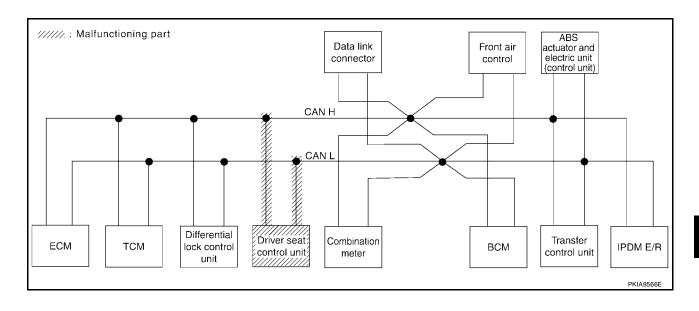
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Case 8
Check driver seat control unit circuit. Refer to <u>LAN-354, "Driver Seat Control Unit Circuit Check"</u>.

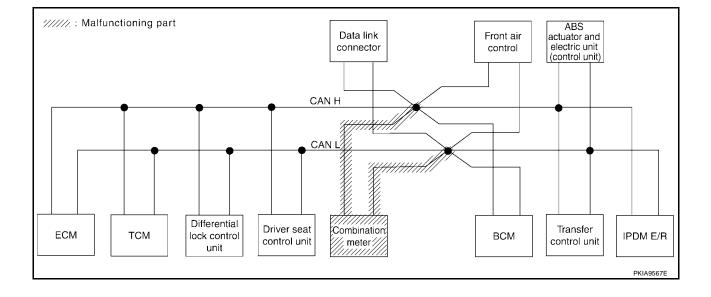
						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit					diagnosis			
0222010101	LIW SOFGER		diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	1	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	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 9
Check combination meter circuit. Refer to <u>LAN-354</u>, "Combination Meter Circuit Check".

	l	1				CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis							
02220.0.0			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	_		UN <b>K</b> ₩N	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	- 1	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN		UNKWN	_	UN <b>K</b> ∕WN	UNKWN	_		_
всм	No indication	NG	UNKWN	UNKWN	_		UNKANN	_	_		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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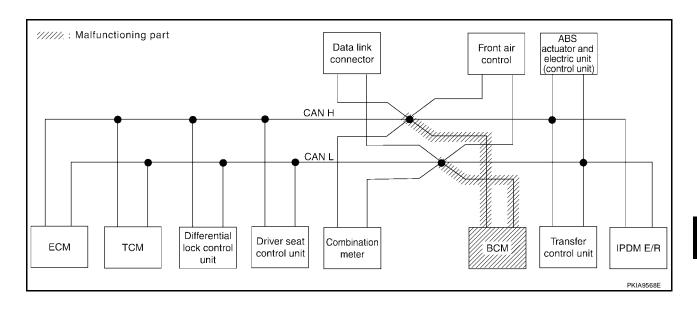
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Case 10

Check BCM circuit. Refer to LAN-355, "BCM Circuit Check".

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
0222010101	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	UNK WN	UNKWN	UNKWN	UNKWN
A/T	1	NG	UNKWN	UNKWN			UNKWN	_	UNKWN	UNKWN	ı
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	l	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UN <b>K</b> ₩N	_	_	_
BCM	No indication	NG	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 11
Check data link connector circuit. Refer to <u>LAN-355</u>, "<u>Data Link Connector Circuit Check"</u>.

						CAN DIA	G SUPPOI	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/
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	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	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 Differential Driver seat Combination Transfer ECM TCM всм IPDM E/R lock control control unit control unit meter PKIA9569E

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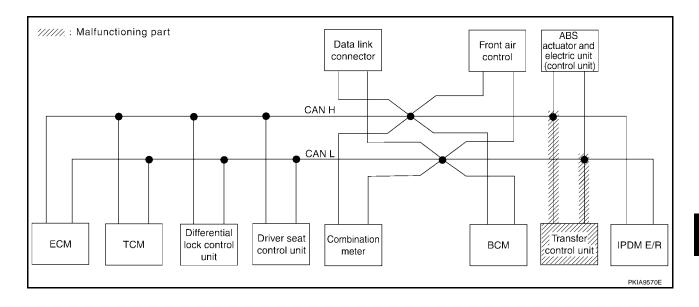
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Case 12
Check transfer control unit circuit. Refer to <u>LAN-356</u>, "Transfer Control Unit Circuit Check".

İ						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
02220101011			diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNK <b>A</b> NN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UN <b>K</b> ₩N	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	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNK WN	UNKWN	UNKWN	_	_	_	_	UNK WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_

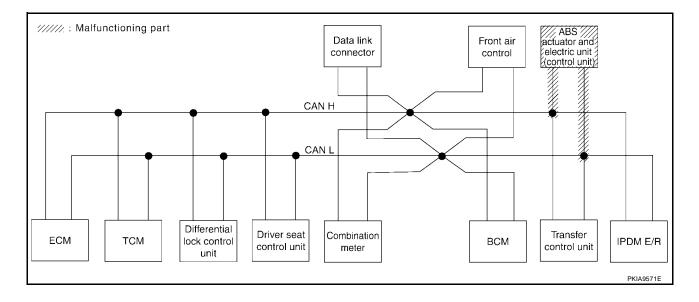


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Case 13

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-356</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

		1				CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
022201 0101	LIVI SCIECTI		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	UNK <b>W</b> N	UNKWN
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	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	-	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNK WN	_
ABS	_	<b>V</b> €	UNKWN	UNKWN	UNK WN	UNK\WN	_	_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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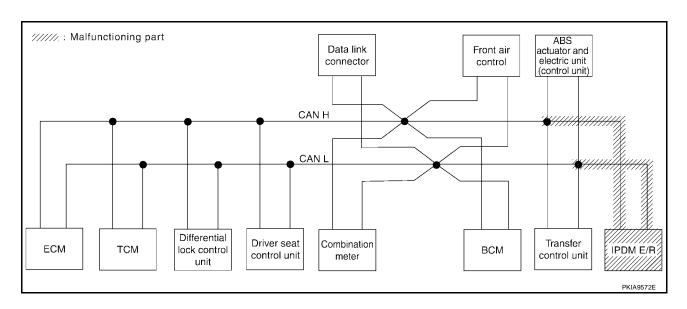
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Case 14
Check IPDM E/R circuit. Refer to LAN-357, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis							
022201 0101	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	Ī	ĺ	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	-	_	-	UN <b>k</b> ₩I
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 15

Check CAN communication circuit. Refer to <a href="LAN-358">LAN-358</a>, "CAN Communication Circuit Check" .

						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit		Receive diagnosis							
0222010101	00.00	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	-	∩ <b>NR</b> WN	-	UNKWN	UN <b>K</b> WN	UNKWN	UNKWN	Π <b>ΜΑ</b> ΜΝ	
A/T	_	NG	UNKWN	UNI WN	_	-	Π <b>ИΚ</b> ΜИ	_	UNKWN	UNKWN	_	
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	Π <b>ΛΚ</b> /ΜИ	UNK WN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_		_	
всм	No indication	NG	UNKWN	UNKWN	_	-	UNKWN	_	_	_	UNKWN	
ALL MODE AWD/4WD	_	NG	UNK WN	UNK WN	UNK/WN	_	_	_	_	UNK/WN	_	
ABS	_	<b>V</b> €	UNKWN	UNK WN	UNK WN	UNKWN	_	_	UNK WN	_	-	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	

#### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-358, "IPDM E/R Ignition Relay Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
0222010101		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	UNK <b>W</b> N	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	Π <b>ΜΚ</b> ΜΝ	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	∩ <b>иК</b> {\mathbb{\pi}}\n	_
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 LAN-358, "IPDM E/R Ignition Relay Circuit Check".

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
0222010101		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	_	_	UN <b>K</b> ₩N	_	<b>NMA</b> MN	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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	Π <b>ΝΚ</b> (ΜΝ	_	_
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.
- 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

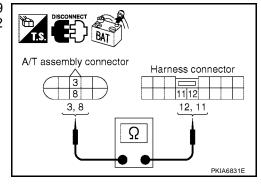
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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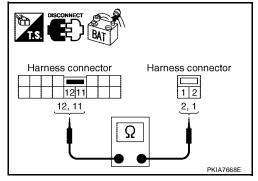
LAN

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

12 (W) - 2 (W) : Continuity should exist. 11 (R) - 1 (R) : Continuity should exist.

#### OK or NG

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



### 4. CHECK HARNESS FOR OPEN CIRCUIT

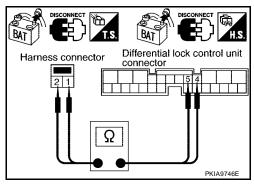
- 1. Disconnect differential lock control unit connector.
- Check continuity between harness connector B75 terminals 2 (W), 1 (R) and differential lock control unit harness connector B77 terminals 5 (W), 4 (R).

2 (W) - 5 (W) : Continuity should exist. 1 (R) - 4 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-331, "Work Flow"</u>.

NG >> Repair harness.



# Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit

## 1. CHECK HARNESS FOR OPEN CIRCUIT

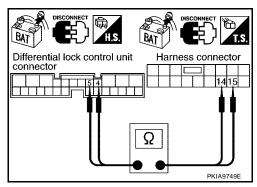
- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Disconnect differential lock control unit connector and harness connector B37.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (W), 4 (R) and harness connector B37 terminals 15 (W), 14 (R).

5 (W) - 15 (W) : Continuity should exist. 4 (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-331, "Work Flow"</u>.

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

15 (W) - 51J (W)

: Continuity should exist.

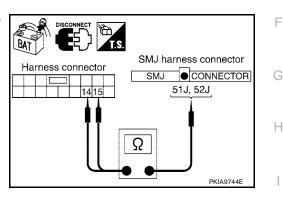
14 (R) - 52J (R)

: 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 (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W)

: Continuity should exist.

52J (R) - 14 (R)

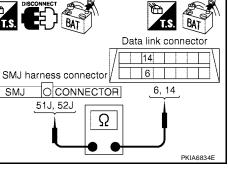
: Continuity should exist.

#### OK or NG

OK

>> Connect all the connectors and diagnose again. Refer to LAN-331. "Work Flow".

NG >> Repair harness.



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

UKS00114

### 1. CHECK CONNECTOR

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

>> Repair terminal or connector. NG

**LAN-351** Revision: January 2005 2004 Titan

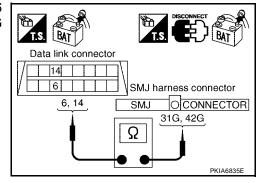
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- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (W), 14 (R) and harness connector M31 terminals 31G (W), 42G (R).

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



### 3. CHECK HARNESS FOR OPEN CIRCUIT

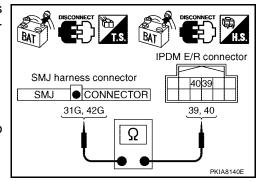
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK  $\rightarrow$  Connect all the connectors and diagnose again. Refer to <u>LAN-331</u>, "Work Flow".

NG >> Repair harness.



UKS00115

### **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 (W) and 86 (R).

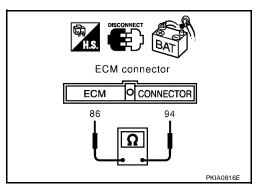
94 (W) - 86 (R)

: 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.

- 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 (W) and 8 (R).

: Approx. 54 - 66 $\Omega$ 

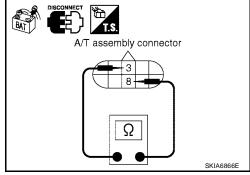
#### OK or NG

OK

>> Replace A/T assembly.

NG

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



UKS0020L

#### **Differential Lock Control Unit Circuit Check**

### 1. CHECK CONNECTOR

- 1. 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.

- 1. Disconnect differential lock control unit connector.
- Check resistance between differential lock control unit harness connector B77 terminals 5 (W) and 4 (R).

5 (W) - 4 (R)

: Approx. 54 - 66 $\Omega$ 

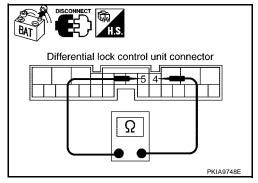
#### OK or NG

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 (W) and 19 (R).

: Approx. 54 - 66 $\Omega$ 

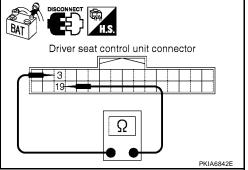
#### OK or NG

OK

>> Replace driver seat control unit.

NG

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



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

### 1. CHECK CONNECTOR

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.

# $\overline{2}$ . Check harness for open circuit

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

: Approx. 54 -  $66\Omega$ 

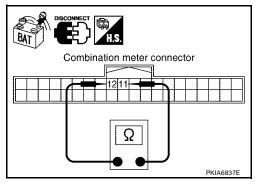
#### OK or NG

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 (W) and 40 (R).

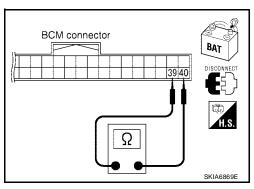
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK :

>> Replace BCM. Refer to <u>BCS-25</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

- 1. 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.

Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. **54 - 66**
$$\Omega$$

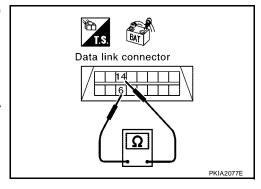
#### OK or NG

OK >:

>> Diagnose again. Refer to LAN-331, "Work Flow".

NG

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



#### UKS001IC

#### **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

- 1. Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

**1 (W) - 2 (R)** : Approx. 
$$54 - 66\Omega$$

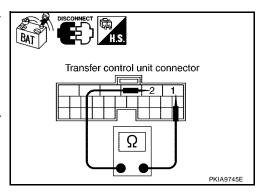
#### OK or NG

OK >> I

>> 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

- Turn ignition switch OFF.
- 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.

# $\overline{2}$ . 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 (W) and 15 (R).

: 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.

ABS actuator and electric unit (control unit) connector

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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 (W) and 40 (R).

: Approx. 108 - 132 $\Omega$ 

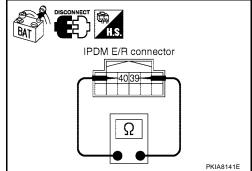
#### OK or NG

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.
- 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
- 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

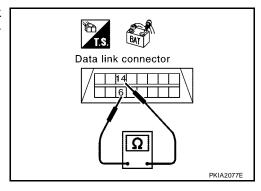
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Continuity should not exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



### 3. CHECK HARNESS FOR SHORT CIRCUIT

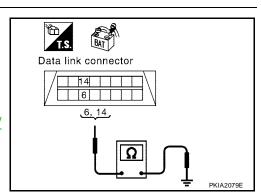
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-359</u>, "ECM/ <u>IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



### IPDM E/R Ignition Relay Circuit Check

UKS001IG

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>.

### **CAN SYSTEM (TYPE 11)**

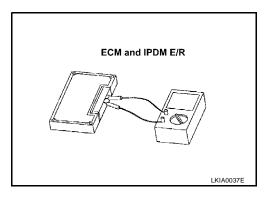
[CAN]

UKS001IH

# 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 12)**

PFP:23710

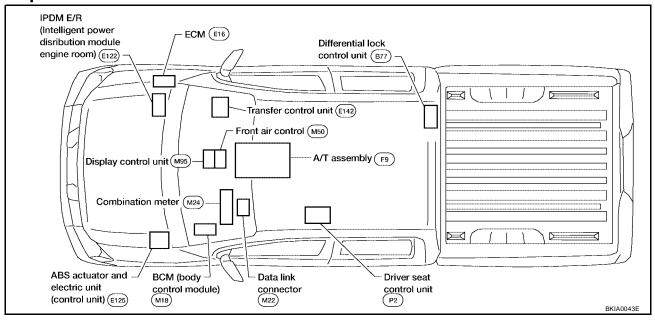
### **System Description**

UKS001II

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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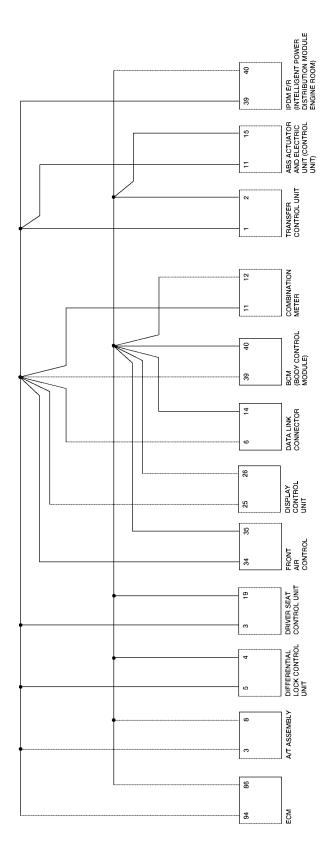
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Schematic UKS001/K



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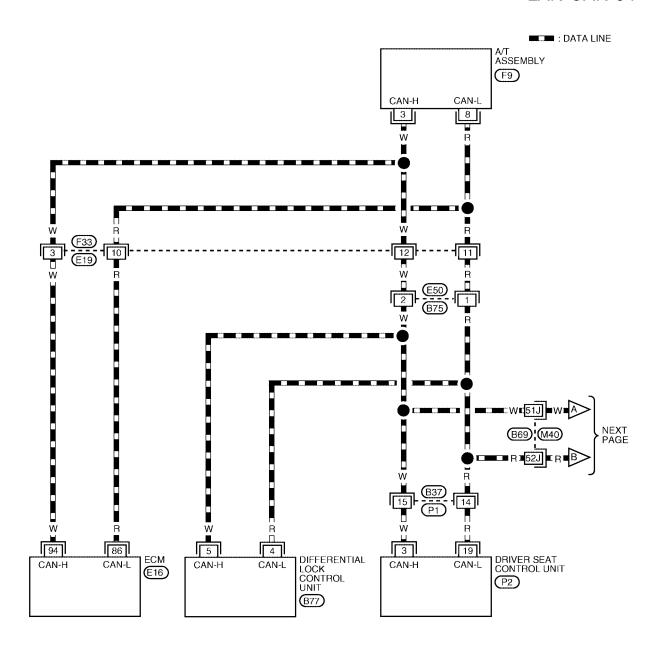
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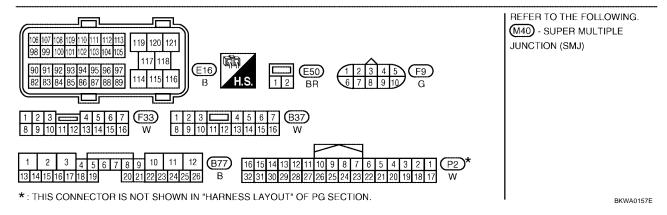
BKWA0156E

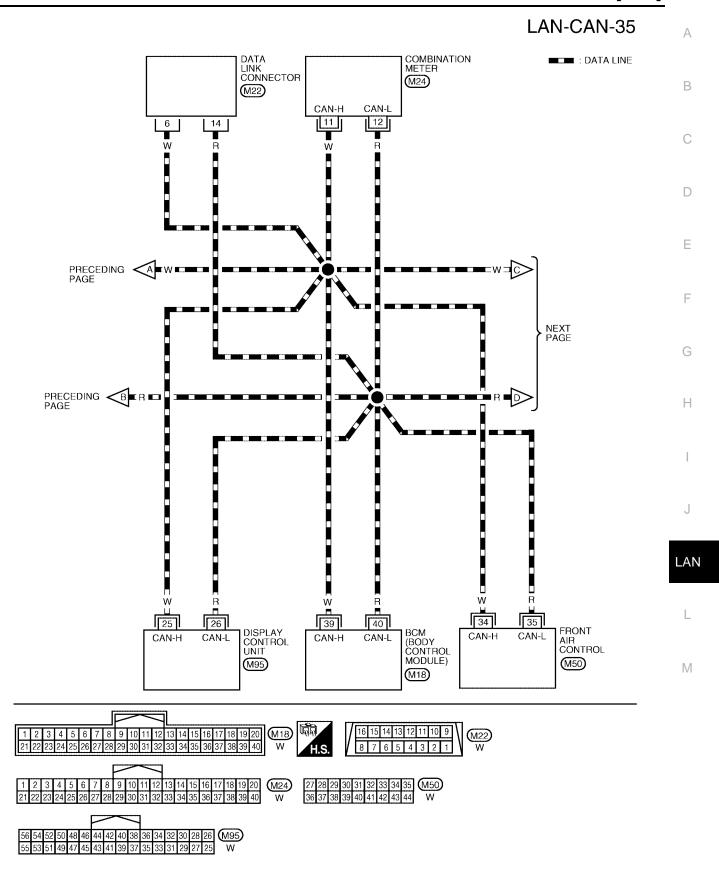
Wiring Diagram - CAN -

KS001IL

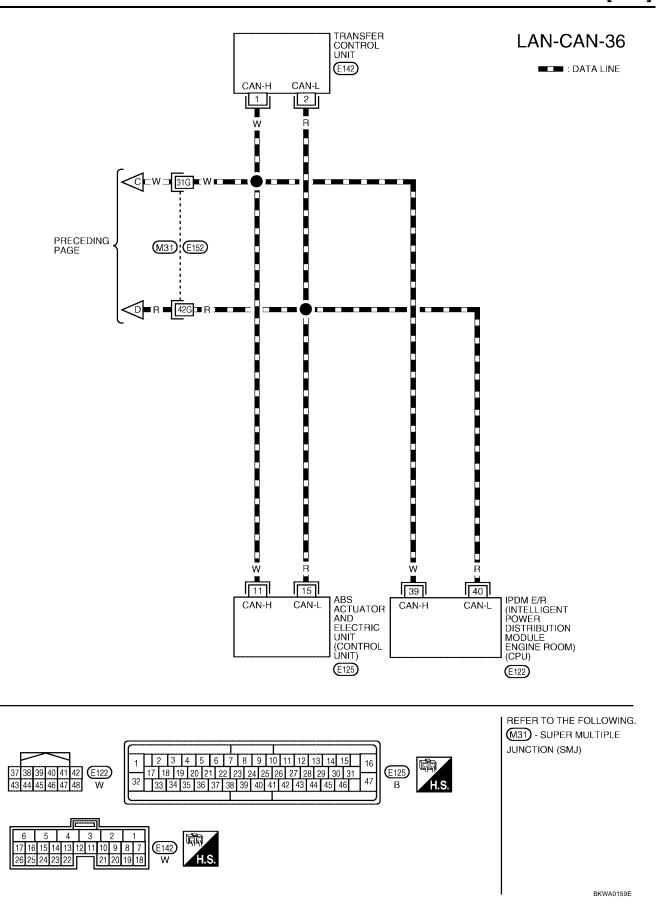
#### LAN-CAN-34







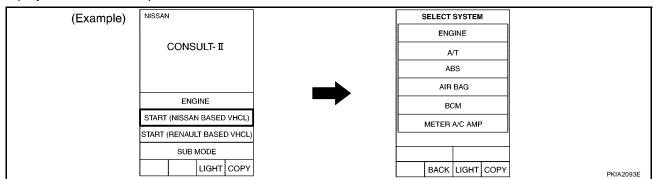
BKWA0158E



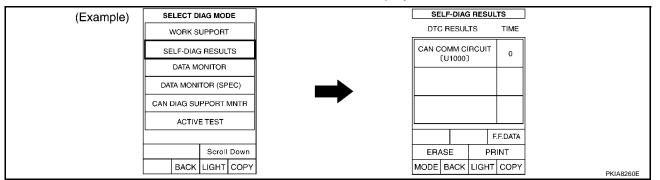
[CAN]

Work Flow

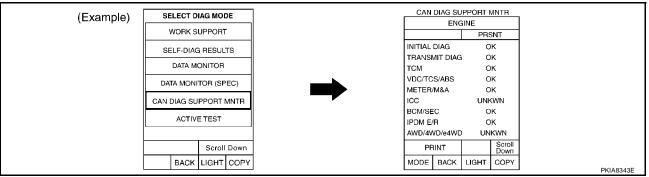
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "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", "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-367, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-367</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-149</u>, "CAN Communication Line <u>Check"</u>.
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-367</u>, <u>"CHECK SHEET"</u>.

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# **CAN SYSTEM (TYPE 12)**

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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-367</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-149">AV-149</a>, "CAN Communication Line Check".
- 9. According to the check sheet results (example), start inspection. Refer to <a href="LAN-369">LAN-369</a>, "CHECK SHEET RESULTS (EXAMPLE)".

# **CAN SYSTEM (TYPE 12)**

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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 DIA	3 SUPPOI	RT MNTR				
SELECT SYST	EM coroon	la itia l	T			OAN DIA		eive diagn	osis			
SELECT STST	Eivi screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKW
<b>V</b> T	_	NG	UNKWN	UNKWN	Ī	_	UNKWN	_	_	UNKWN	UNKWN	_
DIFF LOCK	_	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 CIR
ВСМ	No indication	NG	UNKWN	UNKWN	1	-	UNKWN	-	_	_	-	UNKW
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	-	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_
		Attach copy of SELECT SYSTEM						copy of SYSTEM				
			CAN	c I DIAG SU	Attach co display cor PPORT M	trol unit	check shee	et				

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Attach copy of	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of	Attach copy of
ENGINE		DIFF LOCK	AUTO DRIVE POS.
SELF-DIAG RESULTS		SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of
BCM	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 AUTO DRIVE POS. CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
BCM	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)**

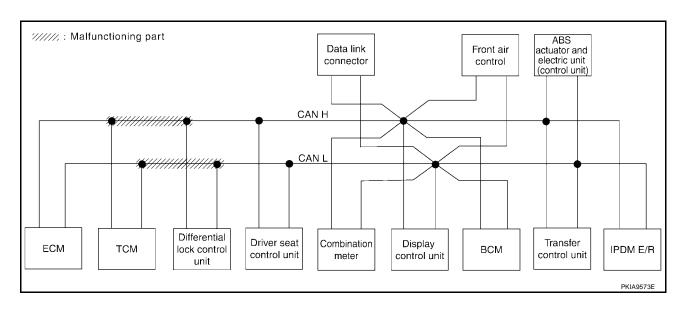
#### NOTE:

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 differential lock control unit. Refer to <u>LAN-386</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI SOFCCIT	diagnosis		ECM	тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	∩ <b>M</b> MN	UNI <b>S</b> WN	_	∩ <b>M</b> MN	UNIXWN	n <b>M</b> γγν
A/T	_	NG	UNKWN	UNKWN	_	_	UNK WN		-	UNI WN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNIX WN	_	_	_	1	-	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	Ω <b>ΝΚ</b> ₩Ν	_	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN O'RC 3	_	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNK WN	-	_	UNKWN	ı	ı	_	-	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UM <b>W</b> WN	_	_	ı	ı	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	∩ <b>иК</b> \\	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_	_



Revision: January 2005 LAN-369 2004 Titan

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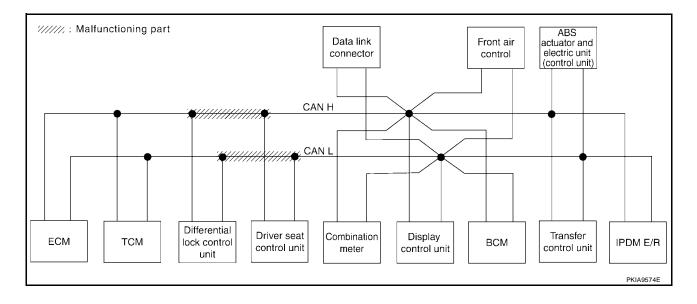
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Case 2
Check harness between differential lock control unit and driver seat control unit. Refer to <u>LAN-387</u>, "Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit".

						CAN DIAG	3 SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI SOFCCIT	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	η <b>νκ</b> ⁄νν	UNION	_	UNI WN	UN <b>K</b> WN	UN <b>A</b> WN
A/T	_	NG	UNKWN	UNKWN	_	_	n <b>uk</b> wu	-	_	UNI WN	UM <b>W</b> N	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	_	UN <b>K</b> ₩N	UN <b>K</b> ₩N	_
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
BCM	No indication	NG	UNKWN	Π <b>ИΝ</b> ΜΝ	_	_	UNKWN	-	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	∩ <b>NK</b> WN	UN <b>∳</b> WN	_	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	Π <b>ΝΚ</b> /ΜИ	Π <b>ИΚ</b> {ΜΝ	UN <b>K</b> ∕WN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UN <b>K</b> ₩N	_	_	_	UNKWN	_	_	_	_



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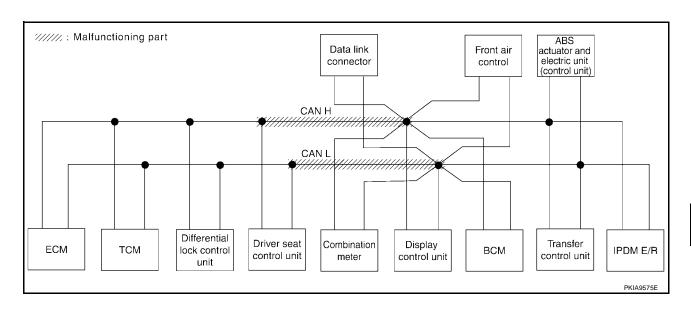
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Case 3

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-388</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

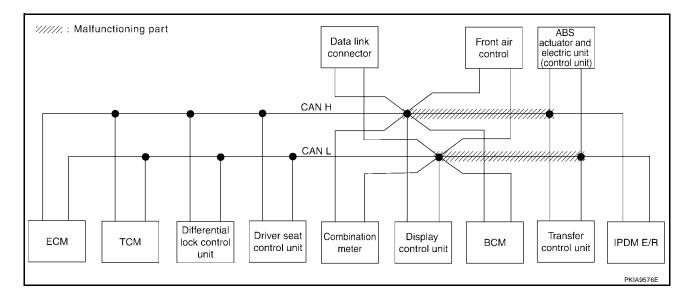
						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
GEEEGT GTGT	LIVI SOFCCIT	diagnosis		ECM	тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	∩ <b>N</b> MN	UNI <b>W</b> WN	_	UN WN	UNK WN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	_	∩ <b>N</b> MN	_	-	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	-	∩ <b>M</b> MN	UNK WN	_
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
BCM	No indication	NG	UNKWN	UNIXWN	_	_	UNKWN	-	-	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	-	_	_	UNKWN	_
ABS	_	NG	UNKWN	∩ <b>M</b> WN	Π <b>ИΚ</b> ⁄ΜИ	UNK WN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_	_



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Case 4
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-388, "Circuit Check Between Data Link Connector and IPDM E/R"</u>.

						CAN DIA	3 SUPPOR	RT MNTR				
SELECT SYST	EM scroon	Initial	Transmit				Rec	eive diagr	osis			
SELECT STST	LIVI SCIECTI	diagnosis	Transmit diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	UNI WN	UNIXWN	UNI WN
A/T	_	NG	UNKWN	UNKWN	-	_	UNKWN	_	-	UNK/WN	UNK/WN	-
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	-	-	UNK <b>W</b> N	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 I
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	-	_	_	UNI
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	_	_	_	-	-	UNKWN	-
ABS	-	NG	UNKWN	UNK WN	UNK WN	UN <b>K</b> ∕WN	_	-	-	UNKWN	-	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



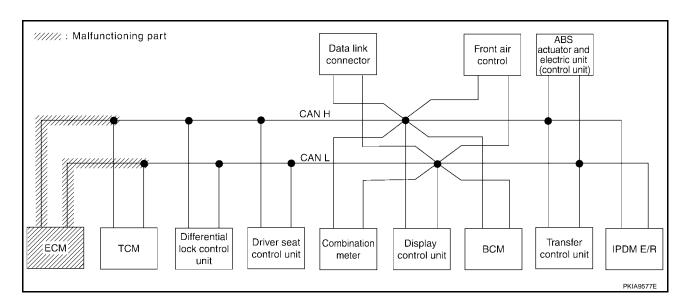
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Case 5
Check ECM circuit. Refer to LAN-389, "ECM Circuit Check".

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
022201 0101	EN SOICEN	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNK WN		Π <b>Μ</b> ΑΝΝ	_	UNK WN	UNIMN	ı	UNIVAN	UNIXWN	UNIMAN
A/T	_	NG	UNKWN	UNK WN	ı	_	UNKWN	_	1	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNK WN	_	_	_	_		UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	UNKWN	1	-	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN ORC 3	_	_	CAN CIRC 5	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
BCM	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	1	1	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	-	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN			_	UNKWN	_	_	_	_



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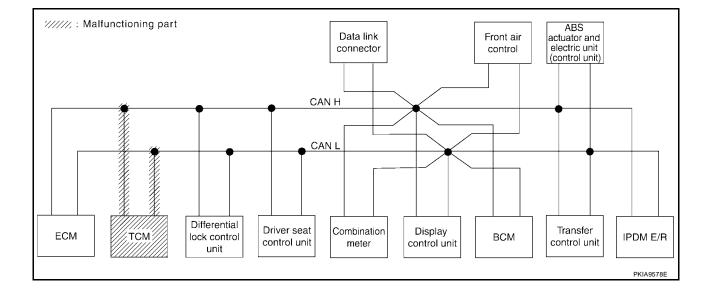
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Case 6
Check TCM circuit. Refer to <u>LAN-390, "TCM Circuit Check"</u>.

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Rec	eive diagn	osis			
022201 0101		diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	∩ <b>M</b> MN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWI
A/T	-	NG	UNKWN	UNIXWN	1	_	∩ <b>M</b> MN	-	_	UNK WN	Π <b>ИΚ</b> ΜΝ	_
DIFF LOCK	_	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
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	-	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	UNKWN	_	-	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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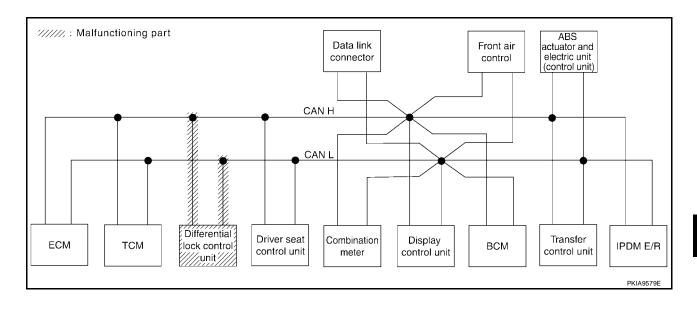
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Case 7
Check differential lock control unit circuit. Refer to <u>LAN-390</u>, "<u>Differential Lock Control Unit Circuit Check"</u>.

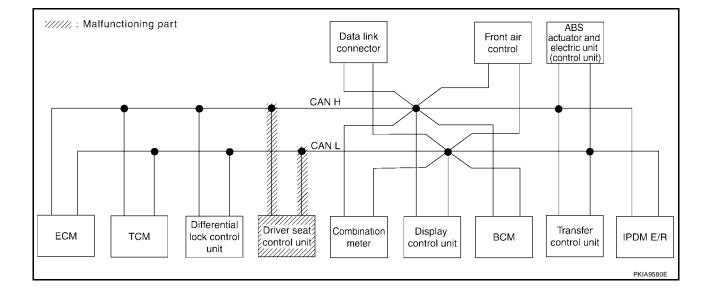
						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
0222010101	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE		NG	UNKWN	_	UNKWN	l	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	ı	UNKWN	ı	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	-	_	UN <b>K</b> ∕VN	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
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	-	-	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UN <b>K</b> ∕VN	_	-	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 8
Check driver seat control unit circuit. Refer to <u>LAN-391</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

						CAN DIA	3 SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI SOFCCIT	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE		NG	UNKWN	ı	UNKWN	ı	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	1	UNKWN	ı	-	UNKWN	UNKWN	_
DIFF LOCK	_	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
BCM	No indication	NG	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	_	_	_	_



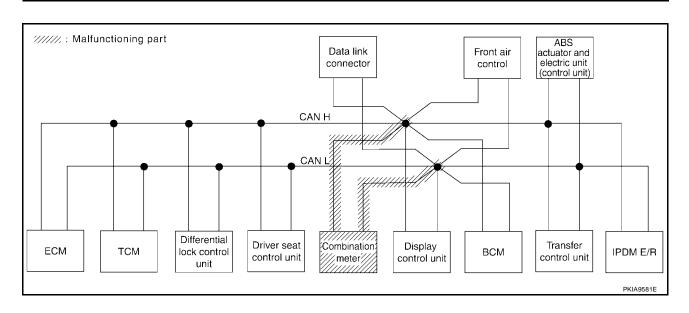
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Case 9
Check combination meter circuit. Refer to <u>LAN-391</u>, "Combination Meter Circuit Check" .

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
0222010101	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	ı	UNKWN	I	UNKWN	UNKWN	ı	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	ı	UNK WN	ı	ı	UNKWN	UNKWN	ı
DIFF LOCK	_	NG	UNKWN	UNKWN	<u> </u>	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNK WN	UNKWN	1	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	_	CAN CAC 5	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
BCM	No indication	NG	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	_	_	_	_

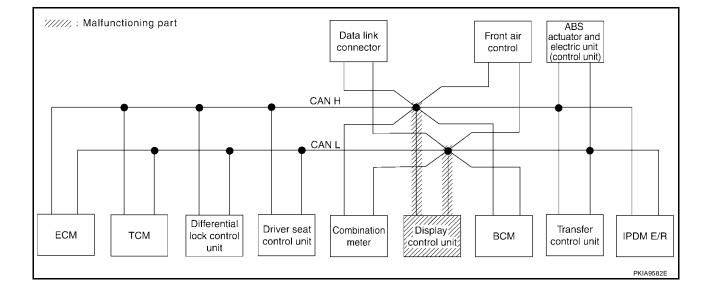


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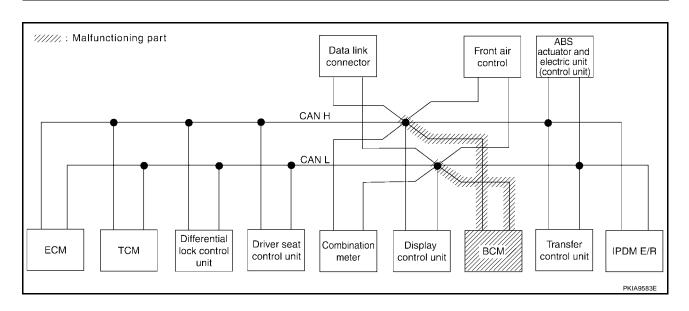
Case 10 Check display control unit circuit. Refer to <u>LAN-392</u>, "<u>Display Control Unit Circuit Check"</u>.

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI SOFCCIT	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	1	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	-	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CAC 1	CAN CAC 3	_	_	CAN CAC 5	CAN CRC 2	CANCAC 4	_	_	CANCAC
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



Case 11
Check BCM circuit. Refer to <u>LAN-392</u>, "BCM Circuit Check" .

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
0222010101	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE		NG	UNKWN	_	UNKWN	I	UNKWN	UNIV	ı	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	ı	UNKWN	ı	ı	UNKWN	UNKWN	ı
DIFF LOCK	_	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	CAN CRC 2	CAN CIRC 4	_	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	I	ı	UNKWN	I	ı	_	-	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	-	ı	ı	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNIMN	_	_	_	_



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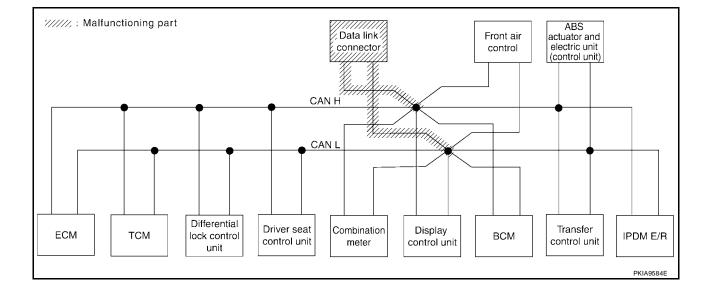
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Case 12
Check data link connector circuit. Refer to <u>LAN-393</u>, "<u>Data Link Connector Circuit Check"</u>.

						CAN DIAG	3 SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	EN SOICCH	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	ı	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	ı	UNKWN	ı	-	UNKWN	UNKWN	_
DIFF LOCK	_	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	ı	ı	UNKWN	ı	-	_	ı	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



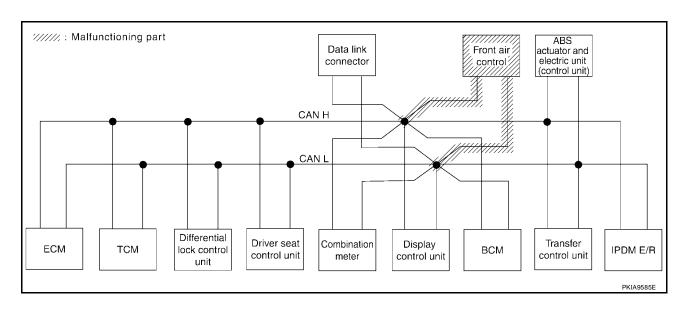
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Case 13
Check front air control circuit. Refer to <u>LAN-393</u>, "Front Air Control Circuit Check".

						CAN DIAC	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
022201 0101	EIVI SOICCII	diagnosis		ECM	тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN		UNKWN	I	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	ı	UNKWN	ı	_	UNKWN	UNKWN	_
DIFF LOCK	_	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 CAC 4	_	_	CAN CIRC
всм	No indication	NG	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	_	_	_	_

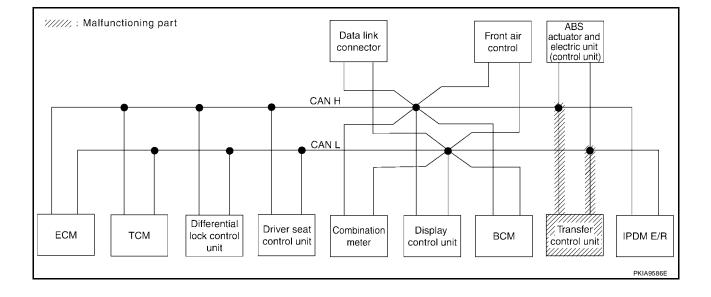


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Case 14
Check transfer control unit circuit. Refer to <u>LAN-394, "Transfer Control Unit Circuit Check"</u>.

						CAN DIAG	3 SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI SOFCCIT	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	∩ <b>M</b> MN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	-	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	_	UN <b>K</b> ₩N	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
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	∩ <b>NK</b> WN	UN <b>K</b> ₩N	UNKWN	_	_	-	_	_	Π <b>ΝΚ</b> ⁄ΛΝ	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	-	_	UNK/WN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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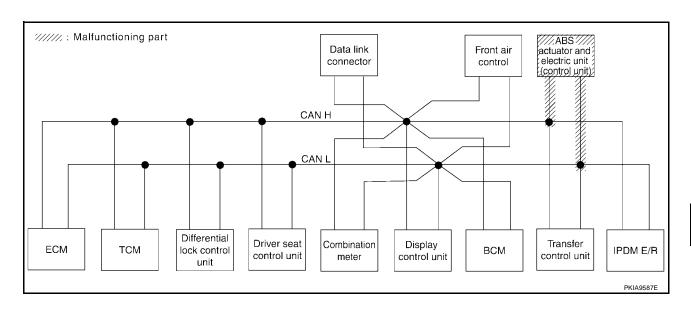
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Case 15

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-394</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

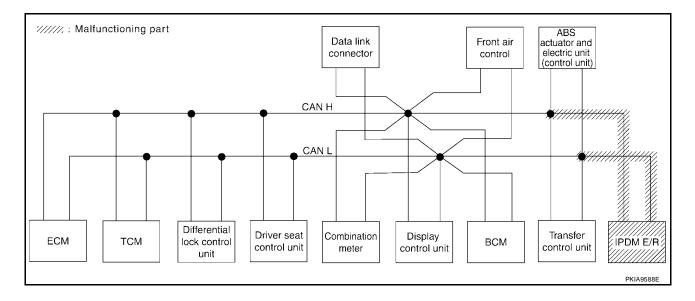
						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
022201 0101	EN SOICCH	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	-	UNKWN	UNK WN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	-	-	UNKWN	UNK WN	_
DIFF LOCK	_	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
BCM	No indication	NG	UNKWN	UNKWN	-	_	UNKWN	-	-	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	-	-	_	_	UNK WN	_
ABS	_	N/E	UNK/WN	UNKWN	UNK WN	UNK WN	_	-	_	UNK/WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 16
Check IPDM E/R circuit. Refer to <u>LAN-395</u>, "IPDM E/R Circuit Check" .

						CAN DIA	3 SUPPO	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
	2111 0010011	diagnosis			тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	ı	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	UNK WN
A/T	ı	NG	UNKWN	UNKWN	-	_	UNKWN	_	_	UNKWN	UNKWN	_
DIFF LOCK	-	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 CAC 7
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	UNKWN
ALL MODE AWD/4WD	ı	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_
												PKIA9474E



# **CAN SYSTEM (TYPE 12)**

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Case 17

Check CAN communication circuit. Refer to LAN-396, "CAN Communication Circuit Check" .

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
0222010101	LIVI SOFCCIT	diagnosis		ECM	тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	<b>NNK</b> WN	_	UN <b>K</b> ₩N	_	UNK WN	UNI <b>W</b> WN	_	UN <b>A</b> WN	UNKWN	UN <b>∳</b> WN
A/T	_	NG	UNKWN	<b>NNK</b> WN	-	_	UNK WN	-	-	UNAMN	UNIV	_
DIFF LOCK	_	NG	UN <b>K</b> ∕VN	UNK WN	_	_	_	_	_	UN <b>K</b> ₩N	UNK <b>∕</b> WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CANORC 1	CANORC 3	_	_	CAN ORC 5	CAN CAC 2	CAN CAC 4	_	_	CANORC
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UN <b>K</b> ∕WN	UN <b>K</b> ₩N	UNKWN	_	_	_	_	_	∩ <b>M</b> MN	_
ABS		<b>V</b> ≰	UNK WN	UNKWN	∩ <b>M</b> AN	UNKWN	_			UNK <b>W</b> N	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

#### Case 18

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-396, "IPDM E/R Ignition Relay Circuit Check".

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
322201 3131	2111 0010011	diagnosis		ECM	тсм	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE		NG	UNKWN	ı	Π <b>ИΚ</b> /ΜИ	_	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	ı	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	-	_	UNKWN	UNI <b>W</b> 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	ı	_	UNKWN	ı	-	_	ı	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK/VN	_	_	ı	_	_	UN <b>K</b> ₩N	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

#### Case 19

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-396, "IPDM E/R Ignition Relay Circuit Check" .

						CAN DIA	3 SUPPO	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER /M&A	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	ı	_	∩ <b>NR</b> WN	_	-	UN <b>K</b> ₩N	UNKWN	_
DIFF LOCK	_	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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UN <b>K</b> ₩N	UNKWN	UNK/WN	_	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-		_	UNKWN	_		_	_
												PKIA9477E

### Circuit Check Between TCM and Differential Lock Control Unit

UKS0020F

# 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

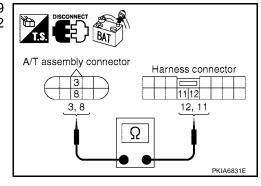
8 (R) - 11 (R)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



[CAN]

# 3. CHECK HARNESS FOR OPEN CIRCUIT

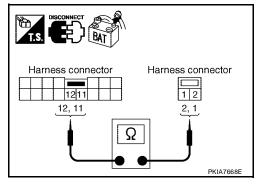
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

12 (W) - 2 (W) 11 (R) - 1 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

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



# 4. CHECK HARNESS FOR OPEN CIRCUIT

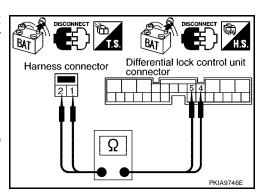
- 1. Disconnect differential lock control unit connector.
- Check continuity between harness connector B75 terminals 2 (W), 1 (R) and differential lock control unit harness connector B77 terminals 5 (W), 4 (R).

2 (W) - 5 (W) 1 (R) - 4 (R) : Continuity should exist. : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-365, "Work Flow"</u>.

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.
- Disconnect differential lock control unit connector and harness connector B37.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (W), 4 (R) and harness connector B37 terminals 15 (W), 14 (R).

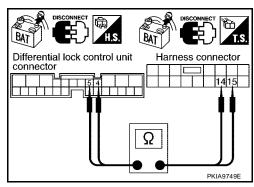
5 (W) - 15 (W) 4 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-365, "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

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

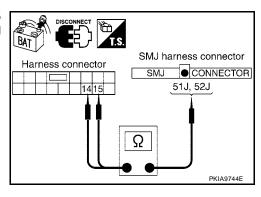
15 (W) - 51J (W) 14 (R) - 52J (R) : Continuity should exist.

: 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 (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

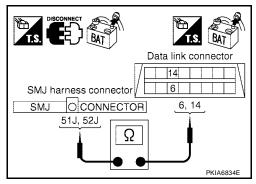
51J (W) - 6 (W) 52J (R) - 14 (R) : Continuity should exist. : Continuity should exist.

#### OK or NG

OK >>

>> Connect all the connectors and diagnose again. Refer to LAN-365, "Work Flow".

NG >> Repair harness.



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

UKS001IP

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 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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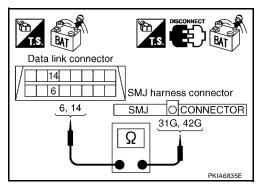
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

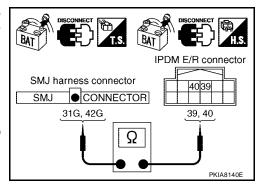
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-365</u>, "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

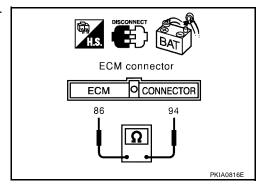
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

94 (W) - 86 (R) : Approx. 108 - 132Ω

#### 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 (W) and 8 (R).

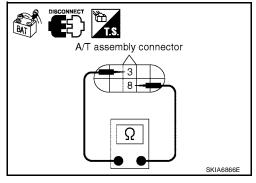
**3 (W) - 8 (R)** : Approx. 54 -  $66\Omega$ 

#### 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.

# $\overline{2}$ . 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 (W) and 4 (R).

: Approx. 54 - 66 $\Omega$ 

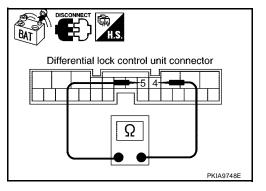
#### OK or NG

OK

>> Replace differential lock control unit.

NG

>> Repair harness between differential lock control unit and harness connector B75.



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### **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.
- Check resistance between driver seat control unit harness connector P2 terminals 3 (W) and 19 (R).

: Approx. 54 - 66 $\Omega$ 

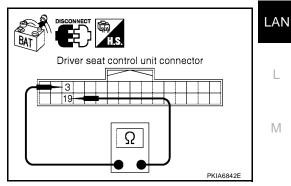
#### OK or NG

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

- 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 (W) and 12 (R).

: Approx. 54 - 66 $\Omega$ 

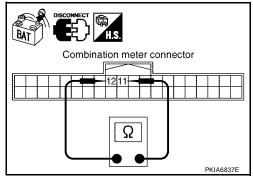
#### OK or NG

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

- 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 (W) and 26 (R).

: Approx. 54 - 66 $\Omega$ 

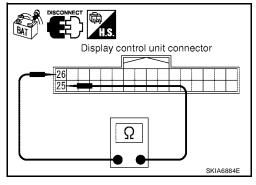
#### OK or NG

OK

>> Replace display control unit.

NG

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



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#### **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.

# $\overline{2}$ . Check harness for open circuit

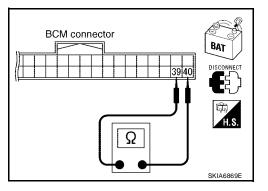
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

**39 (W) - 40 (R)** : Approx. **54 - 66**
$$\Omega$$

#### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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

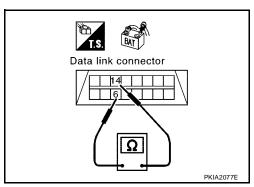
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. **54 - 66**
$$\Omega$$

### OK or NG

OK >> Diagnose again. Refer to LAN-365, "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.
- 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

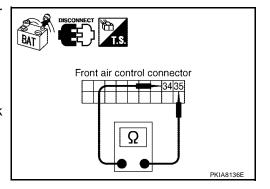
- 1. Disconnect front air control connector.
- Check resistance between front air control harness connector M50 terminals 34 (W) and 35 (R).

**34 (W) - 35 (R)** : 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

- 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 (W) and 2 (R).

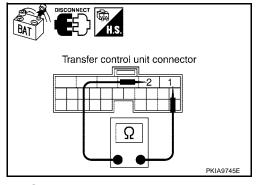
**1 (W) - 2 (R)** : Approx. 54 - 
$$66\Omega$$

#### OK or NG

NG

OK >> Replace transfer control unit.

>> 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

- 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.

# $\overline{2}$ . 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 (W) and 15 (R).

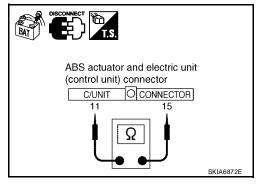
: Approx. 54 -  $66\Omega$ 

#### 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.
- 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 (W) and 40 (R).

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

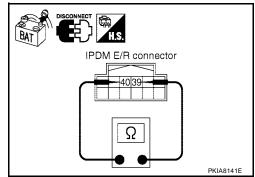
#### OK or NG

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

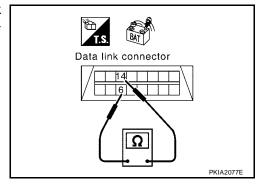
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

> 6 (W) - 14 (R) : 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 (W), 14 (R) and ground.

> **6 (W) - Ground** : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-397, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.

# Data link connector 6, 14 PKIA2079E

# 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".

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## **CAN SYSTEM (TYPE 12)**

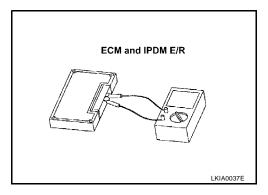
[CAN]

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

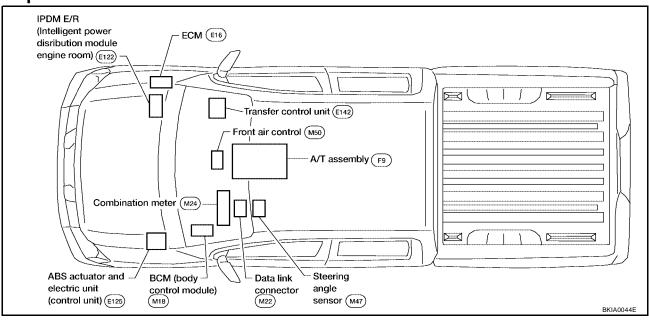
## **System Description**

UKS001W0

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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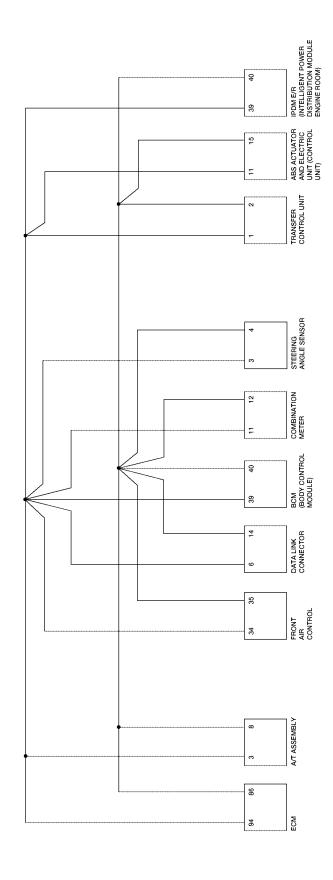
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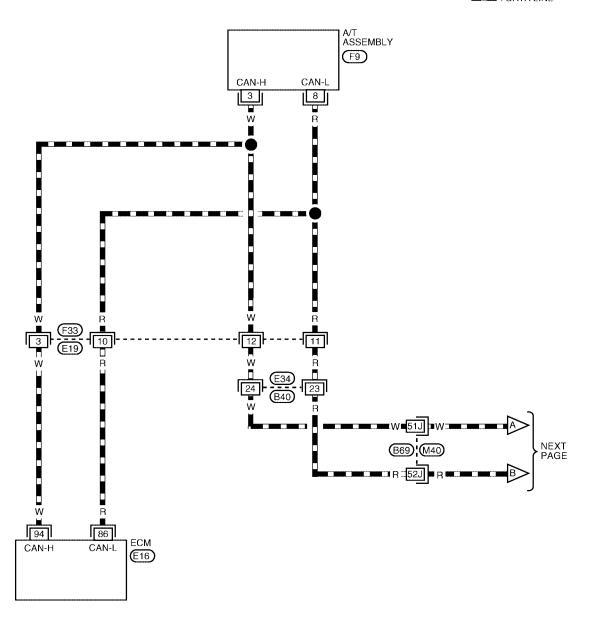
BKWA0160E

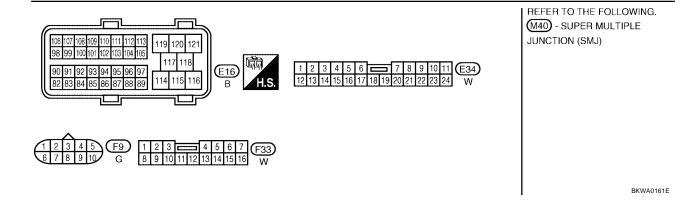
Wiring Diagram - CAN -

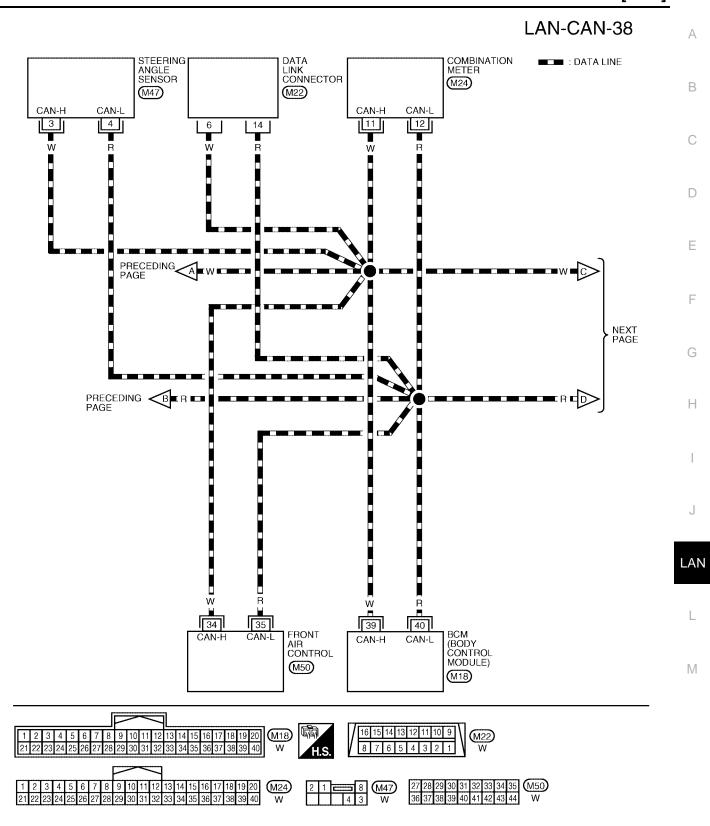
IKS001W3

## LAN-CAN-37

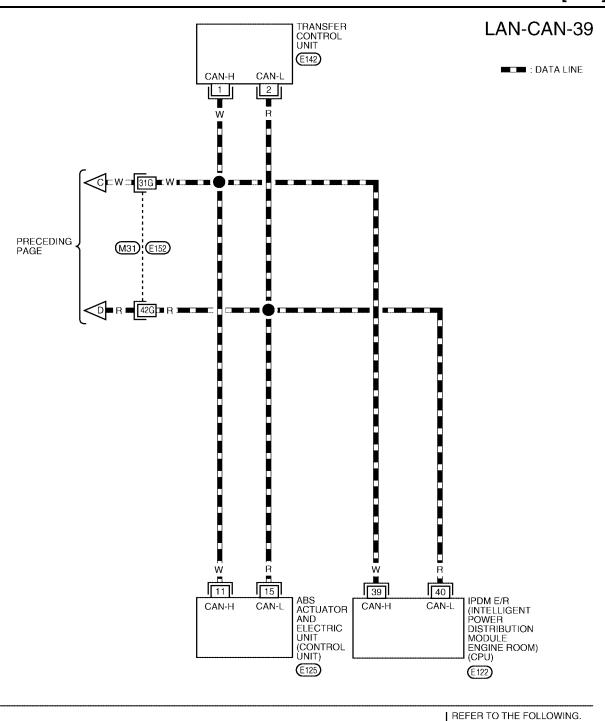
: DATA LINE

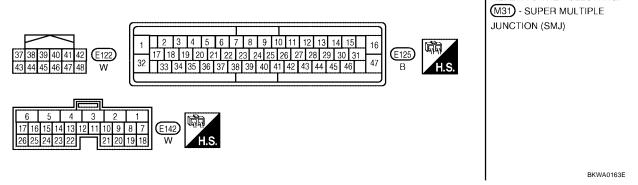






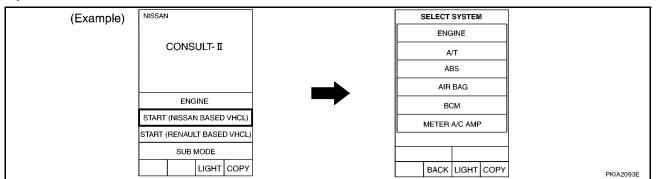
BKWA0162E



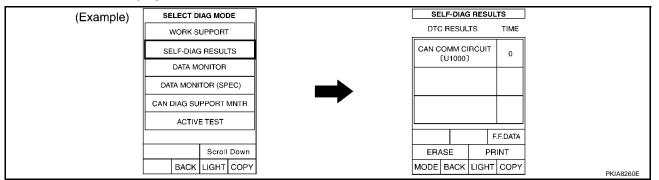


Work Flow

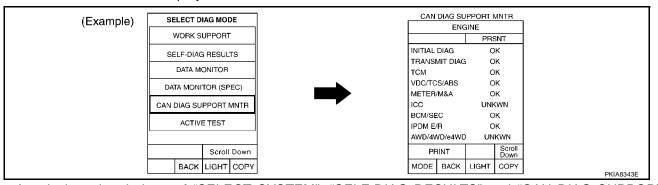
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "BCM", "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", "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-404</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-404">LAN-404</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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-406</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)"

Revision: January 2005 LAN-403 2004 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 SYSTI	EM screen	Initial	Transmit		ſ	ı	Receive	diagnosis			
		diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
<b>4</b> /T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
зсм	No indication	NG	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	_	_	_	_
Symptoms :											
Symptoms :											
Symptoms :											
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Symptoms :											
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Symptoms:											
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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	Attach copy of	Attach copy of
ALL MODE AWD/4WD	ABS	IPDM E/R
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 BCM CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of
ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR

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

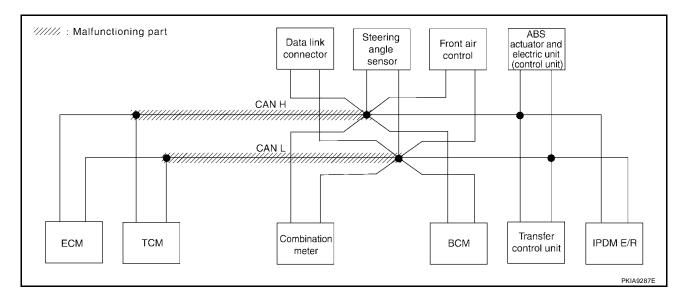
### NOTE:

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-418</u>, "Circuit Check Between TCM and Data Link Connector" .

						CAN DIA	G SUPPOR	T MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	EN GOICON	diagnosis diag	l	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK/WN	Π <b>ΜΑ</b> ΜΝ	_	UNKWN	UNKWN	UNK/WN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	_	UNK/WN	UNIKWN	_
BCM	No indication	NG	UNKWN	∩ <b>ИК</b> МИ	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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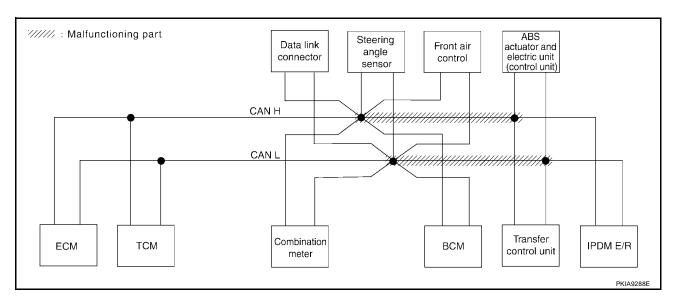
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-419</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

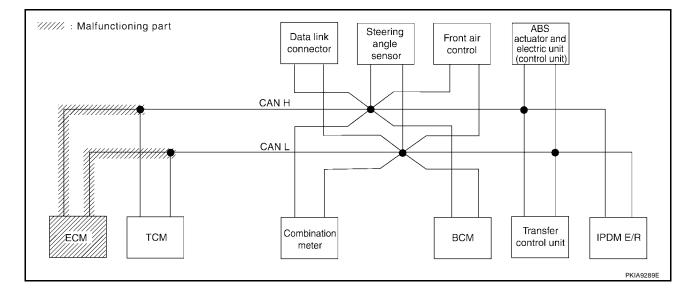
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
322201 3131	EIVI 0010011	diagnosis diagnosis  NG UNKWN		ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN	Π <b>ИΚ</b> ΜИ	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	Π <b>ΜΑ</b> ΜΝ	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	_	_	_	UNIONN
ALL MODE AWD/4WD	_	NG	UNKWN	Π <b>ИΚ</b> /ΜИ	UNI <b>S</b> WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	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-420, "ECM Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
322201 31311	2141 0010011	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNIKWN	UNK WN	∩ <b>M</b> MN	_	UNK WN	∩ <b>NK</b> WN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	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	_	_	_	_



## **CAN SYSTEM (TYPE 13)**

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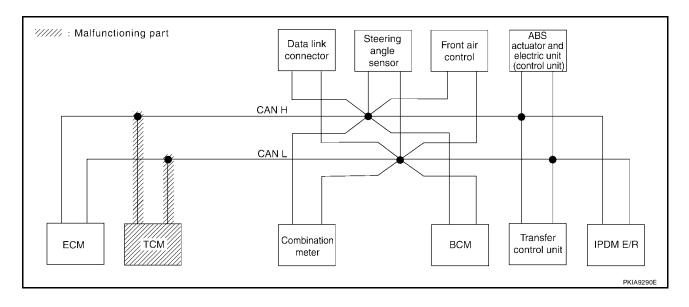
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Case 4
Check TCM circuit. Refer to <u>LAN-421</u>, "TCM Circuit Check" .

						CANIDIA	G SUPPOF	T MANITO			
CELECT CVCT	TM					CAN DIA	Receive of				
SELECT SYST	Elvi screen	Initial diagnosis	Transmit 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	UNK WN	_	UNK/WN	_	-	UNKWN	UNIAMN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNIONN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_
							'				

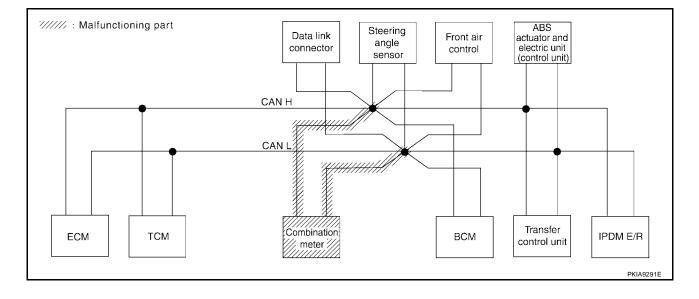


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Case 5
Check combination meter circuit. Refer to <u>LAN-421</u>, "Combination Meter Circuit Check".

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	EN CONCON	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE		NG	UNKWN	_	UNKWN	UNK WN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T		NG	UNKWN	UNKWN	_	UNIXWN			UNKWN	UNKWN	
всм	No indication	NG	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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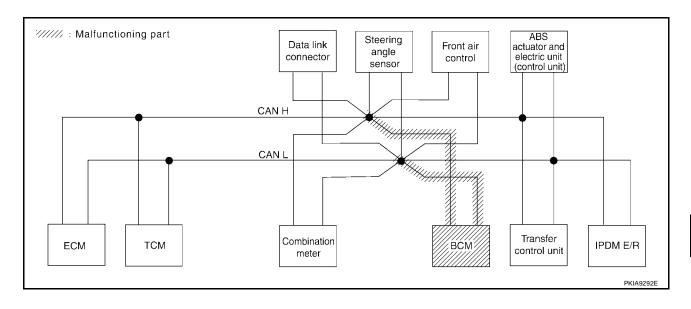
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Case 6
Check BCM circuit. Refer to LAN-422, "BCM Circuit Check".

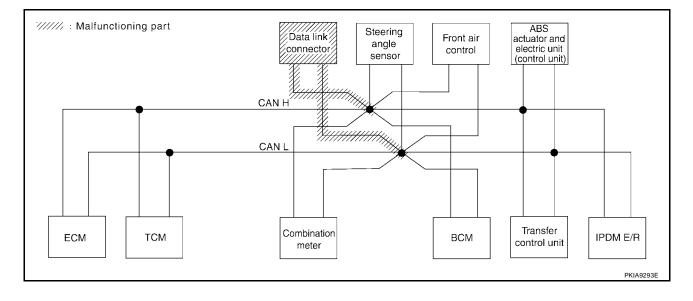
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
OLLLOT OTOT	LIVI SCICCII	Initial Transmit diagnosis diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	Π <b>ΛΚ</b> ΜΝ	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
BCM	No indication	NG	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	_	_	UNI <b>W</b> N	_	_	_	_



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Case 7
Check data link connector circuit. Refer to <u>LAN-422</u>, "<u>Data Link Connector Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
322231313		diagnosis diagnosis  NG UNKWN	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
<b>A</b> /T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	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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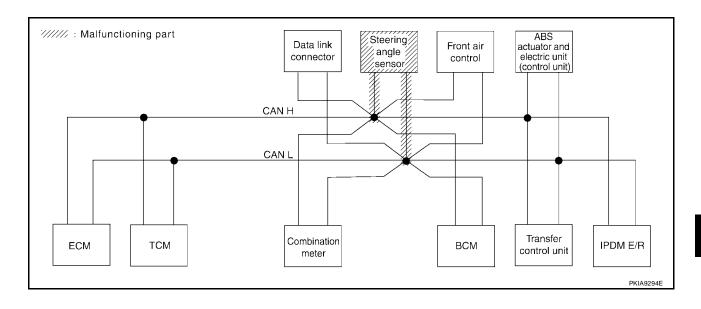
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Case 8

Check steering angle sensor circuit. Refer to <u>LAN-423</u>, "Steering Angle Sensor Circuit Check" .

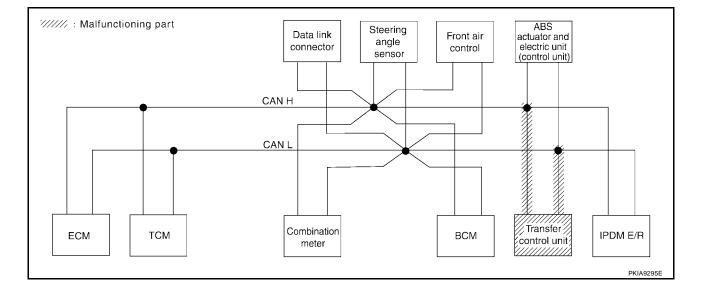
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
022201 01011	diagnosis NE - NG			ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UN <b>W</b> WN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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Case 9
Check transfer control unit circuit. Refer to <u>LAN-423</u>, "Transfer Control Unit Circuit Check".

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
3222313131	diag			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	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UN <b>™</b> WN	UNK WN	UNIONN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	UNKWN	_	_	_	_



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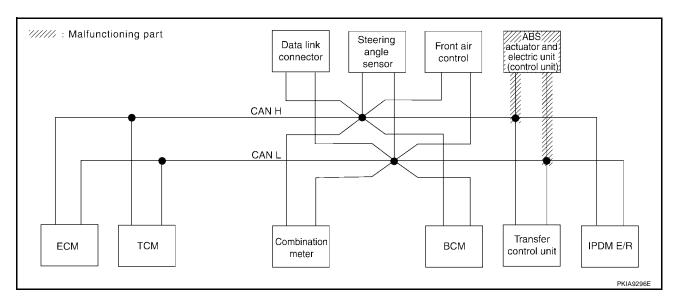
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Case 10

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-424</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

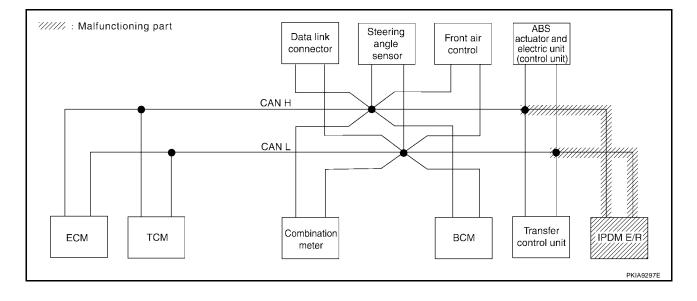
						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYSTEM screen		Initial	Transmit -		Receive diagnosis								
322201 3131	diagr		diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	Π <b>ИΚ</b> ΜИ	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	Π <b>ΜΑ</b> ΜΝ	_		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNK/WN	-		
ABS	_	<b>V</b> s	UNKWN	UNKWN	UNKWN	_	-	UNKWN	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-424</u>, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYSTEM screen		Initial	Transmit				Receive	diagnosis			
0222010101	1		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	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN		_	_	_	UNIXWN
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 13)**

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Case 12

Check CAN communication circuit. Refer to LAN-425, "CAN Communication Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYSTEM screen		Initial	Transmit		Receive diagnosis								
322201 31311	2111 0010011			ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/		
ENGINE	_	NG	UNK WN	_	UNKWN	UNK WN	∩ <b>M</b> MN	_	UNK\\	UNK WN	UNK WN		
A/T	=	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNIONN	_		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	<b>NUK</b> WN	UNK WN	UNI <b>S</b> WN	_	_	_	_	UNK WN	_		
ABS	_	<b>V</b> s	UNIXWN	UNKWN	UNKWN	_	_	UN <b>K</b> WN	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	-	_		

### Case 13

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-426}}$ , "IPDM E/R Ignition Relay  $\underline{\text{Circuit Check}}$ ".

						CAN DIA	G SUPPOF	₹T MNTR					
SELECT SYSTEM screen		Initial Tra	Transmit		Receive diagnosis								
OLLLO 1 O 1 O 1	diagnosis			ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	∩ <b>//</b> WN	UNKWN	UNKWN	_	UNKWN	UNK WN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN			
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD		NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UN <b>K</b> ₩N	_		
ABS		NG	UNKWN	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-426, "IPDM E/R Ignition Relay Circuit Check".

		CAN DIAG SUPPORT MNTR											
SELECT SYSTEM screen		Initial	Transmit		Receive diagnosis								
322231 3131	diag		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	UNK WN	_	UNIXWN	_	-	UNKWN	UNKWN	-		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UN <b>K</b> WN	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		

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

UKS00229

## 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 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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

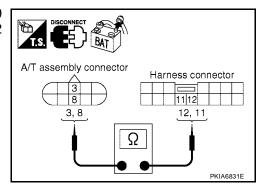
8 (R) - 11 (R)

: 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 (W), 11 (R) and harness connector E34 terminals 24 (W), 23 (R).

12 (W) - 24 (W)

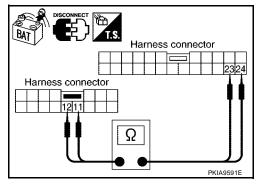
: Continuity should exist.

11 (R) - 23 (R)

: 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 (W), 23 (R) and harness connector B69 terminals 51J (W), 52J (R).

24 (W) - 51J (W)

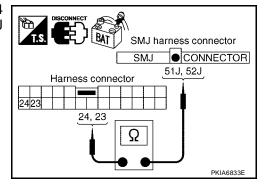
: Continuity should exist.

23 (R) - 52J (R)

: 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 (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W)

: Continuity should exist.

52J (R) - 14 (R)

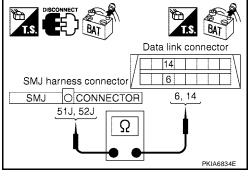
: Continuity should exist.

#### OK or NG

OK >>

>> Connect all the connectors and diagnose again. Refer to LAN-403, "Work Flow".

NG >> Repair harness.



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

UKS0022A

## 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

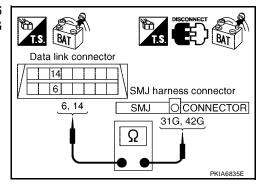
OK >> GO TO 2.

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

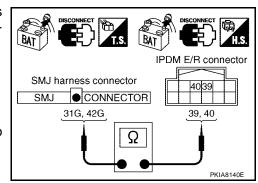
- 1. Disconnect IPDM E/R connector.
- 2. Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 39 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

### OK or NG

OK  $\rightarrow$  Connect all the connectors and diagnose again. Refer to LAN-403, "Work Flow".

NG >> Repair harness.



UKS0022B

## **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.

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

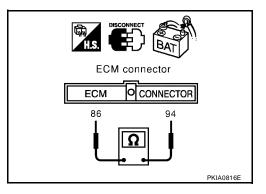
94 (W) - 86 (R) :

: 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.

- 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 (W) and 8 (R).

3 (W) - 8 (R)

: Approx. 54 - 66 $\Omega$ 

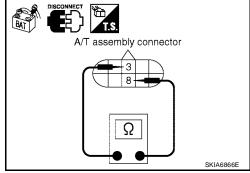
### OK or NG

OK

>> Replace A/T assembly.

NG

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



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### **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- 1. 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.

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

: Approx. 54 - 66 $\Omega$ 

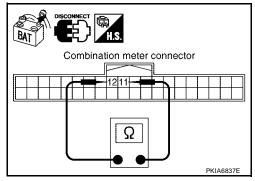
### OK or NG

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 (W) and 40 (R).

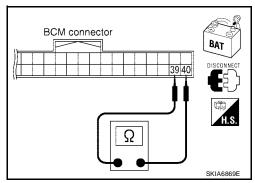
: Approx. 54 - 66 $\Omega$ 

### OK or NG

OK

>> Replace BCM. Refer to <u>BCS-25</u>, "Removal and Installation of <u>BCM"</u>.

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



UKS0022F

### **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.

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## 2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

: Approx. 54 - 66
$$\Omega$$

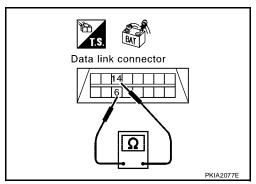
### OK or NG

OK >

>> Diagnose again. Refer to LAN-403, "Work Flow".

NG

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



## 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.

Check resistance between steering angle sensor harness connector M47 terminals 3 (W) and 4 (R).

: Approx. 54 - 66 $\Omega$ 

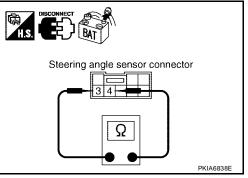
#### OK or NG

OK :

>> Replace steering angle sensor.

NG

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



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## 1. CHECK CONNECTOR

Turn ignition switch OFF.

Disconnect the negative battery terminal.

Transfer Control Unit Circuit Check

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.

- 1. Disconnect transfer control unit connector.
- 2. Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

: Approx. 54 - 66 $\Omega$ 

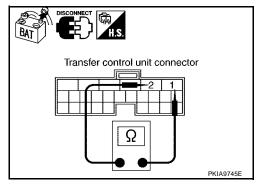
#### OK or NG

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**

UKS00221

### 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 (W) and 15 (R).

: Approx. 54 - 66 $\Omega$ 

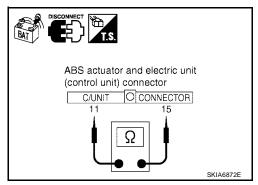
### OK or NG

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.

# $\overline{2}$ . Check harness for open circuit

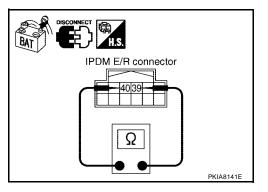
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (W) and 40 (R).

**39 (W) - 40 (R)** : 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.
- Disconnect the negative battery terminal. 2.
- 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
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

>> GO TO 2. OK

NG >> Repair or replace as necessary.

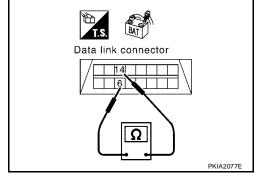
## 2. CHECK HARNESS FOR SHORT CIRCUIT

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

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR SHORT CIRCUIT

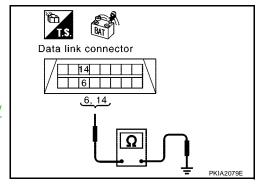
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-426, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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## IPDM E/R Ignition Relay Circuit Check

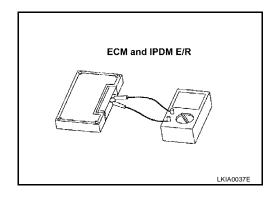
Check the following. If no malfunction is found, replace the IPDM E/R.

- 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, "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			



[CAN]

## **CAN SYSTEM (TYPE 14)**

#### PFP:23710

## **System Description**

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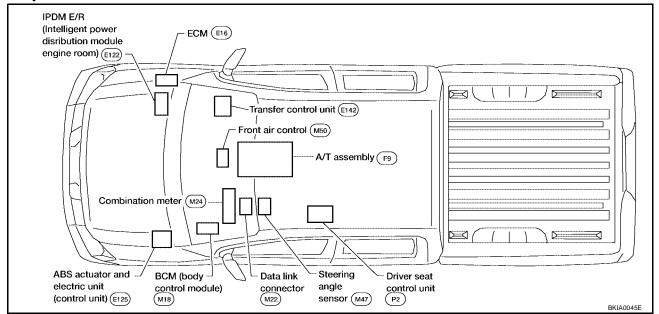
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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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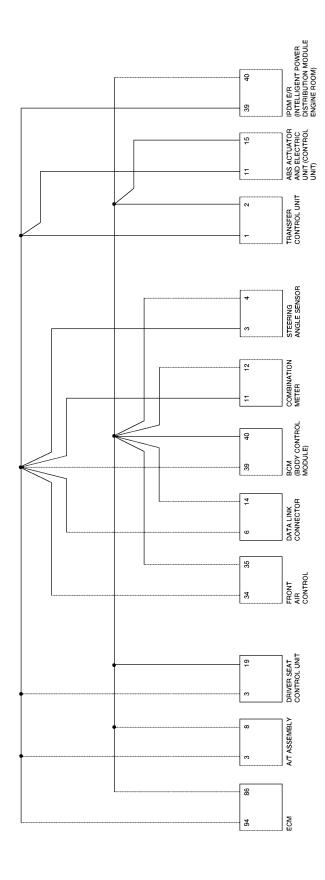
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Schematic UKS001



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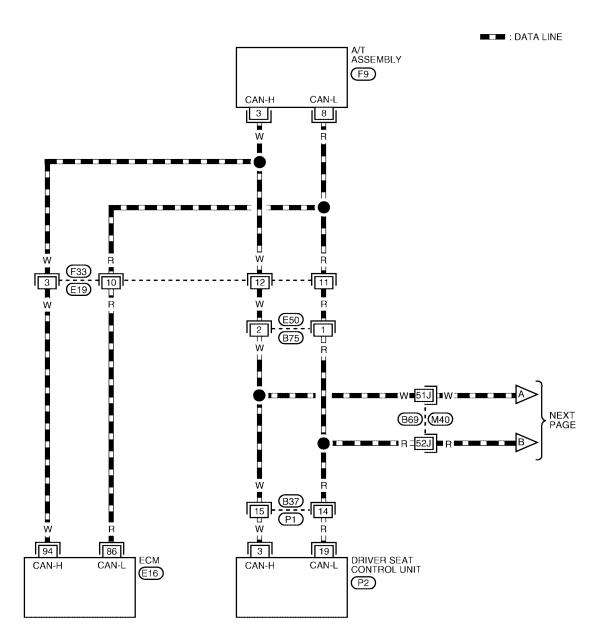
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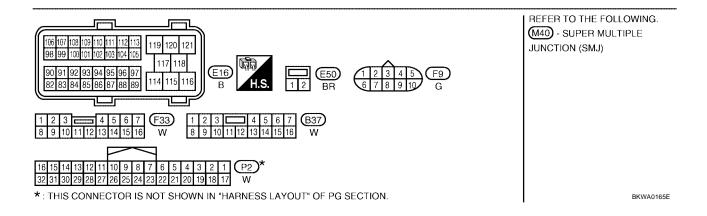
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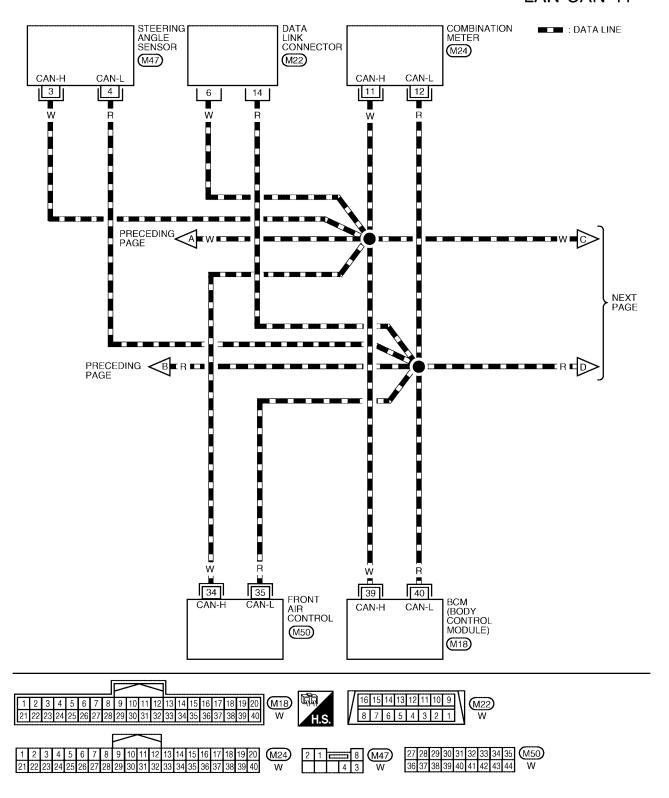
M

## LAN-CAN-40

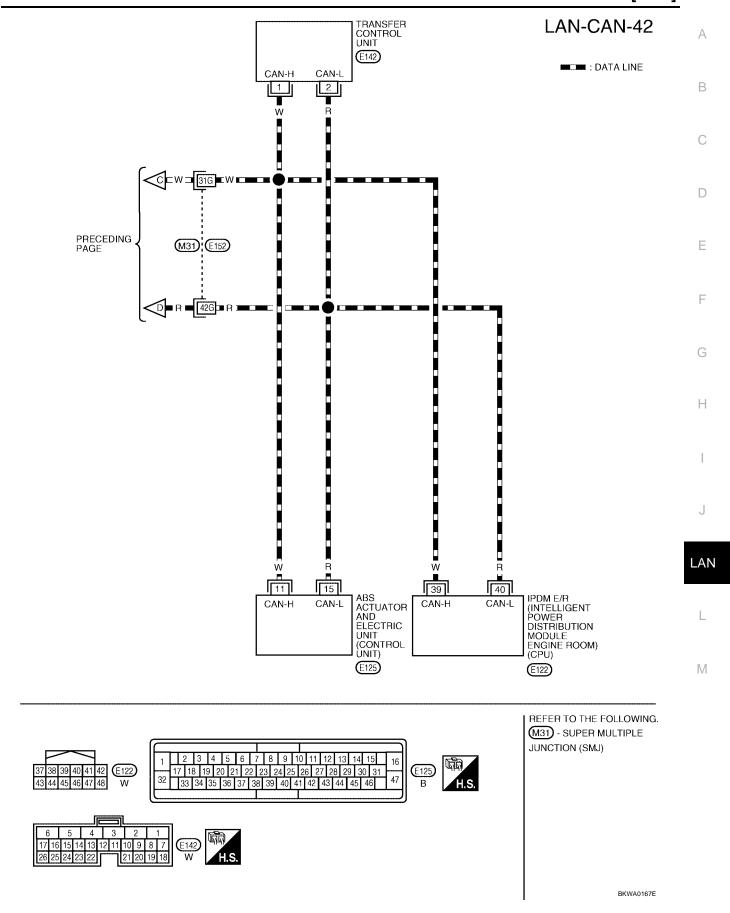




### LAN-CAN-41



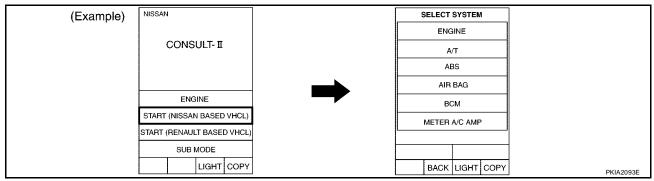
BKWA0166E



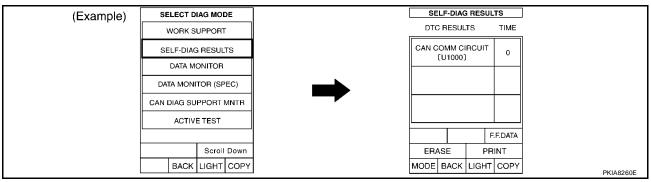
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Work Flow

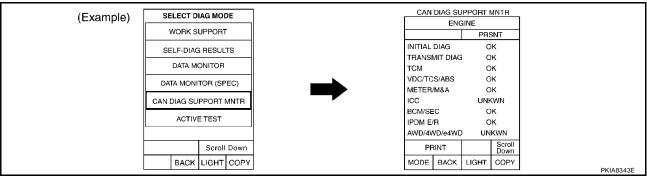
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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-433, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-433</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-435</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

## **CAN SYSTEM (TYPE 14)**

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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.

SELECT SYSTEM screen	Check sheet table	)					CAN DIA	G SUPPOF	RT MNTR			
diagnosis   diagnosis   ECM   TCM   METER/ M&A   BCM/SEC   STRG   AWD/4WD   VDC/TCS   IPDM ENGINE   - NG   UNKWN   - UNKWN   UNKWN   UNKWN   - UNKWN   UNKWN   UNKWN   UNKWN   - UNKWN   UNKWN   - UNKWN   UNKWN   - UNKWN   UNKWN   - UNKWN   UNKWN   - UNKWN   UNKWN   - UNKWN	SELECT SYST	EM screen	Initial	Transmit								
A/T — NG UNKWN UNKWN — UNKWN — UNKWN UNKWN — — — UNKWN UNKWN — — — — — — — — — — — — — — — — — — —	OLLLOT OTOT	LIW SCIECTI			ECM	TCM		BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
AUTO DRIVE POS. No indication NG UNKWN — UNKWN UNKWN — — — — — UNKWN — — — — — UNKWN — — — — — UNKWN — — — — — UNKWN — — — — UNKWN — — — — UNKWN — — — — UNKWN — — — — UNKWN — — — — UNKWN — — — — UNKWN — — — — — UNKWN — — — — — — — — — — — — — — — — — — —	ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
No indication   NG	<b>√</b> T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
Attach copy of Attach copy of Attach copy of	AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
ABS - NG UNKWN UNKWN UNKWN UNKWN UNKWN UNKWN	ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_		_	_	UNKWN
PDM E/R         No indication         —         UNKWN         —         —         UNKWN         —<	ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
Symptoms:  Attach copy of Attach copy of	ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
Attach copy of Attach copy of	PDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_
			A SEL	ttach copy ( .ECT SYST	of EM		SE	Attach copy ELECT SYS	of TEM			

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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	
ALL MODE AWD/4WD	ABS	IPDM E/R	
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 AUTO DRIVE POS. CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of	
ALL MODE AWD/4WD	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

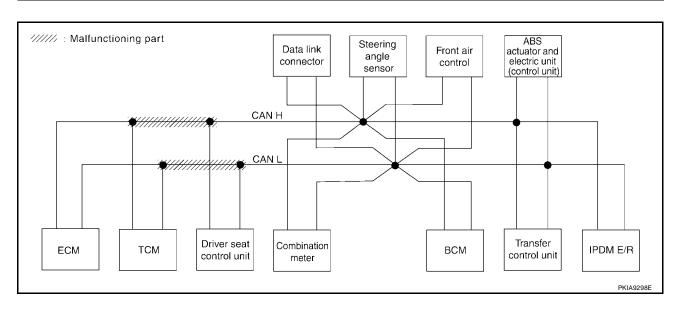
#### NOTE:

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

#### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-449</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
		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	n <b>νk</b> ⁄ων	_	<b>NNA</b> WN	UNAWN	Π <b>ΝΚ</b> {ΛΝ
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	n <b>uk</b> wu	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	_	_	_
всм	No indication	NG	UNKWN	∩ <b>ик</b> {wи	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNIKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNIVAN	_	_	UNKWN	_	_	_	_

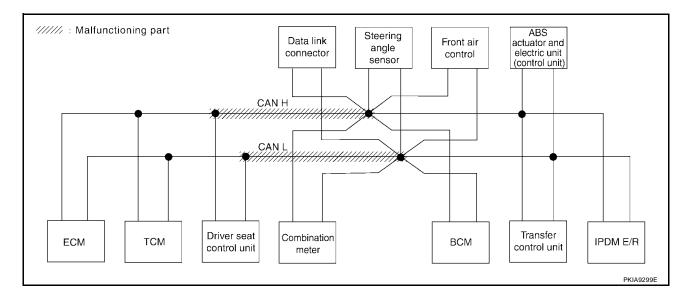


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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-450</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			
02220101011	LIVI GOTGOTI			ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	Π <b>ΛΚ</b> ΜΝ	_	UN <b>A</b> WN	UNIX WN	Π <b>ΝΚ</b> ΜΝ
A/T	_	NG	UNKWN	UNKWN	_	<b>NMANN</b>	_	_	n <b>uk</b> wu	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-
всм	No indication	NG	UNKWN	∩ <b>иК</b> {МИ	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNIKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNION	_	_	UNKWN	_	_	_	_



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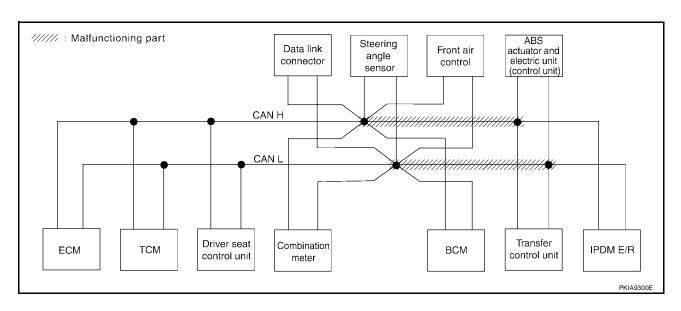
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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-451</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

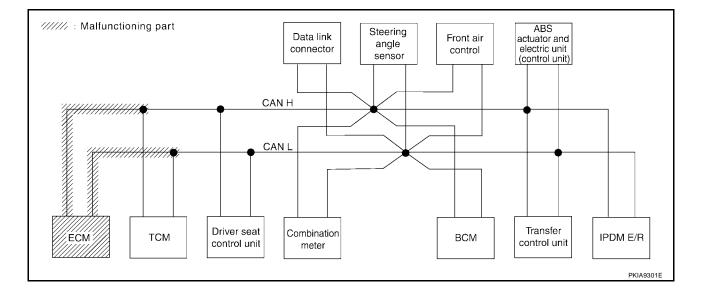
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	UNI <b>W</b> N	UNI <b>N</b> WN	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	∩ <b>NK</b> WN	UNK WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNK WN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	Π <b>ΝΚ</b> ΜΝ	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNIVWN	UNIONN	_	_	UNK/WN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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Case 4
Check ECM circuit. Refer to <u>LAN-452</u>, "ECM Circuit Check" .

						CAN DIA	G SUPPOF				
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	Ω <b>ΝΚ</b> /ΜΝ	UNK <b>W</b> N	UN <b>KA</b> NN	_	UN <b>™</b> WN	<b>UNIX</b> WN	UNK WN
A/T	_	NG	UNKWN	UNIONN	_	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
всм	No indication	NG	UNKWN	UNIXWN	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNIVWN	UNKWN	_	-	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UN <b>W</b> WN	-	_	UNKWN	_	_	_	_

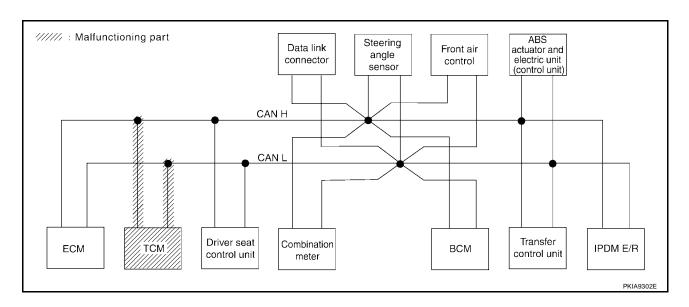


## **CAN SYSTEM (TYPE 14)**

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Case 5 Check TCM circuit. Refer to <u>LAN-452</u>, "TCM Circuit Check" .

	,					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYSTE	EM screen	Initial	Transmit				Receive of	ziagnosis			
	_IVI 301CGII		diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	Π <b>ΝΚ</b> ΜΝ	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNION	_	UNK WN	_	_	UNKWN	UNION	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	_	_	-
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	<b>NNN</b> WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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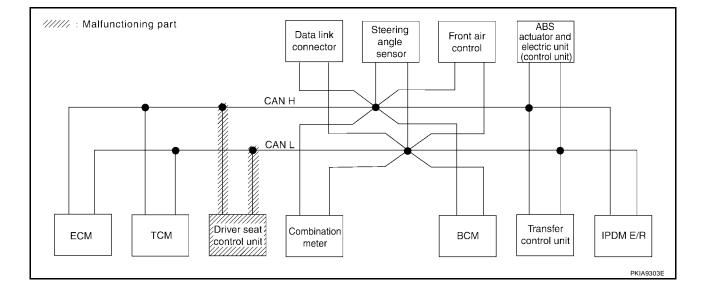
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-453</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
011101			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
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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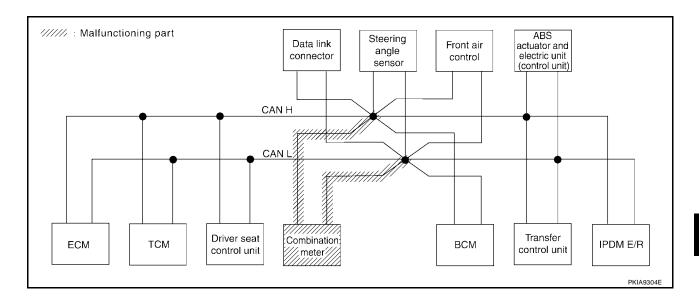
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Case 7
Check combination meter circuit. Refer to <u>LAN-453</u>, "Combination Meter Circuit Check" .

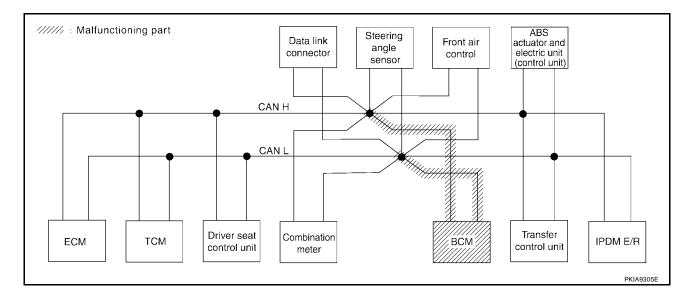
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
02220101011	LIM SOICCII	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNYWN	UNKWN	_	_	_	_
ВСМ	No indication	NG	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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Case 8
Check BCM circuit. Refer to <u>LAN-454, "BCM Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
3222313131	LIVI GOLGGII	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	Π <b>ΝΚ</b> ΜΝ	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNI <b>S</b> WN	_	_	_	_
всм	No indication	NG	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	_	_	UNK WN	_	_	_	_



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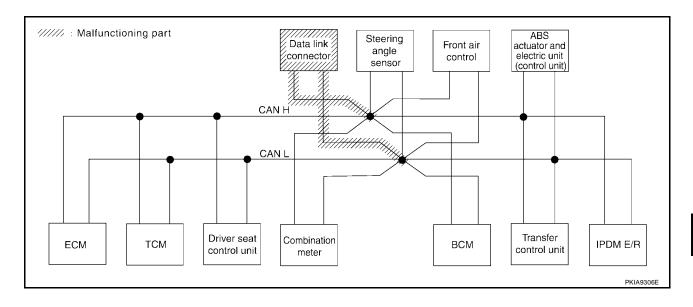
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Case 9
Check data link connector circuit. Refer to <u>LAN-454</u>, "<u>Data Link Connector Circuit Check</u>".

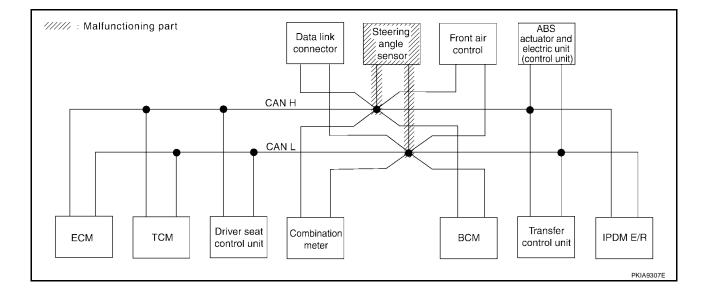
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
02220101011	LINI GOTGOTT	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
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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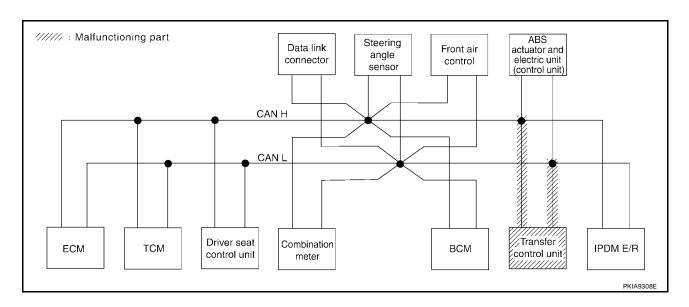
Case 10
Check steering angle sensor circuit. Refer to <u>LAN-455</u>, "Steering Angle Sensor Circuit Check".

						CAN DIA	G SUPPOR	TMNTR			
SELECT SYSTI	EM screen	Initial	Transmit				Receive c	liagnosis			
022201 01011	LIVI SOLCOII	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	_	UNKWN	-	-	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
BCM	No indication	NG	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	_	_	_	_



Case 11
Check transfer control unit circuit. Refer to <u>LAN-455</u>, "Transfer Control Unit Circuit Check".

						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
02220101011	LIW SOLCOII	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	_	Π <b>ΛΚ</b> ΜΝ	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	n <b>uk</b> wu	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-		
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	<b>NNR</b> WN	UNK WN	UN <b>K</b> ₩N	_	_	_	_	Π <b>ΝΚ</b> (ΛΝ	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	-	_	_	_		



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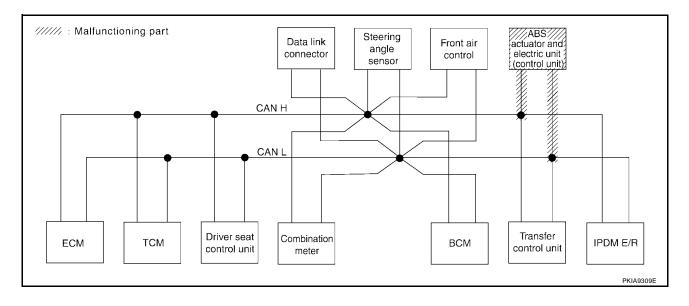
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Case 12

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-456</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis									
SELECT STOTI	LIVI SCIECTI	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	UNIAMN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	-	UNKWN	UNIXWN	-		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-		
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_		
ABS	_	NE	UNIXWN	UNKWN	UNKWN	_	_	UNIVAN	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	_	_		



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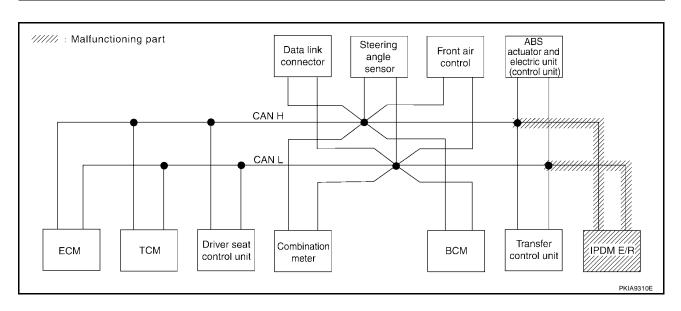
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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-456</u>, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
022201 01011	LIVI SCIECTI	diagnosis	1	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	∩ <b>NK</b> 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	_	_	_	_	UNK WN		
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 14

Check CAN communication circuit. Refer to LAN-457, "CAN Communication Circuit Check" .

						CAN DIA	G SUPPOF	T MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
3222313131	LIVI GOLGGII	diagnosis	diagnosis	ECM TCM		METER/ M&A	BCM/SEC	STRG	STRG AWD/4WD /e4WD		IPDM E/F	
ENGINE	_	NG	Π <b>ΛΚ</b> ΜΝ	_	UNK <b>W</b> N	<b>UNIX</b> WN	Π <b>ΛΚ</b> (ΜΝ	_	UNK WN	UNK WN	Π <b>ΝΚ</b> ΜΝ	
A/T	_	NG	UNKWN	UNK WN	_	UNI WN	_	-	<b>NNN</b> WN	UNIXWN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-	
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN	
ALL MODE AWD/4WD	_	NG	∩ <b>NK</b> WN	UNK WN	UNKWN	_	_	_	_	UNK WN	_	
ABS	_	NS	UNK/WN	UNKWN	UNKWN	_	_	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-457, "IPDM E/R Ignition Relay Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR					
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis									
3222313131	LIW GOTGOTT	diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	Ω <b>ΝΚW</b> N	UNKWN	UNKWN	_	UNKWN	UNIXWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/VN	UNKWN	UNKWN	_	_	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UN <b>K</b> ₩N	_	_	-	_	UNK WN	_		
ABS	_	NG	UNKWN	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 <u>LAN-457</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTI	FM screen	Initial	Transmit	Receive diagnosis								
OLLEGI GIGH	ZIVI SCICCII	diagnosis	1	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	UNIWN	_	UNKWN	_	_	η <b>νκ</b> γνν	UNKWN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_	
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_		_	_	UNKWN	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	
ABS		NG	UNKWN	UNK/WN	UNKWN	_	_	UNK WN	UNKWN	_	_	
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 (W), 8 (R) and harness connector F33 terminals 12 (W), 11 (R).

3 (W) - 12 (W)

: Continuity should exist.

8 (R) - 11 (R)

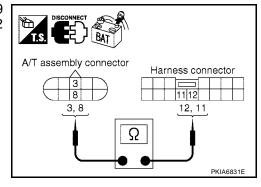
: Continuity should exist.

OK or NG

OK >> GO TO 3.

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NG >> Repair harness.



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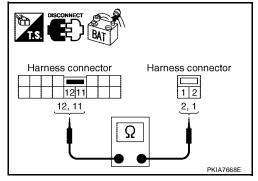
## 3. CHECK HARNESS FOR OPEN CIRCUIT

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

12 (W) - 2 (W) 11 (R) - 1 (R) : 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 (W), 1 (R) and harness connector B37 terminals 15 (W), 14 (R).

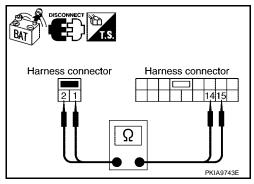
2 (W) - 15 (W) 1 (R) - 14 (R) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-432</u>, "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

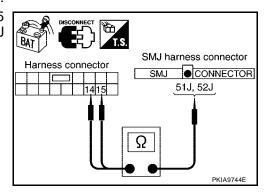
- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : Continuity should exist. 14 (R) - 52J (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR OPEN CIRCUIT

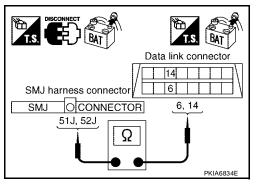
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-432</u>, "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

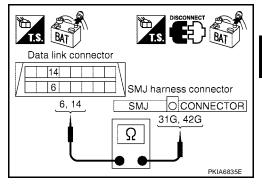
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (W), 14 (R) and harness connector M31 terminals 31G (W), 42G (R).

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

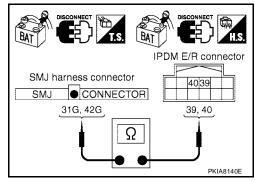
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-432, "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

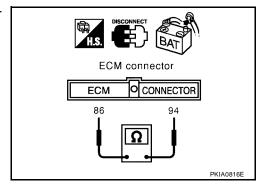
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (W) and 86 (R).

: 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.

- 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

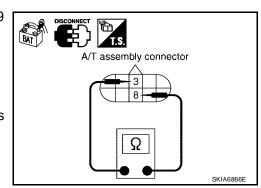
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

: 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 (W) and 19 (R).

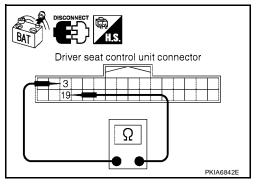
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

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



UKS00243

#### 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

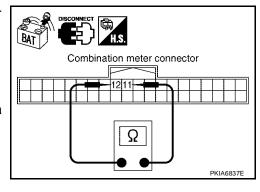
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (W) and 12 (R).

: 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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### **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

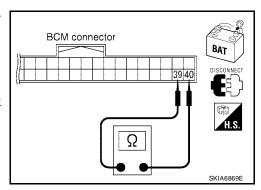
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-25, "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.
- 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

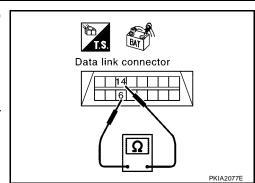
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

**6 (W) - 14 (R)** : Approx. **54 - 66**
$$\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to <u>LAN-432</u>, "Work Flow".

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



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## **Steering Angle Sensor Circuit Check**

## 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.
- Check resistance between steering angle sensor harness connector M47 terminals 3 (W) and 4 (R).

: Approx. 54 - 66 $\Omega$ 

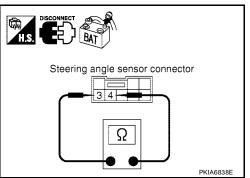
#### OK or NG

OK

>> Replace steering angle sensor.

NG

>> Repair harness between steering angle sensor 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

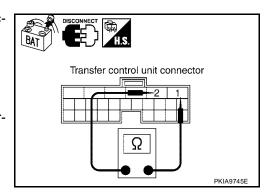
- Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

: 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

### 1. CHECK CONNECTOR

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- 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.

## 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 (W) and 15 (R).

: Approx. 54 - 66 $\Omega$ 

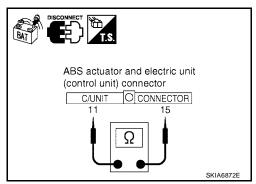
#### OK or NG

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**

### 1. CHECK CONNECTOR

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- 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 (W) and 40 (R).

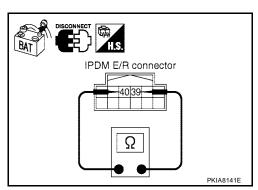
: Approx. 108 - 132 $\Omega$ 

#### 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
- 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.

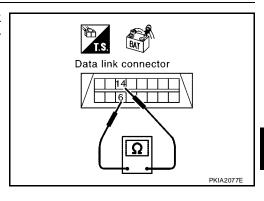
## 2. CHECK HARNESS FOR SHORT CIRCUIT

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

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

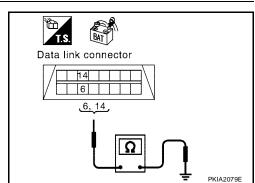
Check continuity between data link connector M22 terminals 6 (W), 14 (R) and ground.

> 6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to LAN-458, "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 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".

**LAN-457** Revision: January 2005 2004 Titan

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## **CAN SYSTEM (TYPE 14)**

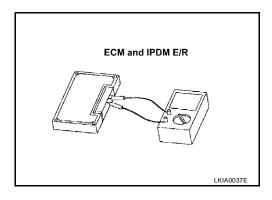
[CAN]

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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 15)**

#### PFP:23710

## **System Description**

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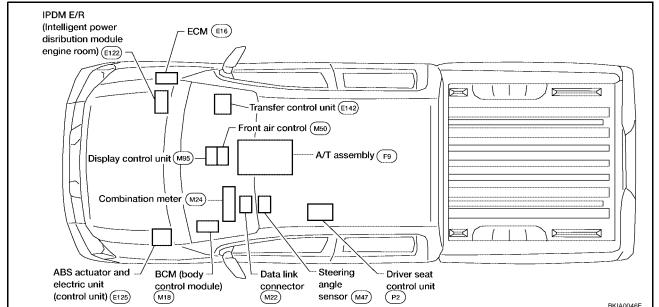
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information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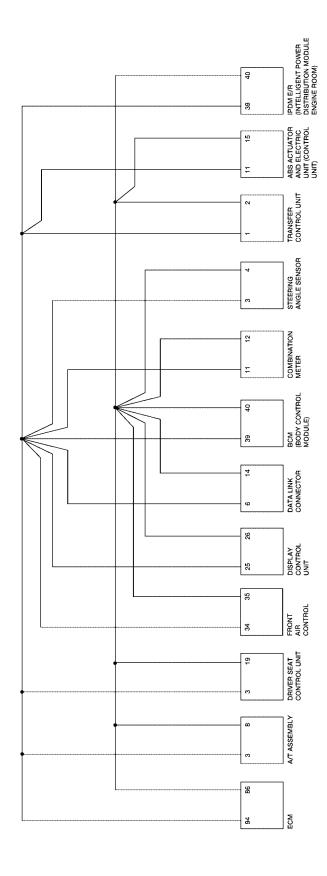


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Schematic UKS001X6



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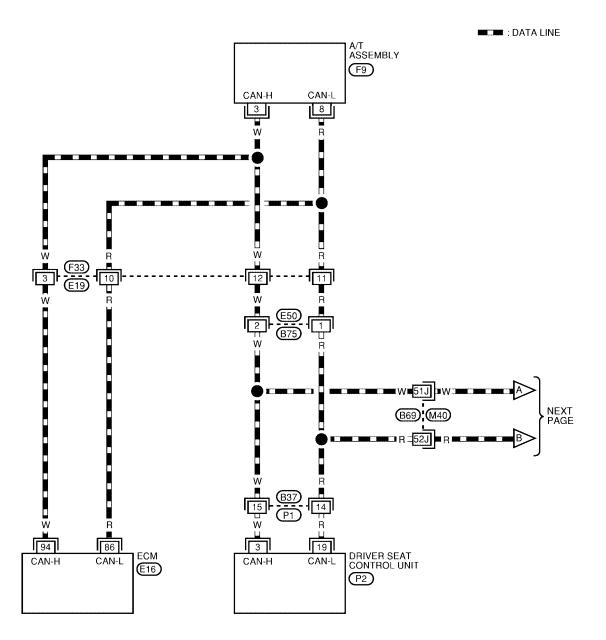
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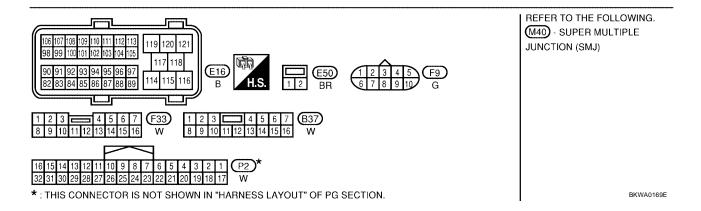
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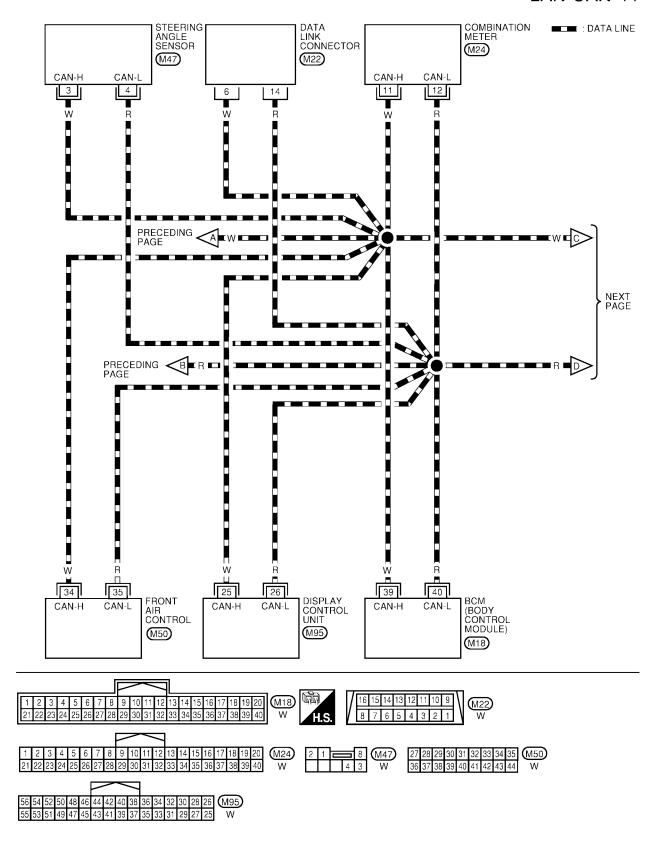
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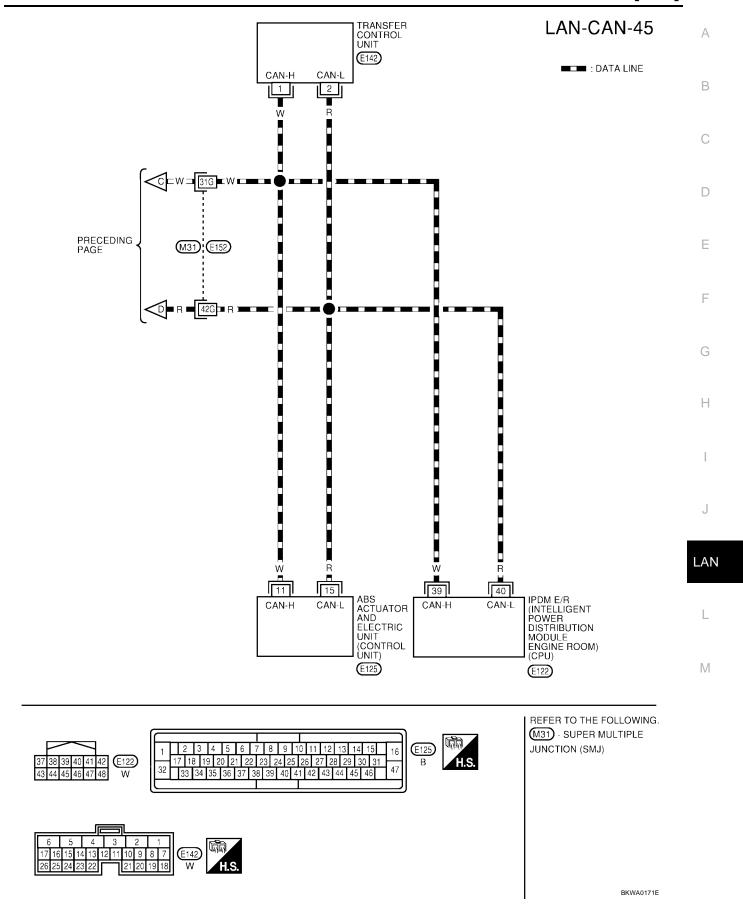
## LAN-CAN-43





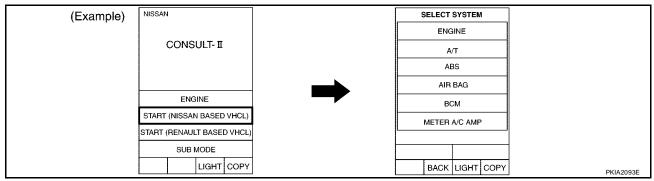
## LAN-CAN-44



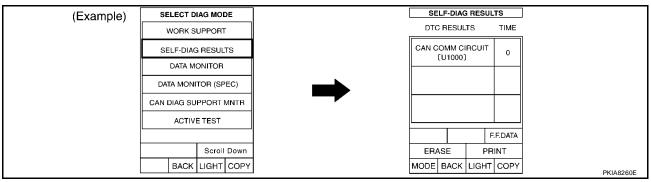


Work Flow

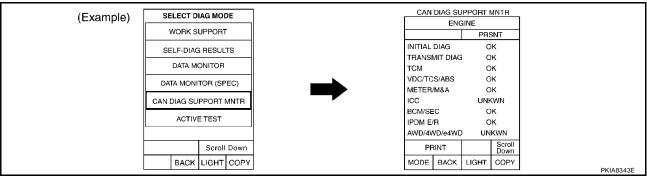
1. When there are no indications of "AUTO DRIVE POS.", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "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", "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-466, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG" or "UNKWN" in the check sheet table. Refer to <u>LAN-466</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-149</u>, "CAN Communication Line <u>Check"</u>.
- 7. Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-466</u>, "CHECK SHEET".

## **CAN SYSTEM (TYPE 15)**

[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-466</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-149">AV-149</a>, "CAN Communication Line Check".

9. According to the check sheet results (example), start inspection. Refer to <u>LAN-468</u>, "CHECK SHEET <u>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.

						OANI DIA	CHDDOL	OT MANITO				
SELECT SYST	<b>□</b>					CAN DIA	SUPPOR Rec	eive diagr				
SELECT SYST		Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWN
<b>A</b> /T	_	NG	UNKWN	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	_	-	_	_	_	UNKWI
ALL MODE AWD/4WD	1	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	_	UNKWN	_	UNKWN	-	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_
		SE	Attach cop LECT SY	y of STEM			Attach SELECT	copy of SYSTEM	1			
			CAN	N DIAG SU	Attach c display co JPPORT N	ntrol unit	check she	et				

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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	
ALL MODE AWD/4WD	ABS	IPDM E/R	
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 AUTO DRIVE POS. CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of	
ALL MODE AWD/4WD	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

Revision: January 2005 LAN-467 2004 Titan

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

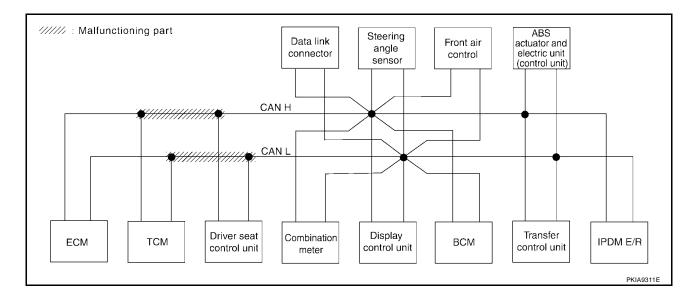
#### NOTE:

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-484</u>, "Circuit Check Between TCM and Driver Seat Control Unit".

						CAN DIA	SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
022201 0101	LIW SOFCOII		diagnosis	ECM	ТСМ	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNI WN	UN <b>∳</b> WN	_	_	∩ <b>M</b> MN	UNR WN	UN <b>K</b> ∳\N
A/T	_	NG	UNKWN	UNKWN	-	UNK/WN	-	-	_	UN <b>K</b> ₩N	Ω <b>ΝΚ</b> ⁄ΜΝ	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNIKWN	UNKWN	UNKWN	_	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN TRC 3	_	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_	_	CAN CIRC
всм	No indication	NG	UNKWN	UNIKWN	_	UNKWN	_	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNION	UNWWN	_	_	-	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNK WN	UN <b>K</b> ₩N	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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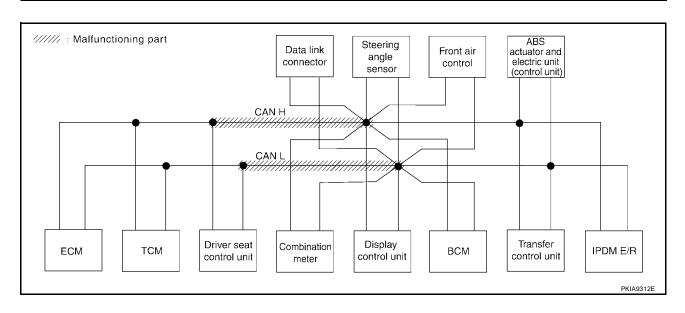
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-485</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

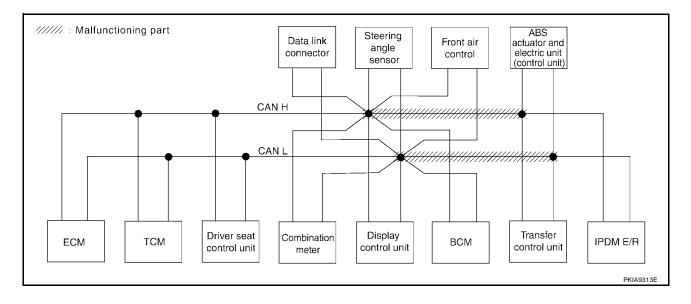
						CAN DIAG	SUPPO	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	2111 0010011		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN		UNKWN	UNI <b>W</b> WN	UNKWN	1	_	Ω <b>ΝΚ</b> /WΝ	UNIXWN	Π <b>ΝΚ</b> ΙΛΝ
A/T	_	NG	UNKWN	UNKWN	-	Π <b>ИΚ</b> ΜИ	1	-	_	Ω <b>ΝΚW</b> N	Ω <b>ΝΚ</b> /WN	_
AUTO DRIVE POS.	No invication	NG	UNKWN	Ī	UNKWN	UNKWN	UNKWN	-	_	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN TRC 3	_	CAN CIRC 5	CAN CIRC 2	-	CAN CIRC 4	_	_	CAN CIRC 7
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	1	-	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNION	UNION	_	_	-	_	_	UNKWN	_
ABS	_	NG	UNKWN	<b>UNKW</b> N	UNKWN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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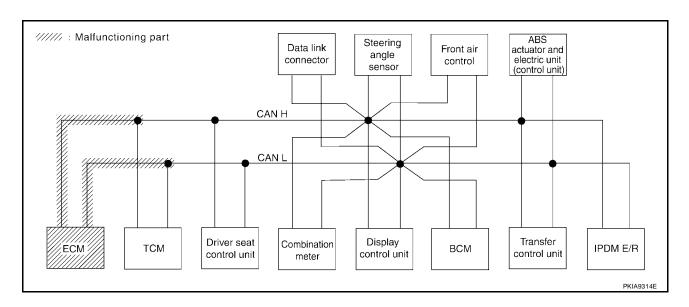
Case 3
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-486, "Circuit Check Between Data Link Connector and IPDM E/R"</u>.

						CAN DIA	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI GOICGII		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE		NG	UNKWN	1	UNKWN	UNKWN	UNKWN	-	_	Ω <b>ΝΚ</b> ⁄ΜΝ	UN <b>K</b> WN	UNK <b>W</b> N
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	-	_	_	Ω <b>ΝΚ</b> Ι ΜΝ	Ω <b>ΝΚ</b> ⁄⁄⁄⁄⁄ΝΝ	_
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	_	_	CANOIRC 7
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	_	_	_	-	UNIWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNK WN	_	-	UNK WN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



Case 4
Check ECM circuit. Refer to LAN-487, "ECM Circuit Check".

						CAN DIA	3 SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	nosis			
022201 0101	2.11 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNK WN	1	Π <b>ИΚ</b> ΜИ	UNK WN	UNK WN	_	_	UNK WN	UN <b>A</b> MN	n <b>uk</b> yı.
A/T	_	NG	UNKWN	UN <b>W</b> NN	_	UNKWN	-	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	UNKWN	_	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CANAIRC 3	-	CAN CIRC 5	CAN CIRC 2	_	CAN CIRC 4	_		CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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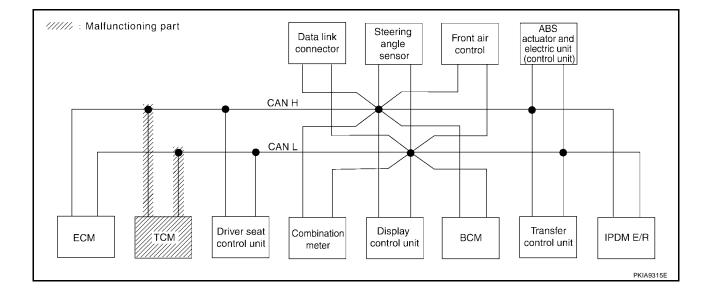
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Case 5
Check TCM circuit. Refer to <u>LAN-487</u>, "TCM Circuit Check" .

						CAN DIA	3 SUPPOI	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
022201 0101	LIVI GOICGII		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	Π <b>ΜΚ</b> ΜΝ	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	UNKWN	_	_	_	UNK WN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNI <b>W</b> 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
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	_	-	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNION	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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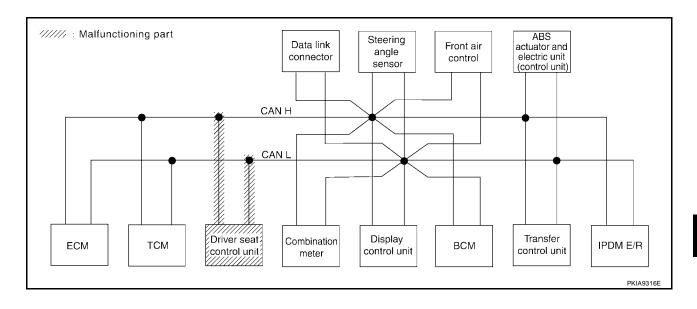
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-488</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

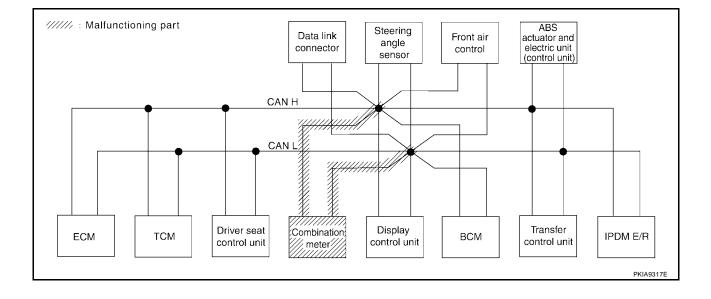
						CAN DIAC	G SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	iosis			
		diagnosis		ECM	ТСМ	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	UNKWN	UNKWN	_
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	1	UNKWN	_	_	_	_	_	UNKW
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 7
Check combination meter circuit. Refer to <u>LAN-488</u>, "Combination Meter Circuit Check".

						CAN DIAG	3 SUPPOI	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	nosis			
322231 3131	LIVI GOICGII	diagnosis		ECM	ТСМ	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE		NG	UNKWN	-	UNKWN	UNK/WN	UNKWN	_	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	Π <b>ΝΚ</b> ΜΝ	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNK/WN	UNKWN	_	_	_	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CARC 5	CAN CIRC 2	_	CAN CIRC 4	_	_	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNK/WN	_	_	_	_	_	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	_	_	_	_	_



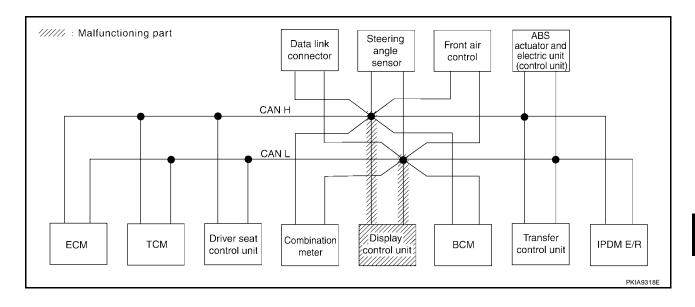
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Case 8
Check display control unit circuit. Refer to <u>LAN-489</u>, "<u>Display Control Unit Circuit Check</u>".

						CAN DIA	3 SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis	_		
		diagnosis			тсм	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	l	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	-	_	_	_	_
Display control unit	_	CAN COMM	CANORC 1	CAN ORC 3	_	CANCERC 5	CAN CRC 2	ı	CANCERC 4	_	-	CAN CAC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	-	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_	_	_	_
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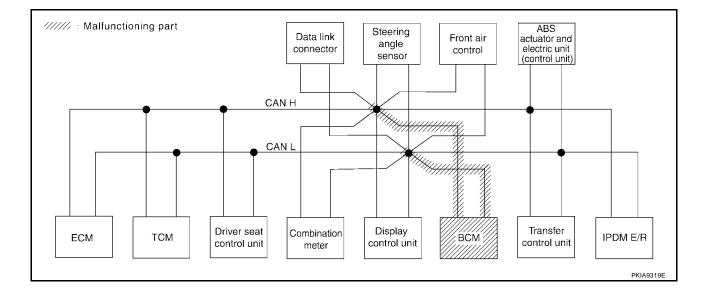


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Case 9
Check BCM circuit. Refer to <u>LAN-489</u>, "BCM Circuit Check" .

						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	osis			
0222010101	2111 0010011		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	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	ı	UNKWN	ı	ı	_	UNKWN	UNKWN	I
AUTO DRIVE POS.	No indication	NG	UNKWN		UNKWN	UNKWN	UNK WN	ı	_	_	_	1
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	CAN CAC 2	_	CAN CIRC 4	_	_	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKWN
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	I	ı	_	_	UNKWN	1
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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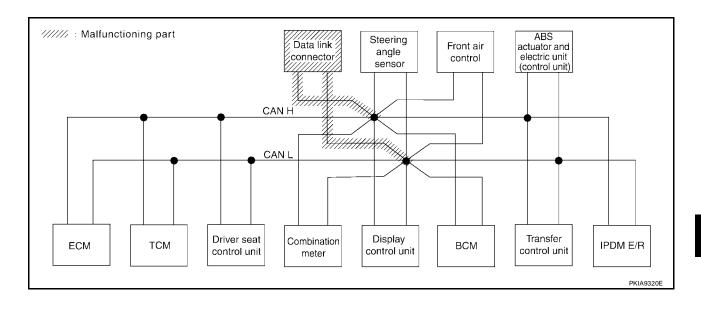
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Case 10

Check data link connector circuit. Refer to LAN-490, "Data Link Connector Circuit Check" .

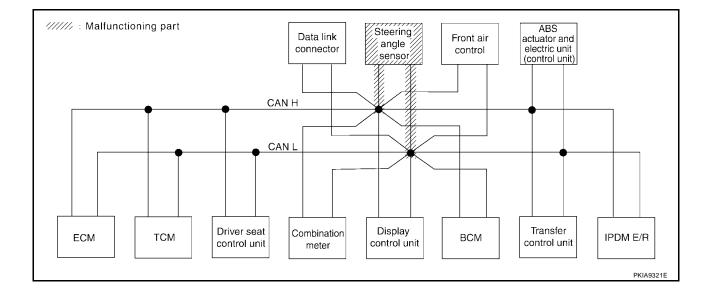
						CAN DIAG	SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
0222010101	2111 0010011	diagnosis		ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWN
A/T	ı	NG	UNKWN	UNKWN	I	UNKWN	_	ı	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	ı	_	_		_
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
ALL MODE AWD/4WD	I	NG	UNKWN	UNKWN	UNKWN	_	-	ı	_	_	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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Case 11
Check steering angle sensor circuit. Refer to <u>LAN-490</u>, "Steering Angle Sensor Circuit Check".

						CAN DIAG	3 SUPPOI	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	osis			
GEEEGT GTGT	LIVI SCIECTI		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	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	_
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
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	_	UNI <b>S</b> WN	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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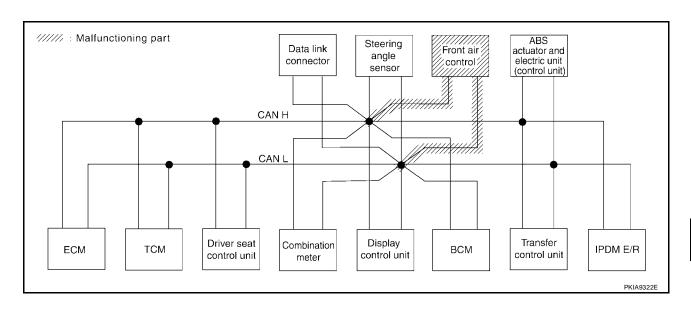
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Case 12
Check front air control circuit. Refer to <u>LAN-491</u>, "Front Air Control Circuit Check".

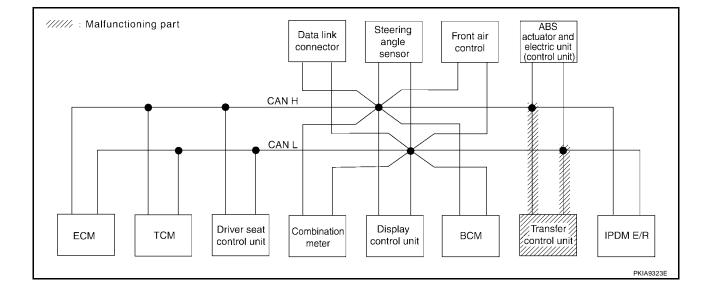
						CAN DIAG	3 SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagr	nosis			
322231 3101	EIW GOICGII	diagnosis			ТСМ	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	-	_	UNKWN	UNKWN	-
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	CAN CIRC 2	-	CAN CRC 4	_	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	_	_	_	_	-	UNKWI
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	1	-
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	_	_	-



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Case 13
Check transfer control unit circuit. Refer to <u>LAN-491, "Transfer Control Unit Circuit Check"</u>.

						CAN DIAC	G SUPPOR	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit				Rec	eive diagn	iosis			
3222313131		diagnosis	l I	ECM	тсм	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UN <b>₩</b> WN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	-	_	_	Ω <b>ΝΚ</b> ⁄γνΝ	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
ALL MODE AWD/4WD	_	NG	UN <b>W</b> WN	UNKWN	UNI <b>W</b> WN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	UNR WN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_



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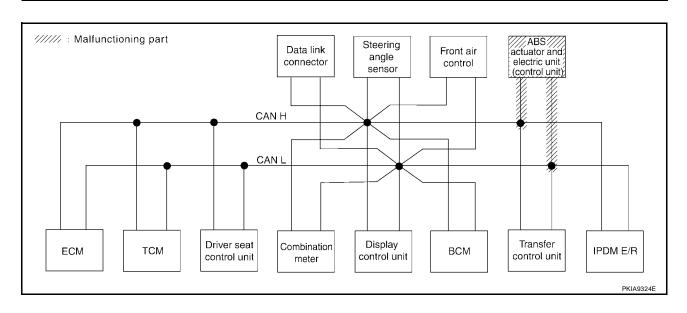
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Case 14

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-492</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

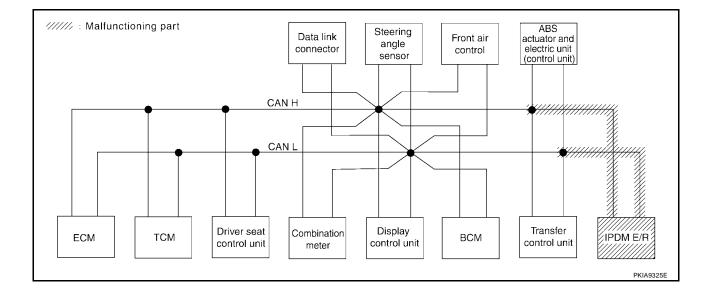
		CAN DIAG SUPPORT MNTR													
SELECT SYSTEM screen		Initial	nitial Transmit		Receive diagnosis										
322231 3131	SELECT STOTEM SCIENT		diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	1	_	UNKWN	UNIV	UNKWN			
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	UNKWN	Π <b>ИΚ</b> (ΜИ	_			
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	ı	UNKWN	_	-	_	_	-	UNKWN			
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNK WN	_			
ABS	_	N	UNK WN	UNKWN	UM WN	_	_	UNKWN	_	UNR WN	-	_			
IPDM E/R	No indication	_	UNKWN	UNKWN		_	UNKWN	_	_	_	_	_			



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Case 15
Check IPDM E/R circuit. Refer to <u>LAN-492</u>, "IPDM E/R Circuit Check" .

		CAN DIAG SUPPORT MNTR												
SELECT SYSTEM screen		Initial Transmit		Receive diagnosis										
		Initial diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_	UNKWN	UNKWN	UNK WN		
A/T	-	NG	UNKWN	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 CAC		
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	_	_	UN <b>KW</b> N		
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 15)**

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Case 16

Check CAN communication circuit. Refer to LAN-493, "CAN Communication Circuit Check" .

		CAN DIAG SUPPORT MNTR												
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis										
		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/		
ENGINE	_	NG	UNK WN	1	UN <b>K</b> ₩N	UNI <b>W</b> WN	UNK WN	_	_	UN <b>K</b> ₩N	UNI <b>W</b> WN	UNKWI		
A/T	_	NG	UNKWN	UN <b>∳</b> WN	_	Π <b>ИΚ</b> ΜИ	_	_	_	UN <b>K</b> ₩N	UNK WN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	UNKWN	_	_	_		_		
Display control unit	_	CAN COMM	CAN CAC 1	CAN CRC 3	_	CAN CAC 5	CAN CAC 2	_	CANCAC 4	_	_	CANCERC		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	-	UNKWN		
ALL MODE AWD/4WD	_	NG	UNK WN	UNKWN	UNI <b>W</b> WN	_	_	_	_	_	UNYWN	_		
ABS	_	<b>N</b> €	UNK <b>W</b> N	UNK WN	UNK WN	_	_	UNK WN	_	UNK WN	-	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_		

## Case 17

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-493, "IPDM E/R Ignition Relay Circuit Check"}}$ .

	CAN DIAG SUPPORT MNTR													
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis										
32223. 3. 012W 30133H		diagnosis		ECM	TCM	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	ı	_	UNKWN	UNK WN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	I	UNKWN	ı	ı	_	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		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	I	ı	_	_	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	ı	UNKWN	_	UNKWN	ı	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_		

#### Case 18

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-493, "IPDM E/R Ignition Relay Circuit Check".

		CAN DIAG SUPPORT MNTR												
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis										
SEEE OF OF OFFICE OF SCIENCE		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	STRG	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNK WN	-	UN <b>K</b> ₩N	_	_	_	UN <b>W</b> WN	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		
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKWN		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_		
ABS	_	NG	UNKWN	UN <b>K</b> VN	UNKWN	_	_	UN <b>K</b> ₩N	_	UNIV	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_	_		

## Circuit Check Between TCM and Driver Seat 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

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

3 (W) - 12 (W)

: Continuity should exist.

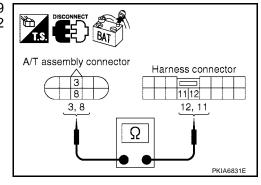
8 (R) - 11 (R)

: 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 (W), 11 (R) and harness connector E50 terminals 2 (W), 1 (R).

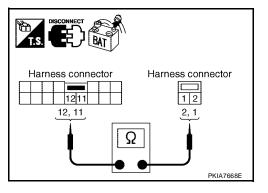
12 (W) - 2 (W) 11 (R) - 1 (R)

: Continuity should exist.

: Continuity should exist.

#### OK or NG

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



# 4. CHECK HARNESS FOR OPEN CIRCUIT

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

2 (W) - 15 (W) 1 (R) - 14 (R)

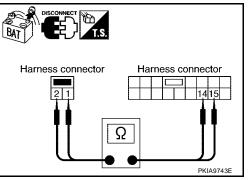
: Continuity should exist.

: Continuity should exist.

## OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-464, "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 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

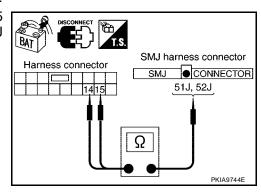
- Disconnect harness connector B37 and harness connector B69.
- 2. Check continuity between harness connector B37 terminals 15 (W), 14 (R) and harness connector B69 terminals 51J (W), 52J (R).

15 (W) - 51J (W) : Continuity should exist. 14 (R) - 52J (R) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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

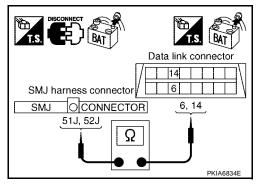
Check continuity between harness connector M40 terminals 51J (W), 52J (R) and data link connector M22 terminals 6 (W), 14 (R).

51J (W) - 6 (W) : Continuity should exist. 52J (R) - 14 (R) : Continuity should exist.

## OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-464</u>, "Work Flow".

NG >> Repair harness.



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

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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 M31
- Harness connector E152

#### OK or NG

1.

OK >> GO TO 2.

NG >> Repair terminal or connector.

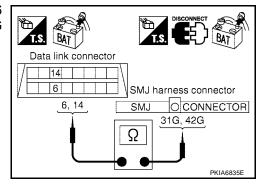
# 2. CHECK HARNESS FOR OPEN CIRCUIT

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

6 (W) - 31G (W) : Continuity should exist. 14 (R) - 42G (R) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

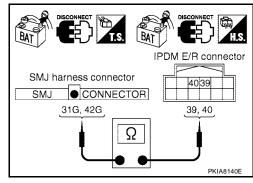
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (W), 42G (R) and IPDM E/R harness connector E122 terminals 19 (W), 40 (R).

31G (W) - 39 (W) : Continuity should exist. 42G (R) - 40 (R) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-464</u>, "Work Flow".

NG >> Repair harness.



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**ECM Circuit Check** 

# 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 (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

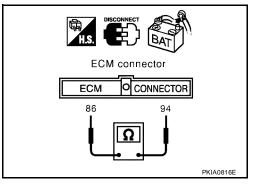
- Disconnect ECM connector.
- Check resistance between ECM harness connector E16 termi-2 nals 94 (W) and 86 (R).

: **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

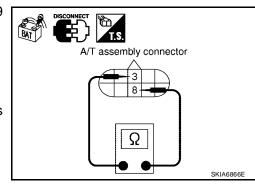
- Disconnect A/T assembly connector. 1.
- Check resistance between A/T assembly harness connector F9 terminals 3 (W) and 8 (R).

3 (W) - 8 (R) : 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.
- 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 (W) and 19 (R).

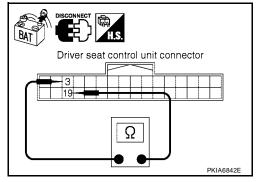
: Approx. 54 - 66 $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

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



# **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

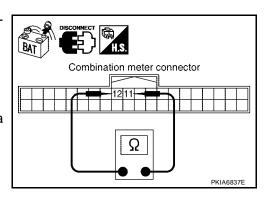
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (W) and 12 (R).

: 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.

- Disconnect the negative battery terminal. 2.
- 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

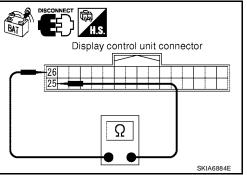
- Disconnect display control unit connector. 1.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (W) and 26 (R).

: 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

- 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

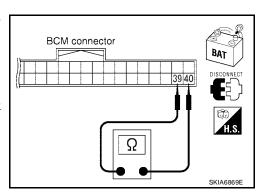
- Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (W) and 40 (R).

: Approx. 54 - 66 $\Omega$ 

OK or NG

OK >> Replace BCM. Refer to BCS-25, "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

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- 1. 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

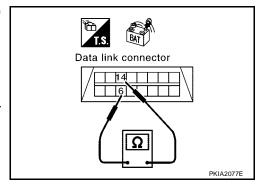
Check resistance between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : Approx. 54 - 
$$66\Omega$$

#### OK or NG

OK >> Diagnose again. Refer to <u>LAN-464</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

- 1. Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M47 terminals 3 (W) and 4 (R).

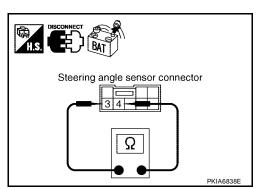
**3 (W) - 4 (R)** : Approx. 
$$54 - 66\Omega$$

#### 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

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

>> GO TO 2. OK

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 (W) and 35 (R).

: Approx. 54 - 66 $\Omega$ 

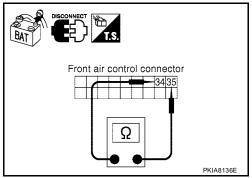
#### OK or NG

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

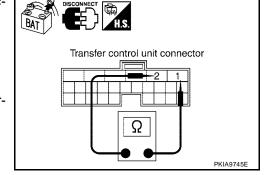
- Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (W) and 2 (R).

: 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 (W) and 15 (R).

: Approx. 54 - 66 $\Omega$ 

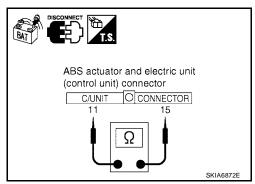
#### OK or NG

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**

1. CHECK CONNECTOR

UKS0024R

- 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

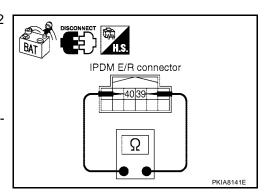
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (W) and 40 (R).

: 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.
- 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
- 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

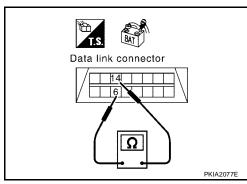
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (W) and 14 (R).

6 (W) - 14 (R) : 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 (W), 14 (R) and ground.

6 (W) - Ground : Continuity should not exist. 14 (R) - Ground : Continuity should not exist.

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-494, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.

# Data link connector 14 6, 14 PKIA2079E

# 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>.

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# **CAN SYSTEM (TYPE 15)**

[CAN]

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Component Inspection
ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- WIPDM 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 ( $\Omega$ ) (Approx.)			
ECM	94 - 86	108 - 132			
IPDM E/R	39 - 40	100 - 132			

