SECTION LAN SYSTEM

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PRECAUTIONS

PRECAUTIONS

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

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

WARNING:

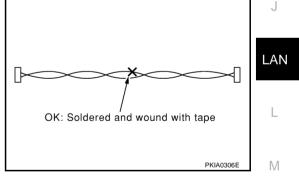
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation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

Precautions For Trouble Diagnosis CAN SYSTEM

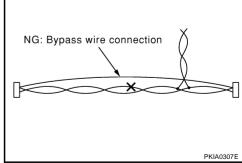
- Do not apply voltage of 7.0V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0V or less.
- Be sure to turn ignition switch off and disconnect negative battery terminal before checking the circuit.

Precautions For Harness Repair CAN SYSTEM

• 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.)



System Description

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

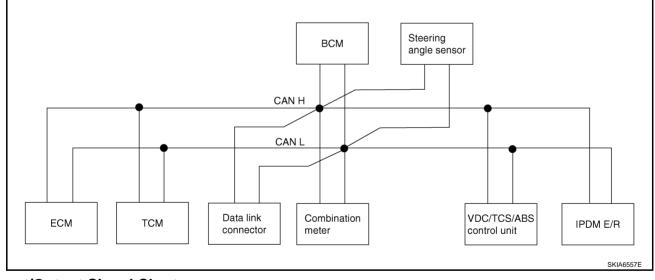
CAN Communication Unit

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

, ,	57 7 71	5						
Body type	Sedan							
Axle	2WD							
Engine	VQ35DE							
Transmission	A	M/T						
Brake control		VDC						
CAN system type	1	3	2					
CAN system trouble diagnosis	LAN-8 (Up to serial 329287*)	LAN-55 (From serial 329288*)	LAN-33					

*: For further information, refer to GI-47, "IDENTIFICATION NUMBER" .

TYPE 1/TYPE 3 System Diagram



Input/Output Signal Chart

						1. 1141151111	
Signals	ECM	ТСМ	Combina- tion meter	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Engine torque signal	Т	R					
Engine speed signal	Т	R	R			R	
Engine coolant temperature signal	Т	R	R				
Accelerator pedal position signal	Т	R				R	
Closed throttle position signal	Т	R					
Wide open throttle position signal	Т	R					
Battery voltage signal	Т	R					

T: Transmit R: Receive

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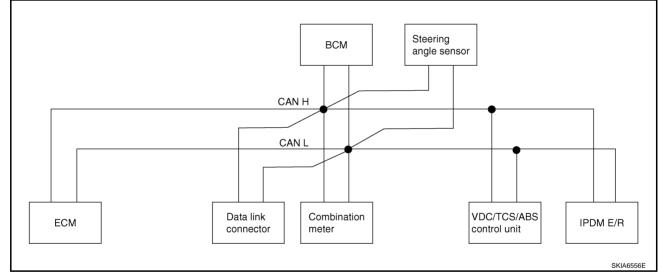
								ı.
Signals	ECM	ТСМ	Combina- tion meter	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R	А
Stop lamp switch signal		R	Т					-
Fuel consumption monitor signal	Т		R					В
A/T self-diagnosis signal	R	Т						-
A/T CHECK indicator lamp signal		Т	R					
A/T position indicator signal		Т	R			R		
ABS operation signal		R				Т		-
A/T shift schedule change demand signal		R				Т		D
A/C switch signal	R			Т				-
A/C compressor request signal	Т						R	E
A/C compressor feedback signal	Т		R					-
Blower fan motor switch signal	R			Т				-
Cooling fan motor operation signal	Т						R	- F
Position lights request signal			R	Т			R	-
Low beam request signal				Т			R	G
Low beam status signal	R						Т	=
High beam request signal			R	Т			R	-
High beam status signal	R						Т	H
Front fog lights request signal				Т			R	-
			R			Т		-
Vehicle speed signal	R	R	Т	R				-
Sleep request 1 signal			R	Т				-
Sleep request 2 signal				Т			R	J
Wake up request 1 signal			R	Т			R	-
Wake up request 2 signal			R	Т			R	LAN
Door switch signal (without naviga- tion system)			R	Т			R	
Door switch signal (with navigation system)			Т	R				L
Turn indicator signal			R	Т				-
Seat belt buckle switch signal			Т	R				M
Oil pressure switch signal			R				Т	-
Buzzer output signal			R	Т				-
ASCD SET lamp signal	Т		R					-
ASCD CRUISE lamp signal	Т		R					-
ASCD OD cancel request signal	Т	R						-
ASCD operation signal	Т	R						-
Output shaft revolution signal	R	Т						-
Front wiper request signal				Т			R	-
Front wiper stop position signal				R			Т	-
Rear window defogger switch signal				Т			R	-
Rear window defogger control sig- nal	R						Т	-
Manual mode signal		R	Т					-

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Signals	ECM	ТСМ	Combina- tion meter	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Not manual mode signal		R	Т				
Manual mode shift up signal		R	Т				
Manual mode shift down signal		R	Т				
Manual mode indicator signal		Т	R				
Hood switch signal				R			Т
Theft warning horn request signal				Т			R
Horn chirp signal				Т			R
Steering angle sensor signal					Т	R	
Malfunction indicator lamp signal (Type 3 only: From serial 329288*)	Т		R				
Fuel level sensor signal (Type 3 only: From serial 329288*)	R		Т				
Turbine revolution signal (Type 3 only: From serial 329288*)	R	т					

*: For further information, refer to GI-47, "IDENTIFICATION NUMBER" .

TYPE 2 System Diagram



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	Combina- tion meter	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Engine speed signal	Т	R			R	
Engine coolant temperature signal	Т	R				
Accelerator pedal position signal	Т				R	
Fuel consumption monitor signal	Т	R				
A/C switch signal	R		Т			
A/C compressor request signal	Т					R
A/C compressor feedback signal	Т	R				
Blower fan motor switch signal	R		Т			
Cooling fan motor operation signal	Т					R

Revision; 2004 April

Steering VDC/TCS/ Combina-А ECM BCM ABS IPDM E/R Signals angle tion meter sensor control unit R Т R Position lights request signal В т R Low beam request signal Low beam status signal R R т High beam request signal R т R High beam status signal R R т Front fog lights request signal Т R т D R Vehicle speed signal т R R R т Sleep request 1 signal F т Sleep request 2 signal R Wake up request 1 signal R т Wake up request 2 signal R т F Door switch signal (without navigation system) R т R Т Door switch signal (with navigation system) R R т Turn indicator signal т R Seat belt buckle switch signal R т Oil pressure switch signal Н R т Buzzer output signal Malfunction indicator lamp signal Т R ASCD SET lamp signal Т R ASCD CRUISE lamp signal Т R R Т Fuel level sensor signal Front wiper request signal Т R R т Front wiper stop position signal LAN R Rear window defogger switch signal т Rear window defogger control signal R R т Hood switch signal R Т Theft warning horn request signal Т R т Horn chirp signal R т R Steering angle sensor signal Μ

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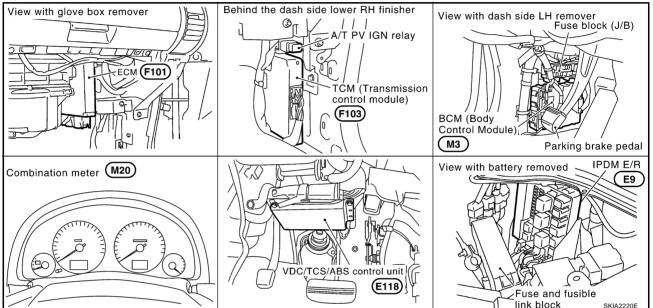
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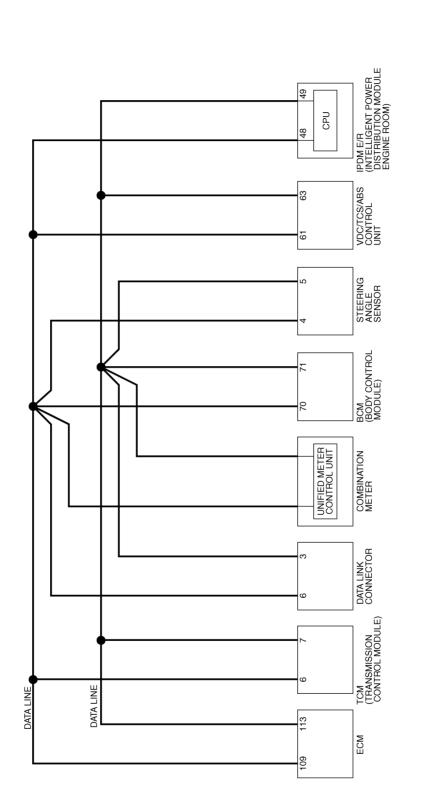
System Description

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

Component Parts and Harness Connector Location



Schematic



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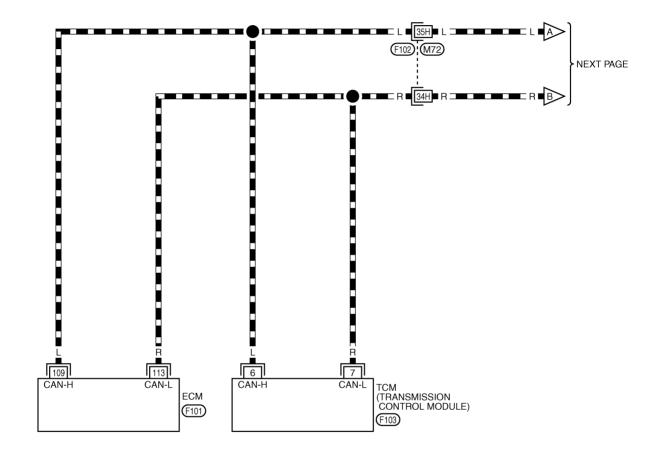
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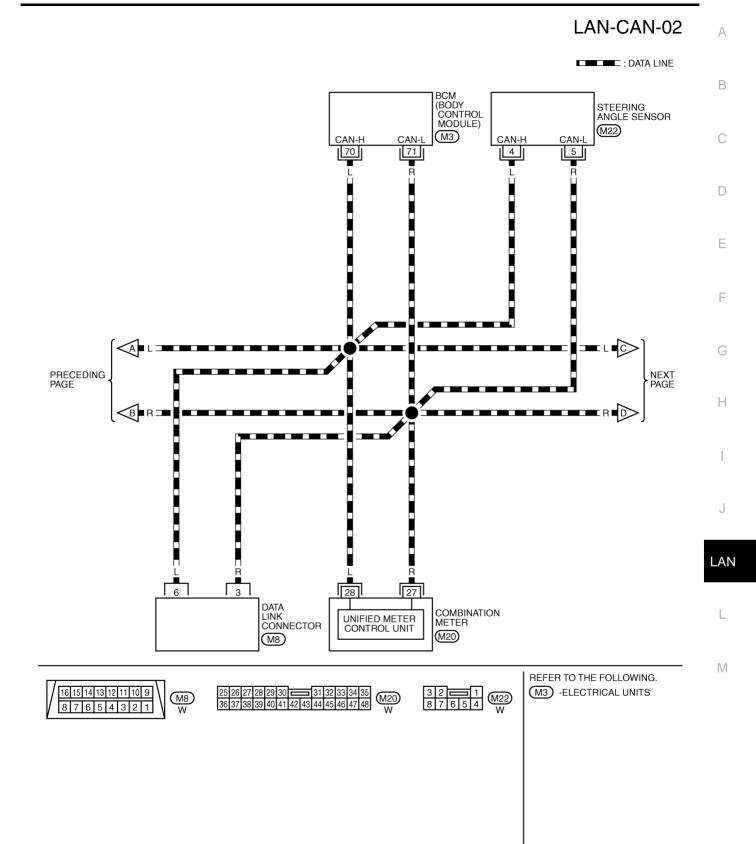
DATA LINE



REFER TO THE FOLLOWING. (F102) -SUPER MULTIPLE JUNCTION (SMJ) (F101), (F103) -ELECTRICAL UNITS

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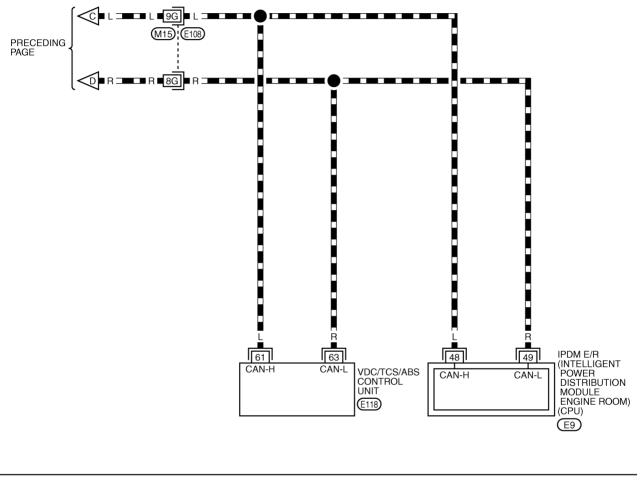
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DATA LINE





REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ) (E118) -ELECTRICAL UNITS

TKWT0956E

Work Flow

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "BCM" and "ABS" displayed on CON-SULT-II.

(Example)	SELECT DIAG MODE	SELF-DIAG RESULTS	
· · · /	WORK SUPPORT	DTC RESULTS TIME	
	SELF-DIAG RESULTS	CAN COMM CIRCUIT (U1000) 0	
	DATA MONITOR		
	DATA MONITOR (SPEC)		
	CAN DIAG SUPPORT MNTR		
	ACTIVE TEST		
		F.F.DATA	
	Scroll Down	ERASE PRINT	
	BACK LIGHT COPY	MODE BACK LIGHT COPY	

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

(Example)	SELECT DIAG MODE	_	CAN DIAG SUPPORT	MNTR
(Example)	[]		ENGINE	
	WORK SUPPORT		PR	BNT
	SELF-DIAG RESULTS			к
				к
	DATA MONITOR			K
	DATA MONITOR (SPEC)		DC/TCS/ABS C	K
		M	ETER/M&A C	к
	CAN DIAG SUPPORT MNTR	IC	C UNI	(WN
		BC	CM/SEC C	ĸ
	ACTIVE TEST	IP	DM E/R C	ĸ
		AV	ND/4WD/e4WD UN	KWN
	Scroll Down		PRINT	Scroll Down
	BACK LIGHT COPY	м	ODE BACK LIGHT	СОРҮ
				PKIA8343E

- 3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-14</u>, "CHECK SHEET".
- Based on the "CAN DIAG SUPPORT MNTR" results, put marks "v" onto the items with "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-14, "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.
- 5. According to the check sheet results (example), start inspection. Refer to <u>LAN-15, "CHECK SHEET</u> <u>RESULTS (EXAMPLE)"</u>.

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CHECK SHEET

NOTE:

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

SELECT SYSTEM screen ENGINE	Initial	CAN DIAG SUPPORT MNTR Initial Transmit Transmit										
		Transmit			Re METER		sis	VDC/TCS	1			
ENGINE	diagnosis	diagnosis	ECM	ТСМ	/M&A	BCM/SEC	STRG	/ABS	IPDM E/I			
	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	I	UNKWN	UNKWN			
A/T	NG	UNKWN	UNKWN	-	UNKWN	-		UNKWN	-			
BCM	NG	UNKWN	UNKWN	-	UNKWN	-	-	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	-	-			
Symptoms :												
Attach co ENGIN SELF-DIAG F	VE		tach copy of A/T DIAG RESU		E	h copy of 3CM AG RESULTS		Attach co ABS SELF-DIAG F				
ENGINE			tach copy of A/T DIAG SUPP(MNTR		E CAN DIA	h copy of 3CM G SUPPORT INTR		Attach co ABS CAN DIAG SI MNTF	JPPORT			

CHECK SHEET RESULTS (EXAMPLE)

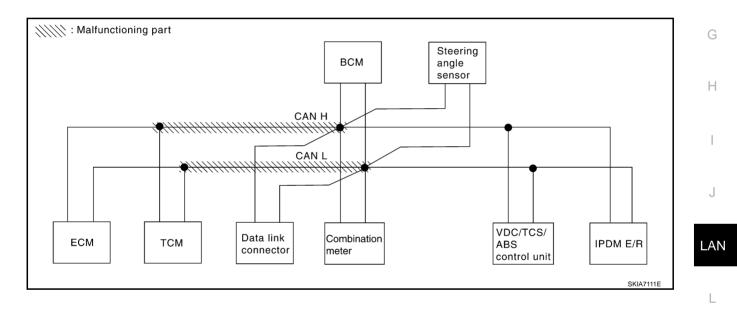
NOTE:

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

Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-24</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.

		CAN DIAG SUPPORT MNTR										
	1.000.0	-			Re	ceive diagno	sis					
	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R			
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK			
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	-	_	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	-	_			



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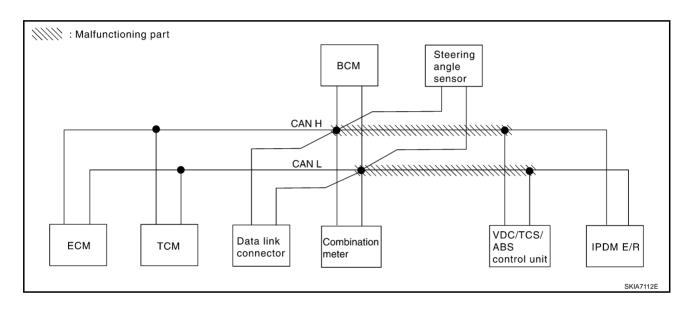
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Case 2

Check harness between data link connector and VDC/TCS/ABS control unit. Refer to <u>LAN-25, "Circuit Check</u> <u>Between Data Link Connector and VDC/TCS/ABS Control Unit"</u>.

				CAN DIAG SUPPORT MNTR								
SELECT SYSTEM	luciti e l	Turnersit			Re	ceive diagno	sis					
screen		diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R			
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	UNKWN	_	UNKWN				
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	-	_	-				
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNK	_	_			



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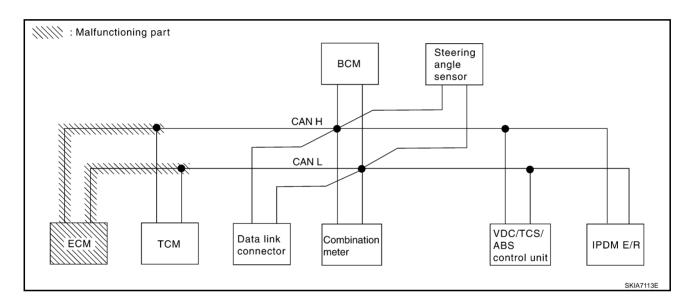
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Case 3

Check ECM circuit. Refer to LAN-26, "ECM Circuit Check" .

				CAN DIA	AG SUPPOR	RT MNTR			
SELECT SYSTEM	lucities l	Receive diagnosis							
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	UNKWN	
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	-
ВСМ	NG	UNKWN	UNKWN	-	UNKWN	-	_	-	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_



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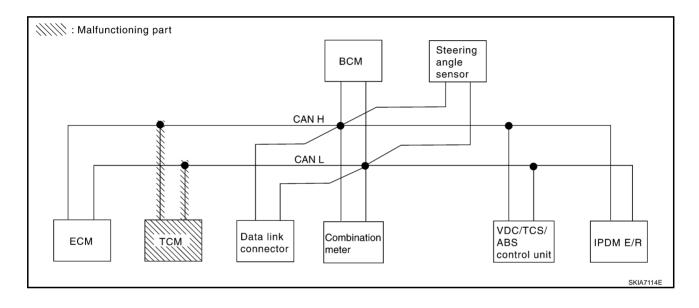
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Case 4

Check TCM circuit. Refer to LAN-26, "TCM Circuit Check" .

				CAN DIA	AG SUPPOF	RT MNTR						
SELECT SYSTEM	Initial Transmit			Receive diagnosis								
screen	Initial diagnosis	Transmit 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	_	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	_	_			



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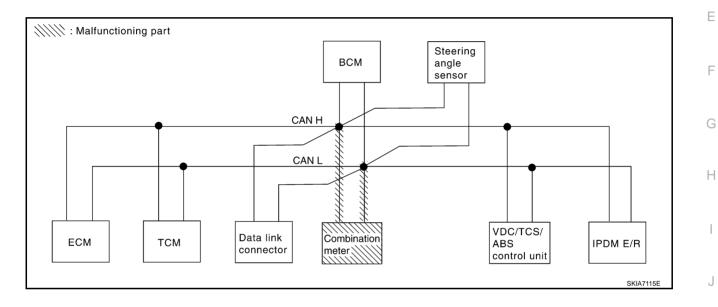
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Case 5

Check combination meter circuit. Refer to LAN-27, "Combination Meter Circuit Check" .

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM	1	Turnersit		Receive diagnosis								
screen	Initial diagnosis	Transmit 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	-	UNKWN	—	_	UNKWN	—			
BCM	NG	UNKWN	UNKWN	_		—	—	—	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNK	_	UNKWN	_	_			



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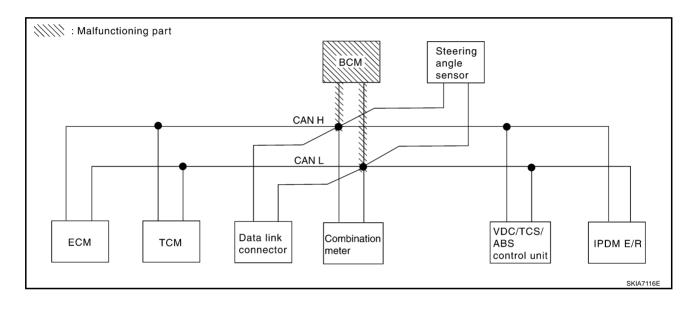
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Case 6

Check BCM circuit. Refer to LAN-27, "BCM Circuit Check" .

				CAN DIA	AG SUPPOR	RT MNTR						
SELECT SYSTEM	lucition l	T		Receive diagnosis								
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R			
ENGINE	NG	UNKWN	-	UNKWN	UNKWN		_	UNKWN	UNKWN			
A/T	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	-			
BCM	NG		UNKWN	-		-	_	-				
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	_	-			



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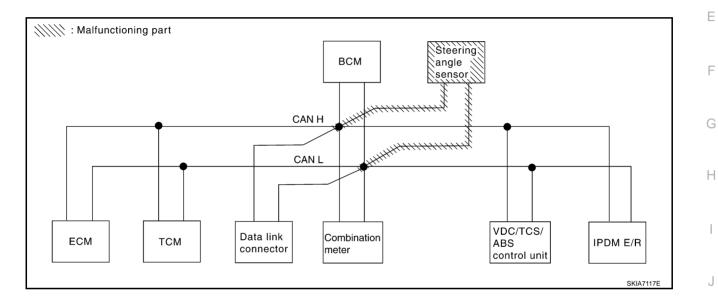
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Case 7

Check steering angle sensor circuit. Refer to LAN-28, "Steering Angle Sensor Circuit Check" .

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM	Initial Transmit		Receive diagnosis									
screen diagnosis	Transmit 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	-	UNKWN	-	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	-	UNKWN	_	_	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_			



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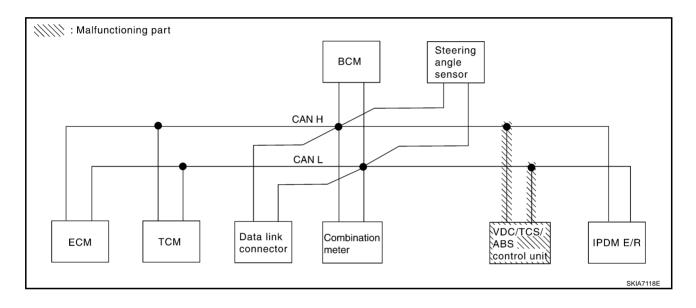
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Case 8

Check VDC/TCS/ABS control unit circuit. Refer to LAN-28, "VDC/TCS/ABS Control Unit Circuit Check" .

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM Initial	lucities l	Initial Transmit		Receive diagnosis								
screen	diagnosis	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	-	UNKWN	-	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	-	_	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNK	-	UNKWN	_	_			



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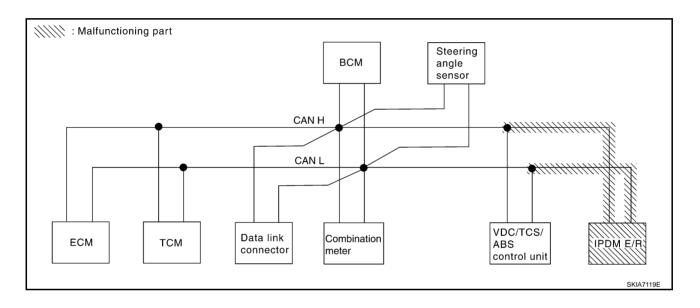
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Case 9

Check IPDM E/R circuit. Refer to LAN-29, "IPDM E/R Circuit Check" .

				CAN DIA	AG SUPPOR	T MNTR					
SELECT SYSTEM	luciti e l	Trendentit		Receive diagnosis							
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	-		
BCM	NG	UNKWN	UNKWN	_	UNKWN	_	_	—			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_		



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Case 10

Check CAN communication circuit. Refer to LAN-30, "CAN Communication Circuit Check" .

				CAN DIA	AG SUPPOR	T MNTR			
SELECT SYSTEM	luciti e l	Turnersit			Re	ceive diagno	sis		
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN		_	UNKWN	
A/T	NG	UNKWN	UNKWN	-	UNKWN	—	_	UNKWN	_
BCM	NG	UNKWN	UNKWN	_	UNKWN	—	_	-	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_

Case 11

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-32, "IPDM E/R Ignition Relay Circuit Check".

			CAN DIAG SUPPORT MNTR								
SELECT SYSTEM	lucities l	Initial Transmit		Receive diagnosis							
screen diagr	diagnosis	Initial Transmit diagnosis diagnosis NG UNKWN	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	-		
BCM	NG	UNKWN	UNKWN	_	UNKWN	-	_	-	UNKWN		
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	_	-		

Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-32</u>, "IPDM E/R Ignition Relay Circuit Check".

				CAN DIA	G SUPPOR	T MNTR						
SELECT SYSTEM	1	T		Receive diagnosis								
screen	Initial diagnosis	Transmit 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	-	UNKWN	—	_	UNKWN	_			
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	—	_	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_			

Circuit Check Between TCM and Data Link Connector 1. CHECK CONNECTOR

AKS009BM

PKIB0290E

- 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 F102
- Harness connector M72

OK or NG

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

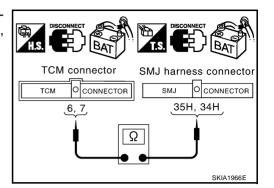
LAN-24

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

- 1. Disconnect TCM connector and harness connector F102.
- 2 Check continuity between TCM harness connector F103 terminals 6 (L), 7 (R) and harness connector F102 terminals 35H (L), 34H (R).
 - 6 (L) 35H (L)
 - 7 (R) 34H (R)
- : Continuity should exist.
- : Continuity should exist.

OK or NG

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



SMJ harness connector

35H, 34H

SMJ

• CONNECTOR

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Data link connector

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

Check continuity between harness connector M72 terminals 35H (L), 34H (R) and data link connector M8 terminals 6 (L), 3 (R).

- 35H (L) 6 (L) 34H (R) - 3 (R)
- : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-13, "Work Flow" .

NG >> Repair harness.

Circuit Check Between Data Link Connector and VDC/TCS/ABS Control Unit AKS009BN

1. CHECK CONNECTOR

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

OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect harness connector M15. 1.
- Check continuity between data link connector M8 terminals 6 2. (L), 3 (R) and harness connector M15 terminals 9G (L), 8G (R).
 - 6 (L) 9G (L)
 - 3 (R) 8G (R)

: Continuity should exist. : Continuity should exist.



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

- Data link connector SMJ harness connector 6 3 • CONNECTOR SMJ 6, 3 9G, 8G Ω SKIA1968E

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

- 1. Disconnect VDC/TCS/ABS control unit connector.
- Check continuity between harness connector E108 terminals 9G (L), 8G (R) and VDC/TCS/ABS control unit harness connector E118 terminals 61 (L), 63 (R).
 - 9G (L) 61 (L)
 - 8G (R) 63 (R)
- : Continuity should exist.
- : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-13, "Work Flow".

NG >> Repair harness.

ECM Circuit Check

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 109 (L) and 113 (R).

109 (L) - 113 (R)

: Approx. 108 - 132 Ω

OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between harness connector F102 and ECM.



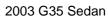
1. CHECK CONNECTOR

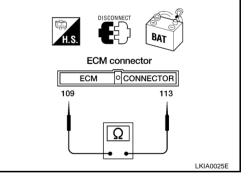
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of TCM for damage, bend and loose connection (control module side and harness side).

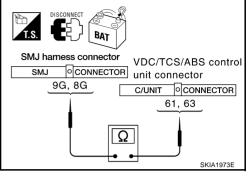
OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.



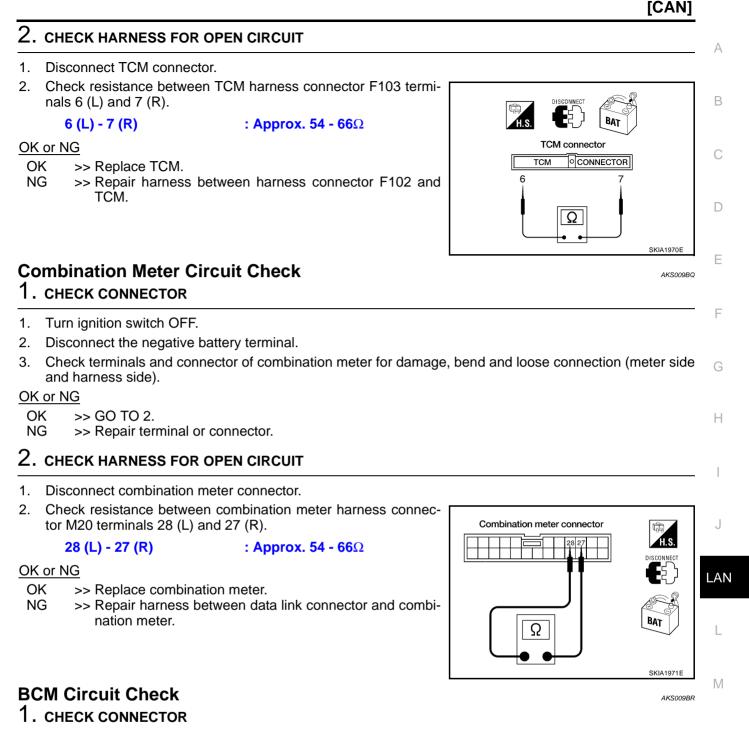




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- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of BCM for damage, bend and loose connection (control module side and harness side).

OK or NG

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

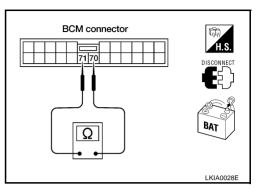
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M3 terminals 70 (L) and 71 (R).

70 (L) - 71 (R)

: Approx. 54 - 66Ω

OK or NG

- OK >> Replace BCM. Refer to <u>BCS-23, "Removal and Installa-</u> tion of <u>BCM"</u>.
- NG >> Repair harness between data link connector and BCM.



Steering Angle Sensor Circuit Check

1. CHECK CONNECTOR

AKS009BS

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

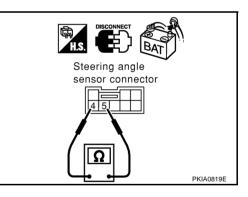
- 1. Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M22 terminals 4 (L) and 5 (R).

4 (L) - 5 (R)

: Approx. 54 - 66Ω

OK or NG

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



AKS009BT

VDC/TCS/ABS Control Unit Circuit Check

1. CHECK CONNECTOR

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

OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

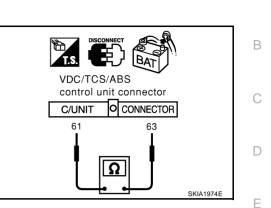
- 1. Disconnect VDC/TCS/ABS control unit connector.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (R).

61 (L) - 63 (R)

: Approx. 54 - 66Ω

OK or NG

- OK >> Replace VDC/TCS/ABS control unit.
- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.



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 $_{\rm G}$ and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

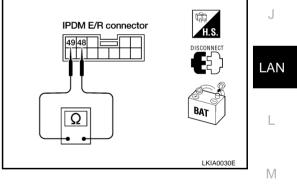
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (R).

48 (L) - 49 (R)

: Approx. 108 - 132 Ω

OK or NG

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



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CAN Communication 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, control unit side, meter side, sensor side and harness side).
- ECM
- TCM
- Combination meter
- BCM
- Steering angle sensor
- VDC/TCS/ABS control unit
- IPDM E/R
- Between ECM and IPDM E/R

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

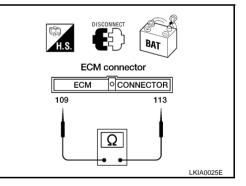
- 1. Disconnect following connectors.
- ECM connector
- TCM connector
- Harness connector F102
- Check continuity between ECM harness connector F101 terminals 109 (L) and 113 (R).

109 (L) - 113 (R) : Continuity should not exist.

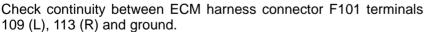
OK or NG

OK >> GO TO 3.

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



3. CHECK HARNESS FOR SHORT CIRCUIT



- 109 (L) Ground
 - 113 (R) Ground : Con

: Continuity should not exist.

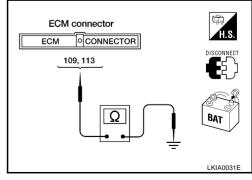
: Continuity should not exist.

OK or NG

NG

OK >> GO TO 4.

- Repair harness between ECM and harness connector F102.
 - Repair harness between TCM and harness connector F102.



4. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- Combination meter connector
- BCM connector
- Steering angle sensor connector
- Harness connector M15
- 2 Check continuity between data link connector M8 terminals 6 (L) and 3 (R).

6 (L) - 3 (R)

: Continuity should not exist.

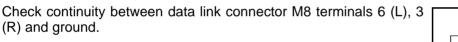
OK or NG

NG

OK >> GO TO 5.

- >> Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.
 - Repair harness between harness connector M72 and BCM.
 - Repair harness between harness connector M72 and steering angle sensor.

5. CHECK HARNESS FOR SHORT CIRCUIT



- 6 (L) Ground 3 (R) - Ground
- : Continuity should not exist.
- : Continuity should not exist.

OK or NG

- OK >> GO TO 6. NG
 - >> Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.
 - Repair harness between harness connector M72 and BCM.
 - Repair harness between harness connector M72 and steering angle sensor.

: Continuity should not exist.

6. CHECK HARNESS FOR SHORT CIRCUIT

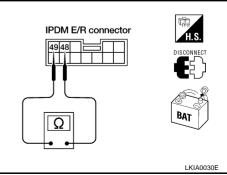
- Disconnect VDC/TCS/ABS control unit connector and IPDM E/R connector. 1.
- Check continuity between IPDM E/R harness connector E9 ter-2. minals 48 (L) and 49 (R).

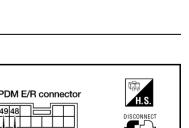
48 (L) - 49 (R)

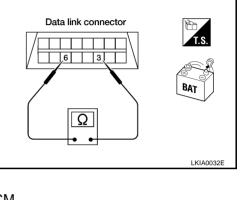
OK or NG

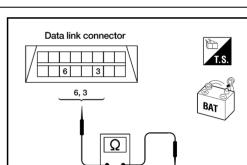
OK >> GO TO 7.

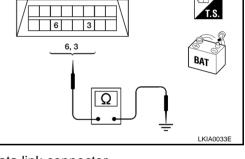
- NG >> • Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.

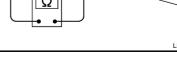












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7. CHECK HARNESS FOR SHORT CIRCUIT

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

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

: Continuity should not exist.

OK or NG

OK >> GO TO 8.

- NG >> • Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to LAN-32, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION" . OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-13, "Work Flow" .

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

IPDM E/R Ignition Relay Circuit Check

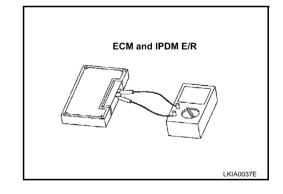
Replace IPDM E/R if there is no malfunction after checking the following.

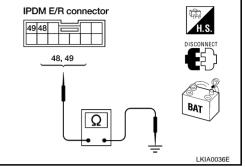
- IPDM E/R power circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection" . •
- Ignition power supply circuit. Refer to PG-10, "IGNITION POWER SUPPLY IGNITION SW. IN "ON" AND/OR "START""

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 109 and 113.
- Check resistance between IPDM E/R terminals 48 and 49.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	109 - 113	108 - 132
IPDM E/R	48 - 49	100 - 152





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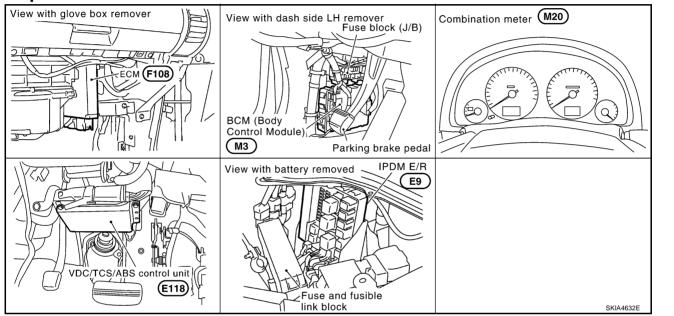
AKS009BW

AKS009BX

System Description

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

Component Parts and Harness Connector Location



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PFP:23710

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AKS007V1

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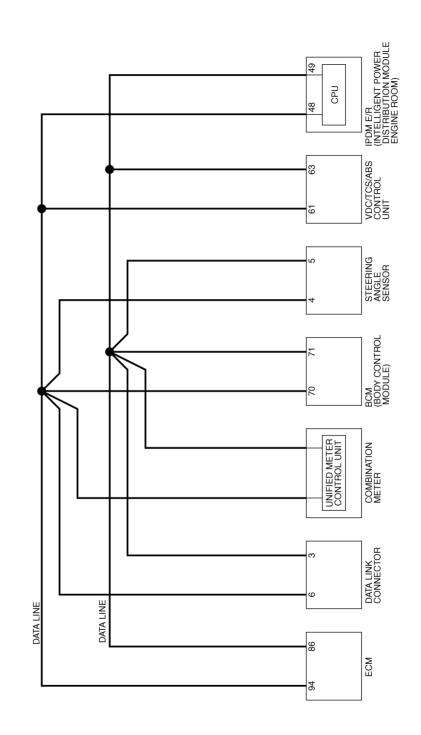
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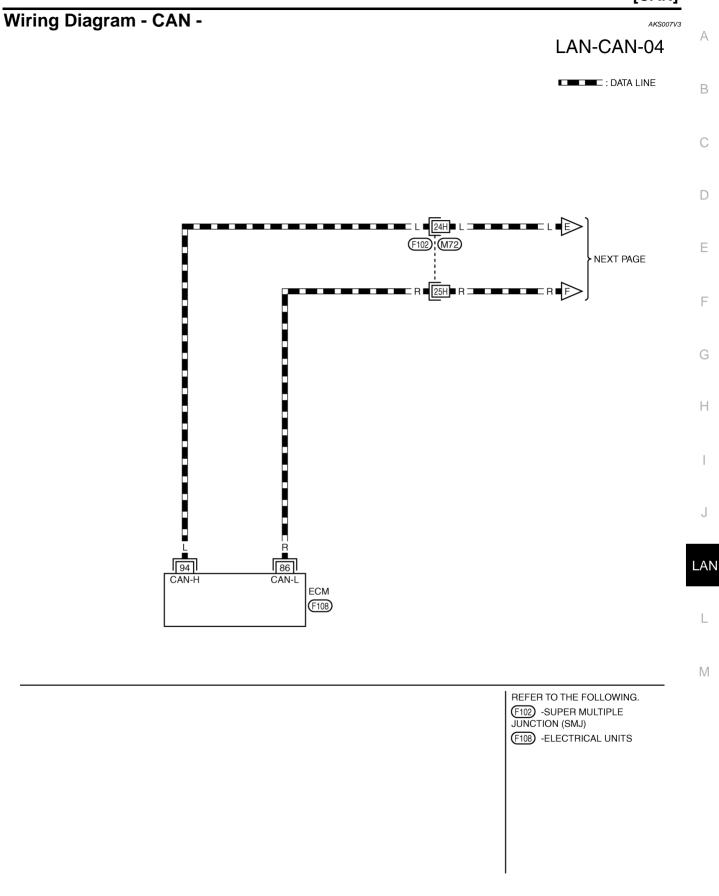
Schematic

AKS007V2



TKWT0957E

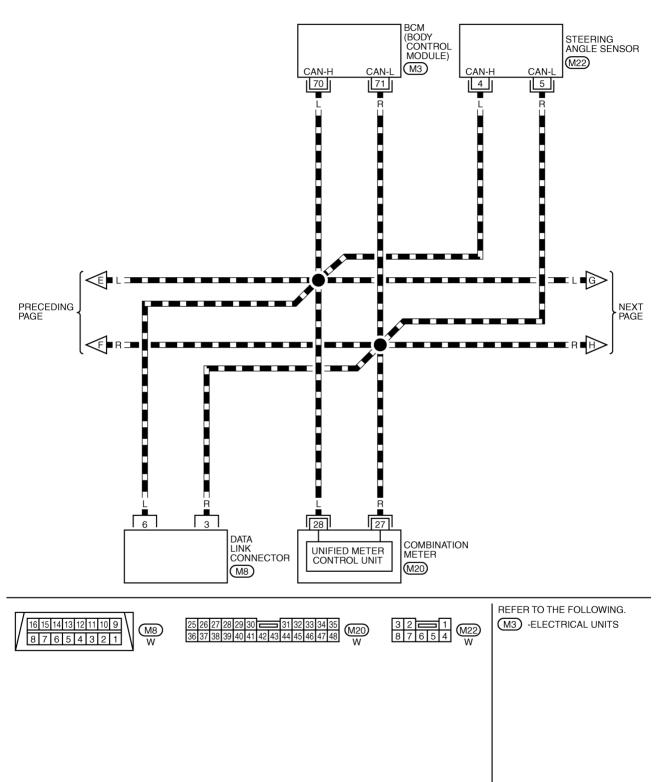
[CAN]



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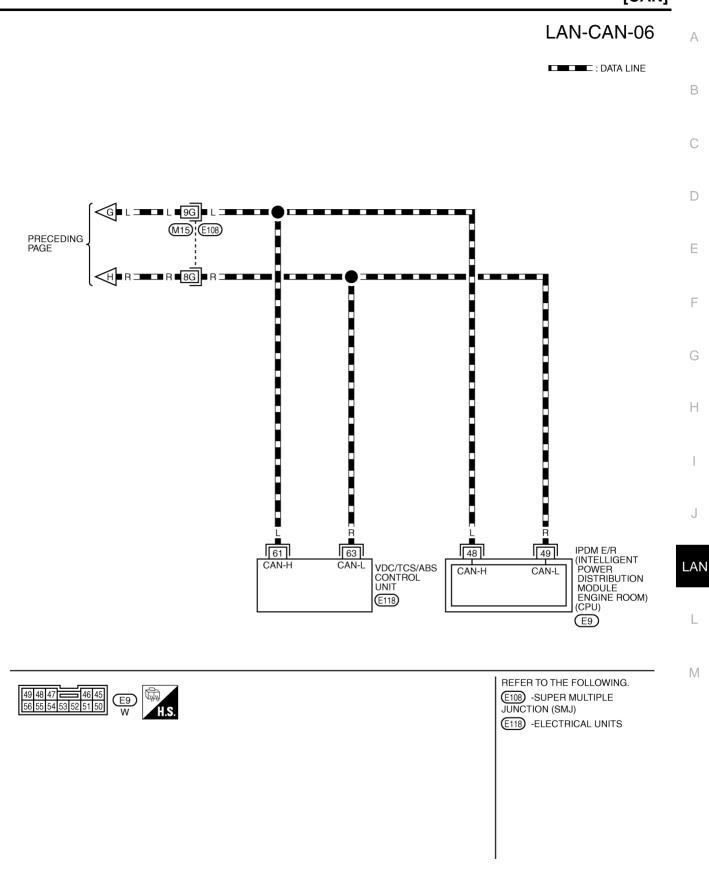
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[CAN]

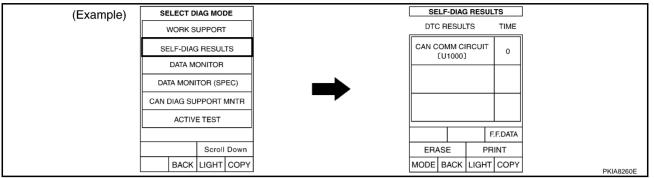


TKWT0960E

Work Flow

AKS00C41

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "BCM" and "ABS" displayed on CONSULT-II.



 Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "BCM" and "ABS" displayed on CON-SULT-II.

(Example)	SELECT DIA	AG MODE		SUPPORT MNTR	
	WORK SU	PPORT		PRSNT	
	SELF-DIAG F	RESULTS	INITIAL DIAG		
	DATA MOI	NITOR	TRANSMIT D TCM	IAG OK OK	
	DATA MONITO	OR (SPEC)	VDC/TCS/AB	s ок	
	CAN DIAG SUP	PORT MNTR	METER/M&A	OK UNKWN	
	ACTIVE		BCM/SEC	ОК	
			IPDM E/R AWD/4WD/e4	OK WD UNKWN	
		Scroll Down	PRINT	Scroll Down	
	BACK L	LIGHT COPY	MODE BAC		PKIA8343E

- 3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to LAN-39, "CHECK SHEET".
- Based on the "CAN DIAG SUPPORT MNTR" results, put marks "v" onto the items with "NG" or "UNKWN" in the check sheet table. Refer to <u>LAN-39, "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.
- 5. According to the check sheet results (example), start inspection. Refer to <u>LAN-40, "CHECK SHEET</u> <u>RESULTS (EXAMPLE)"</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.

SELECT			(CAN DIAG SU				
SYSTEM	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	diagnosis STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
всм	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	_	_
	Attach copy of ENGINE SELF-DIAG RESU			tach copy of BCM DIAG RESUL ⁻	гs		ch copy of ABS AG RESULTS	
	Attach copy of ENGINE CAN DIAG SUPPO MNTR			tach copy of BCM DIAG SUPPOF MNTR		CAN DIA	ch copy of ABS AG SUPPORT MNTR	

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CHECK SHEET RESULTS (EXAMPLE)

NOTE:

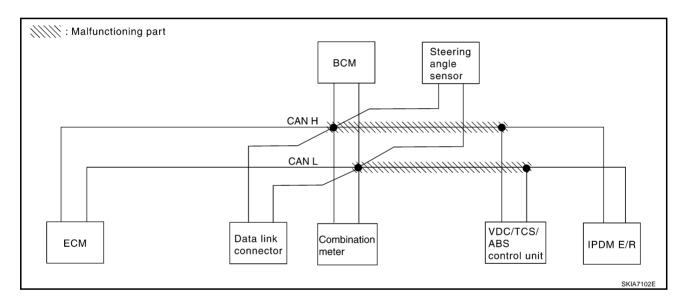
If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Case 1

Check harness between data link connector and VDC/TCS/ABS control unit. Refer to <u>LAN-47</u>, "Circuit Check <u>Between Data Link Connector and VDC/TCS/ABS Control Unit"</u>.

			(CAN DIAG SU	IPPORT MNTE	3		
SELECT	Initial	Transmit			Receive	diagnosis		
SYSTEM screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
BCM	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNK
ABS	NG	UNKWN			_	UNKWN	_	_

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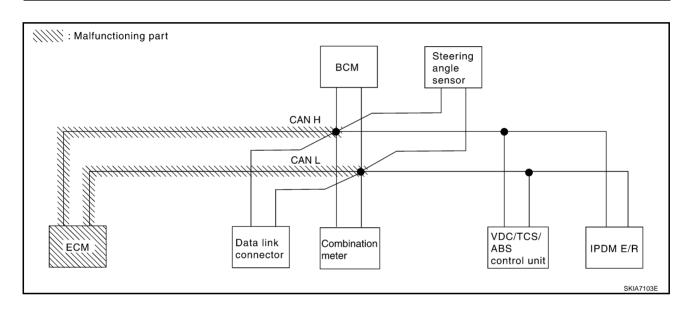
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Case 2

Check ECM circuit. Refer to LAN-48, "ECM Circuit Check" .

SELECT				CAN DIAG SU	PPORT MNTE	-		
SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	-	-



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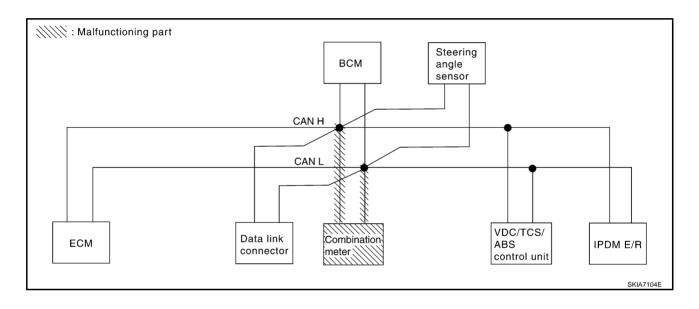
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Case 3

Check combination meter circuit. Refer to LAN-49, "Combination Meter Circuit Check" .

			(CAN DIAG SU	PPORT MNTF	1		
SELECT	Initial	Tropomit			Receive	diagnosis		
SYSTEM screen	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
всм	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNK	_	UNKWN	-	-



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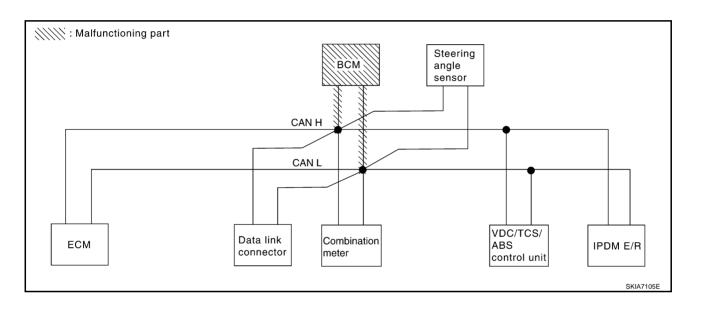
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Case 4

Check BCM circuit. Refer to LAN-49, "BCM Circuit Check" .

				CAN DIAG SU	PPORT MNTF	1		
SELECT SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	_	-



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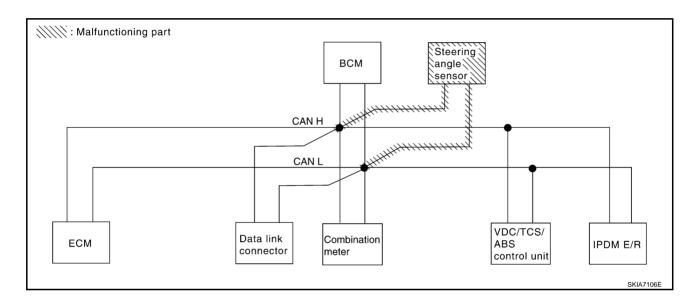
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Case 5

Check steering angle sensor circuit. Refer to LAN-50, "Steering Angle Sensor Circuit Check" .

				CAN DIAG SU	PPORT MNTF	3		
SELECT SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
всм	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	-	_



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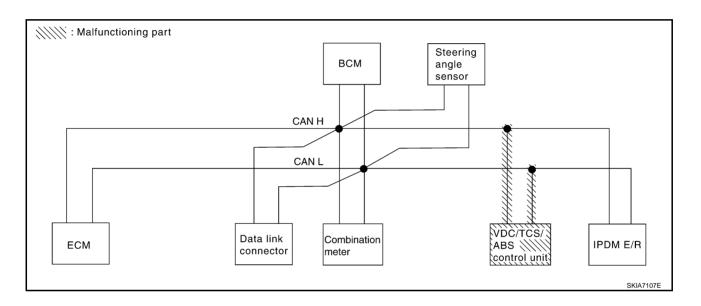
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Case 6

Check VDC/TCS/ABS control unit circuit. Refer to LAN-50, "VDC/TCS/ABS Control Unit Circuit Check" .

				CAN DIAG SU	IPPORT MNTF	1		
SELECT SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	-	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	-	-



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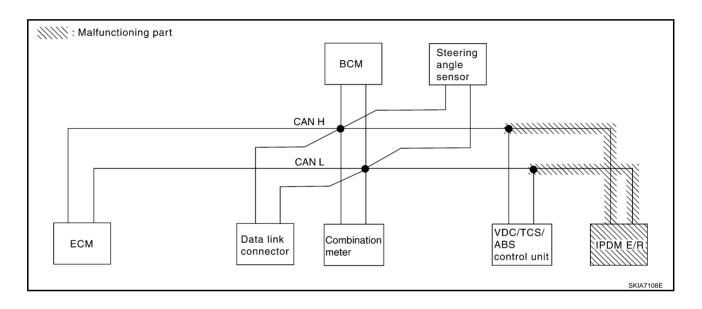
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Case 7

Check IPDM E/R circuit. Refer to LAN-51, "IPDM E/R Circuit Check" .

				CAN DIAG SU	IPPORT MNTF	3		
SELECT SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	-	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	_	-



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Case 8

Check CAN communication circuit. Refer to LAN-52, "CAN Communication Circuit Check" .

			(CAN DIAG SU	PPORT MNTF	3		
SELECT	Initial	Tronomit			Receive of	diagnosis		
SYSTEM screen	diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
BCM	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNK
ABS	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_

Case 9

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-54</u>, "IPDM E/R Ignition Relay <u>Circuit Check</u>".

				CAN DIAG SU	PPORT MNTE	1		
SELECT SYSTEM	Initial	Transmit			Receive	diagnosis		
screen	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	_	-

Case 10

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-54, "IPDM E/R Ignition Relay Circuit Check"</u>.

			(CAN DIAG SU	IPPORT MNT	1		
SELECT	Initial	Tronomit			Receive	diagnosis		
SYSTEM screen	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN
ВСМ	NG	UNKWN	UNKWN	UNKWN	-	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	_	_

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

1. CHECK CONNECTOR

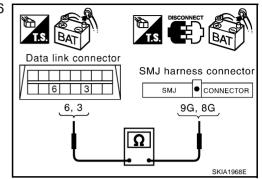
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108

OK or NG

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

LAN-47

- 1. Disconnect harness connector M15.
- Check continuity between data link connector M8 terminals 6 (L), 3 (R) and harness connector M15 terminals 9G (L), 8G (R).
 - 6 (L) 9G (L)
 - 3 (R) 8G (R)
- OK or NG
- OK >> GO TO 3.
- NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector.
- Check continuity between harness connector E108 terminals 9G (L), 8G (R) and VDC/TCS/ABS control unit harness connector E118 terminals 61 (L), 63 (R).
 - 9G (L) 61 (L) 8G (R) - 63 (R)
- : Continuity should exist.

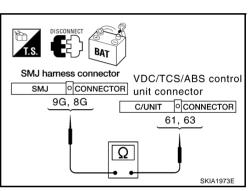
: Continuity should exist.

: Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-38, "Work Flow"</u>. NG >> Repair harness.



AKS007V6

- 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 F102
- Harness connector M72

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

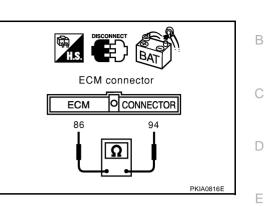


- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F108 terminals 94 (L) and 86 (R).
 - 94 (L) 86 (R)

: Approx. 108 - 132Ω

OK or NG

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



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 $_{\rm G}$ and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

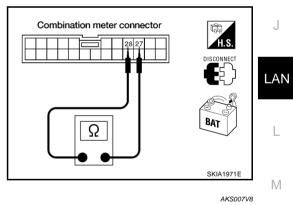
- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M20 terminals 28 (L) and 27 (R).

28 (L) - 27 (R)

: Approx. 54 - 66 Ω

OK or NG

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



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.

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

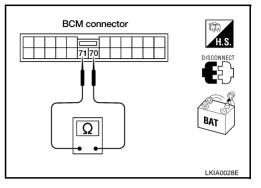
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M3 terminals 70 (L) and 71 (R).

70 (L) - 71 (R)

: Approx. 54 - 66Ω

OK or NG

- OK >> Replace BCM. Refer to <u>BCS-23, "Removal and Installa-</u> tion of <u>BCM"</u>.
- NG >> Repair harness between data link connector and BCM.



Steering Angle Sensor Circuit Check

1. CHECK CONNECTOR

AKS007V9

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

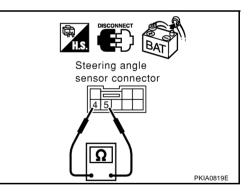
- 1. Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M22 terminals 4 (L) and 5 (R).

4 (L) - 5 (R)

: Approx. 54 - 66Ω

OK or NG

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



AKS007VA

VDC/TCS/ABS Control Unit Circuit Check

1. CHECK CONNECTOR

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

OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

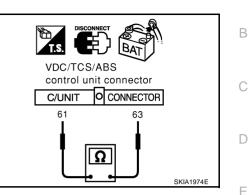
- Disconnect VDC/TCS/ABS control unit connector. 1.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (R).

61 (L) - 63 (R)

: Approx. 54 - 66 Ω

OK or NG

- OK >> Replace VDC/TCS/ABS control unit.
- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.



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 3. G and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

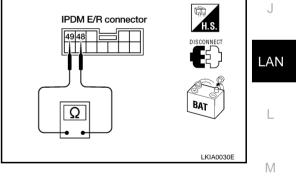
- 1. Disconnect IPDM E/R connector.
- Check resistance between IPDM E/R harness connector E9 ter-2. minals 48 (L) and 49 (R).

48 (L) - 49 (R)

: Approx. 108 - 132 Ω

OK or NG

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



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CAN Communication Circuit Check

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

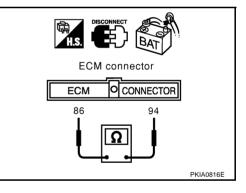
- 1. Disconnect following connectors.
- ECM connector
- Harness connector F102
- 2. Check continuity between ECM harness connector F108 terminals 94 (L) and 86 (R).

94 (L) - 86 (R)

: Continuity should not exist.

OK or NG

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



3. CHECK HARNESS FOR SHORT CIRCUIT

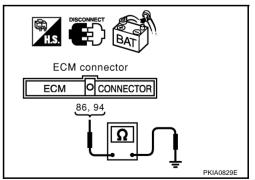
Check continuity between ECM harness connector F108 terminals 94 (L), 86 (R) and ground.

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

- : Continuity should not exist.

OK or NG

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



Revision; 2004 April

4. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- Combination meter connector
- BCM connector
- Steering angle sensor connector
- Harness connector M15
- 2. Check continuity between data link connector M8 terminals 6 (L) and 3 (R).

6 (L) - 3 (R)

: Continuity should not exist.

OK or NG

NG

OK >> GO TO 5.

- Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.
 - Repair harness between harness connector M72 and BCM.
 - Repair harness between harness connector M72 and steering angle sensor.

5. CHECK HARNESS FOR SHORT CIRCUIT



- 6 (L) Ground 3 (R) - Ground
- : Continuity should not exist.
- : Continuity should not exist.

OK or NG

- OK >> GO TO 6. NG >> • Repair
 - > Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.

: Continuity should not exist.

- Repair harness between harness connector M72 and BCM.
- Repair harness between harness connector M72 and steering angle sensor.

LAN-53

6. CHECK HARNESS FOR SHORT CIRCUIT

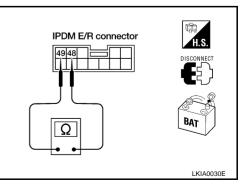
- 1. Disconnect VDC/TCS/ABS control unit connector and IPDM E/R connector.
- 2. Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (R).

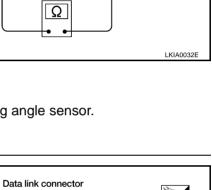
48 (L) - 49 (R)

OK or NG

OK >> GO TO 7.

- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.





Data link connector

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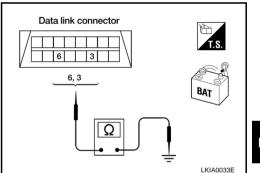
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7. CHECK HARNESS FOR SHORT CIRCUIT

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

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

: Continuity should not exist.

OK or NG

OK >> GO TO 8.

- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to <u>LAN-54, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u> OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-38, "Work Flow" .

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

IPDM E/R Ignition Relay Circuit Check

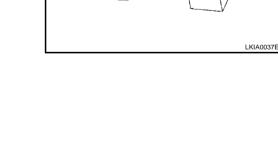
Replace IPDM E/R if there is no malfunction after checking the following.

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

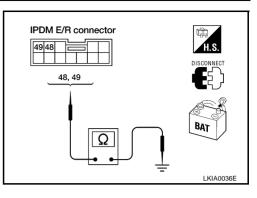
Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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

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



ECM and IPDM E/R



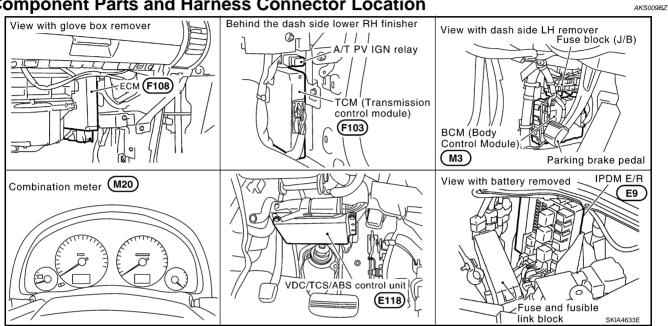
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System Description

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

Component Parts and Harness Connector Location



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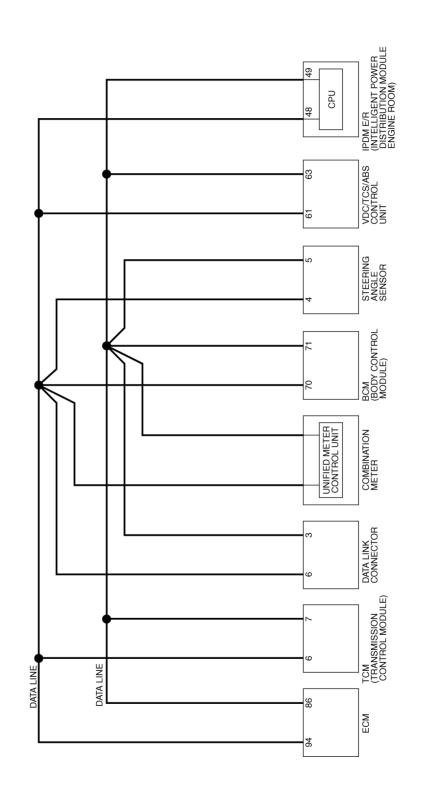
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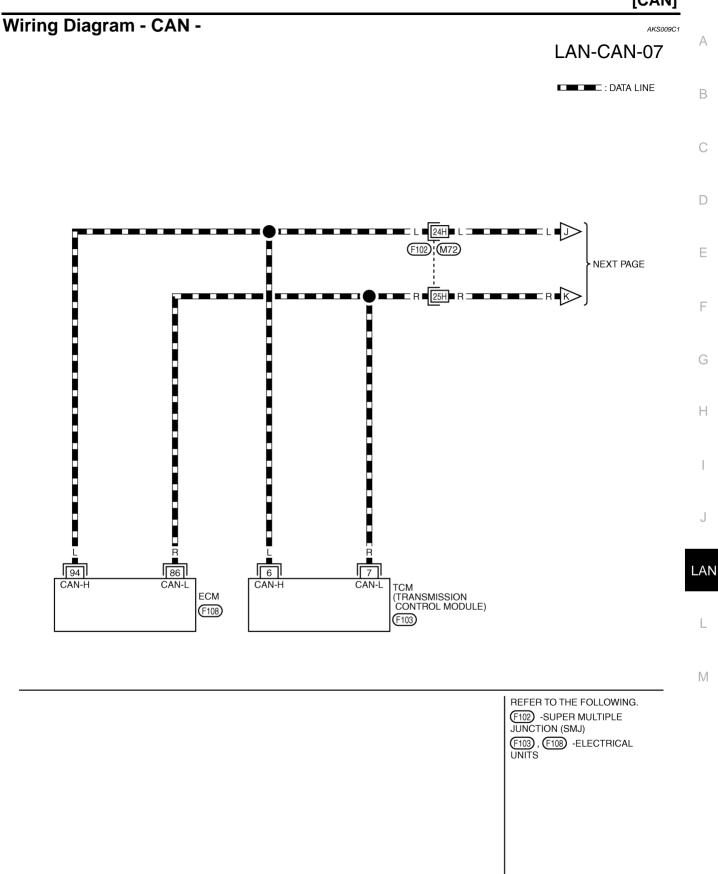
Schematic

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TKWT1022E

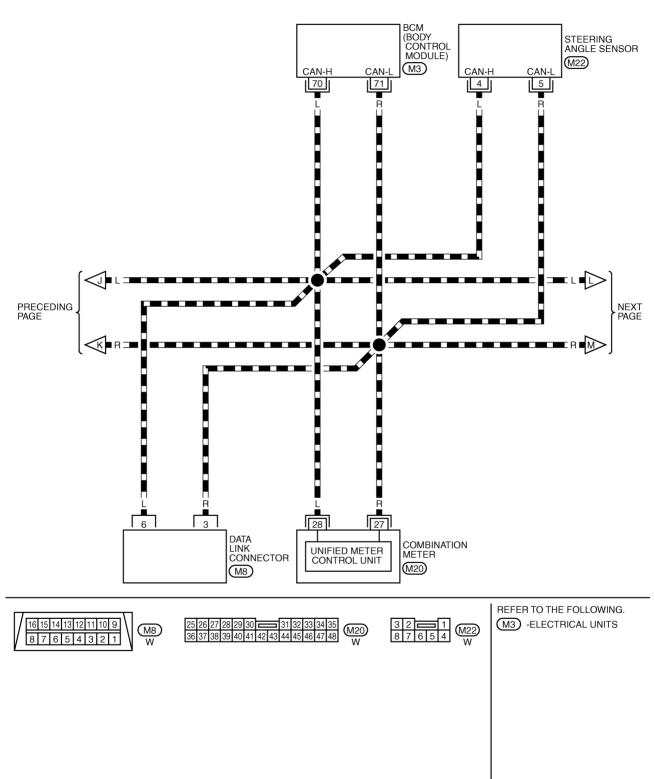
[CAN]



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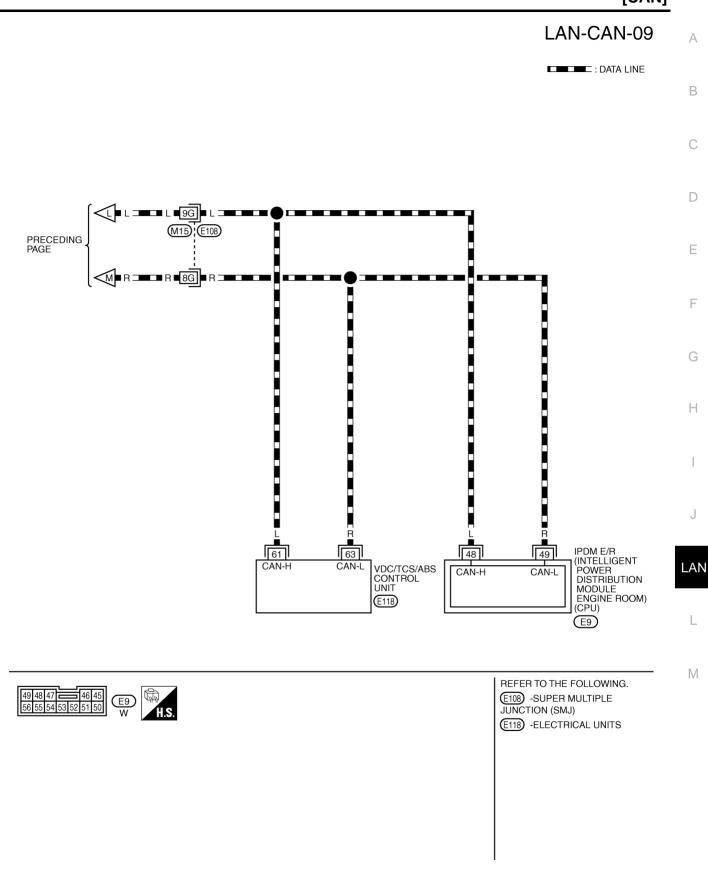
LAN-CAN-08





TKWT1024E

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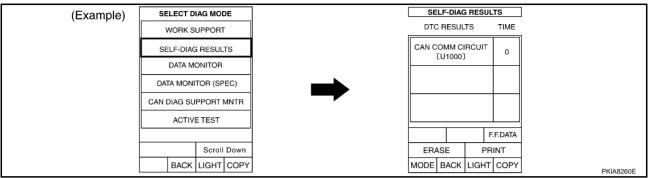


TKWT1025E

AKS00C42

Work Flow

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "BCM" and "ABS" displayed on CON-SULT-II.



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

(Example)	SELECT DIAG MODE	CAN D	IAG SUPPORT MNTR	
(Example)			ENGINE	
	WORK SUPPORT		PRSNT	
	SELF-DIAG RESULTS	INITIAL D	IAG OK	
		TRANSMI	IT DIAG OK	
	DATA MONITOR	TCM	ок	
	DATA MONITOR (SPEC)	VDC/TCS	/ABS OK	
	Brantment (er 20)	METER/M	1&A OK	
	CAN DIAG SUPPORT MNTR	ICC	UNKWN	
		BCM/SEC	с ок	
	ACTIVE TEST	IPDM E/R	ок	
		AWD/4WE	D/e4WD UNKWN	
	Scroll Down	PRI	NT Scroll Down	
			Down	
	BACK LIGHT COPY	MODE	BACK LIGHT COPY	IA834

- Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-61, "CHECK SHEET"</u>.
- Based on the "CAN DIAG SUPPORT MNTR" results, put marks "v" onto the items with "NG" or "UNKWN" in the check sheet table. Refer to <u>LAN-61, "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.
- 5. According to the check sheet results (example), start inspection. Refer to <u>LAN-62, "CHECK SHEET</u> <u>RESULTS (EXAMPLE)"</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.

SELECT				CAN DI	AG SUPPOF				
SYSTEM	Initial	Transmit			Re METER	ceive diagno		VDC/TCS	
screen	diagnosis	diagnosis	ECM	ТСМ	/M&A	BCM/SEC	STRG	/ABS	IPDM E/R
ENGINE	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	-	UNKWN	_
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	-	_	_	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	_	—
Symptoms :									
Attach co ENGI SELF-DIAG F	NE		tach copy of A/T DIAG RESU		E	h copy of 3CM \G RESULTS	s	Attach co ABS ELF-DIAG F	-
Attach co ENGII CAN DIAG S MNT	VÉ UPPORT		tach copy of A/T DIAG SUPPO MNTR		e Can dia	h copy of 3CM G SUPPORT INTR		Attach co ABS CAN DIAG SI MNTF	JPPORT

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CHECK SHEET RESULTS (EXAMPLE)

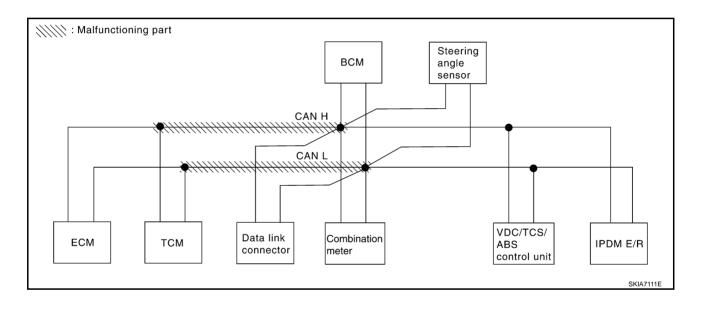
NOTE:

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

Case 1

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

				CAN DIA	AG SUPPOR	T MNTR				
SELECT SYSTEM	1	T		Receive diagnosis						
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R	
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN		
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	_	
BCM	NG	UNKWN	UNKWN	_	UNKWN	_	_	—	UNKWN	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_	



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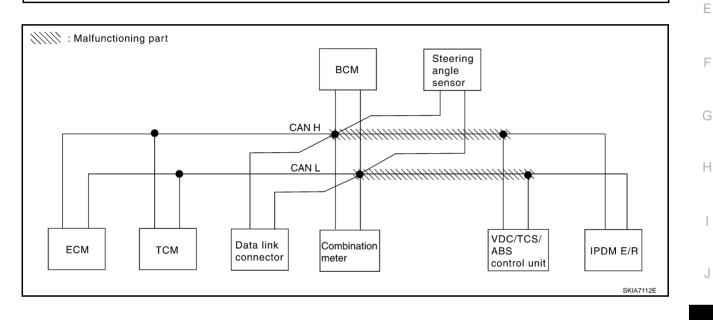
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Case 2

А Check harness between data link connector and VDC/TCS/ABS control unit. Refer to LAN-72, "Circuit Check Between Data Link Connector and VDC/TCS/ABS Control Unit" .

				CAN DIA	AG SUPPOF	RT MNTR				
SELECT SYSTEM	lucition l	Turnersit	Receive diagnosis							
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R	
ENGINE	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN		
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	—	
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	-	_	_		
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKIWN	_	_	



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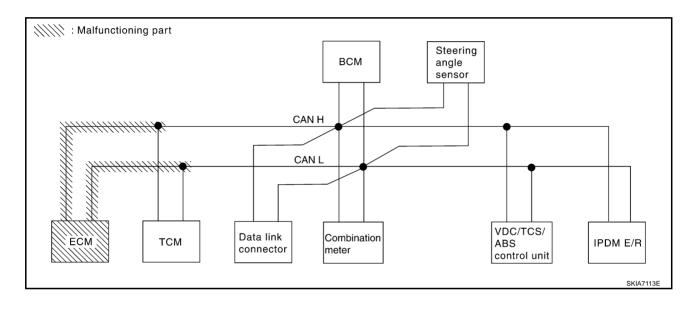
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Case 3

Check ECM circuit. Refer to LAN-73, "ECM Circuit Check" .

				CAN DIA	AG SUPPOF	RT MNTR				
SELECT SYSTEM	lucition l	Turnersit		Receive diagnosis						
screen	Initial diagnosis	Transmit 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	-	UNKWN	-	_	UNKWN	_	
BCM	NG	UNKWN	UNKWN	-	UNKWN	-	_	-	UNKWN	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	—	



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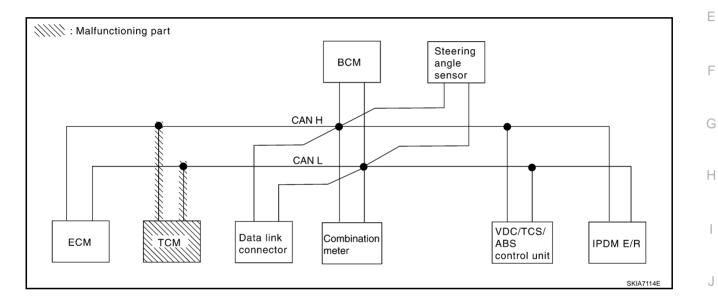
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Case 4

Check TCM circuit. Refer to LAN-73, "TCM Circuit Check" .

				CAN DIA	AG SUPPOF	T MNTR				
SELECT SYSTEM	lucition l	Transmit		Receive diagnosis						
screen	Initial diagnosis	Transmit 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	-	UNKWN	—	_	UNKWN	_	
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	—	_	-	UNKWN	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	—	_	



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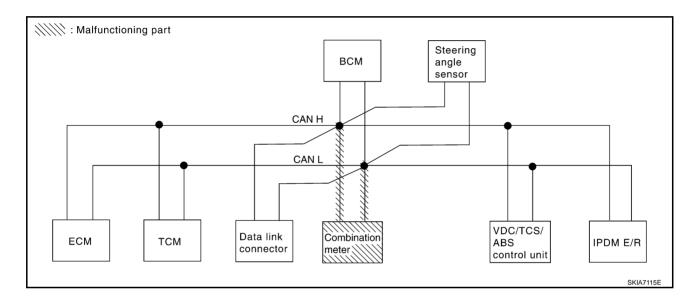
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Case 5

Check combination meter circuit. Refer to LAN-74, "Combination Meter Circuit Check" .

				CAN DIA	AG SUPPOR	T MNTR					
SELECT SYSTEM	lucities l	Transmit	Receive diagnosis								
screen	Initial diagnosis	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	-	UNKWN	—	_	UNKWN			
BCM	NG	UNKWN	UNKWN	_		—	_	—	UNKWN		
ABS	NG	UNKWN	UNKWN	UNKWN	UNK	—	UNKWN	-	-		



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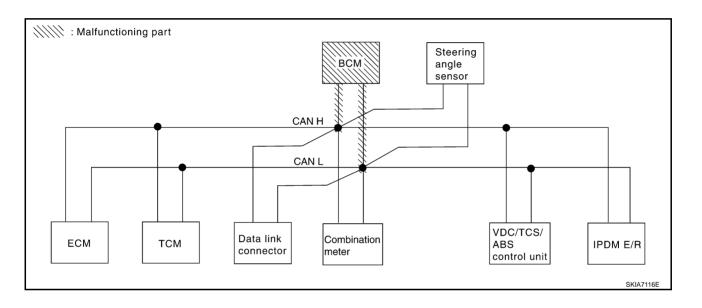
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Case 6

Check BCM circuit. Refer to LAN-74, "BCM Circuit Check" .

				CAN DIA	AG SUPPOR	T MNTR				
SELECT SYSTEM	lucities l	Turnersit		Receive diagnosis						
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R	
ENGINE	NG	UNKWN	-	UNKWN	UNKWN	UNK	_	UNKWN	UNKWN	
A/T	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN	-	
BCM	NG	UNKWN	UNKWN	_		—	_	-		
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_	



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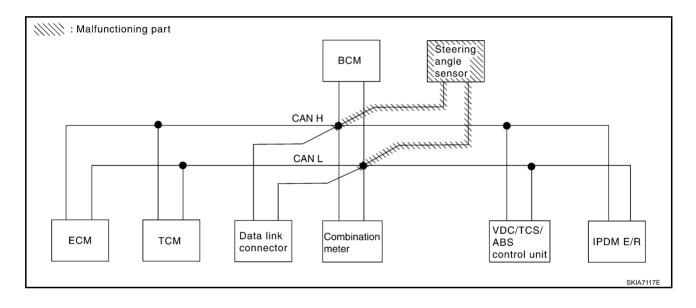
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Case 7

Check steering angle sensor circuit. Refer to LAN-75, "Steering Angle Sensor Circuit Check" .

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM	lucition l	Tura a sura la		Receive diagnosis								
screen	Initial diagnosis	Transmit 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	-	UNKWN	_	_	UNKWN				
BCM	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	—	_			



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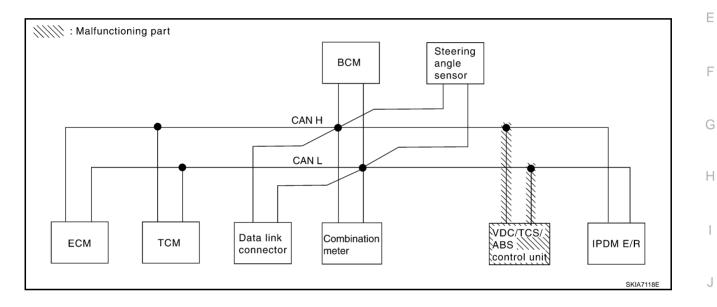
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Case 8

Check VDC/TCS/ABS control unit circuit. Refer to LAN-75, "VDC/TCS/ABS Control Unit Circuit Check" .

		CAN DIAG SUPPORT MNTR										
SELECT SYSTEM	lucition l	Transmit diagnosis		Receive diagnosis								
screen	diagnosis diag		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	NG	UNKWN	UNKWN	-	UNKWN	-	_	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNK	_	UNKWN	-	_			



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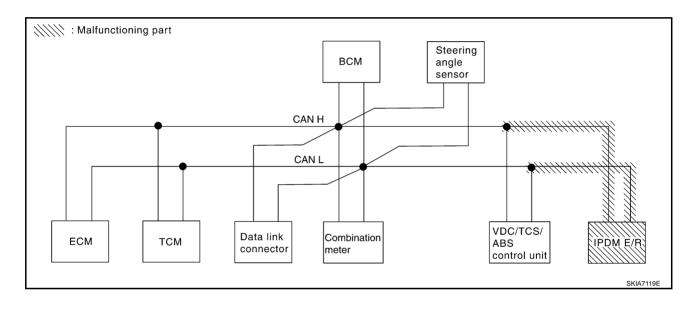
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Case 9

Check IPDM E/R circuit. Refer to LAN-76, "IPDM E/R Circuit Check" .

				CAN DIA	AG SUPPOF	RT MNTR					
SELECT SYSTEM	luciti e l	Turnersit		Receive diagnosis							
screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	UNKWN			
A/T	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	_		
BCM	NG	UNKWN	UNKWN	_	UNKWN	_	_	—			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	-	—		



Case 10

Check CAN communication circuit. Refer to LAN-77, "CAN Communication Circuit Check" .

	CAN DIAG SUPPORT MNTR									
SELECT SYSTEM	lucition l	T		Receive diagnosis						
SYSTEM Initial screen diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	NG	UNKWN	-	UNKWN	UNWN	UNKWN	_	UNKWN		
A/T	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	_	
ВСМ	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	UNKWN	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	-	

Case 11

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-79</u>, "IPDM E/R Ignition Relay <u>Circuit Check</u>".

	CAN DIAG SUPPORT MNTR									
SELECT SYSTEM	luciti e l	T	Receive diagnosis							
screen			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	NG	UNKWN	UNKWN	_	UNKWN	-	_	_	UNKWN	
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_	

Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-79</u>, "IPDM E/R Ignition Relay Circuit Check".

	CAN DIAG SUPPORT MNTR											
SELECT SYSTEM	luciti e l	Turnersit		Receive diagnosis								
screen	Initial diagnosis	Transmit 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	-	UNKWN	-	_	UNKWN	_			
BCM	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	UNKWN			
ABS	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_			

Circuit Check Between TCM 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 F102
- Harness connector M72

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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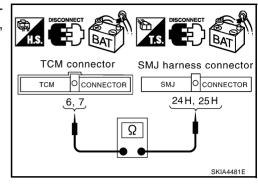
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$\overline{2}$. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect TCM connector and harness connector F102.
- 2. Check continuity between TCM harness connector F103 terminals 6 (L), 7 (R) and harness connector F102 terminals 24H (L), 25H (R).
 - 6 (L) 24H (L)
 - 7 (R) 25H (R)
- : Continuity should exist.
- : Continuity should exist.

OK or NG

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



${\mathfrak B}_{\cdot}$ check harness for open circuit

Check continuity between harness connector M72 terminals 24H (L), 25H (R) and data link connector M8 terminals 6 (L), 3 (R).

- 24H (L) 6 (L)
- 25H (R) 3 (R)
- : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-60, "Work Flow" .

NG >> Repair harness.

Data link connector SMJ harness connector • CONNECTOR SMJ 6 3 24H, 25H 6, 3 Ω SKIA4482E

Circuit Check Between Data Link Connector and VDC/TCS/ABS Control Unit AKS009C4

1. CHECK CONNECTOR

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

OK or NG

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

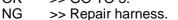
2. CHECK HARNESS FOR OPEN CIRCUIT

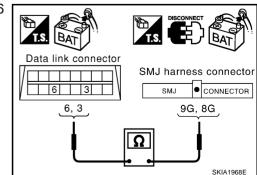
- Disconnect harness connector M15. 1.
- Check continuity between data link connector M8 terminals 6 2. (L), 3 (R) and harness connector M15 terminals 9G (L), 8G (R).
 - 6 (L) 9G (L) 3 (R) - 8G (R)

: Continuity should exist. : Continuity should exist.



OK >> GO TO 3.





$\overline{3}$. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector.
- 2 Check continuity between harness connector E108 terminals 9G (L), 8G (R) and VDC/TCS/ABS control unit harness connector E118 terminals 61 (L), 63 (R).
 - 9G (L) 61 (L)
 - 8G (R) 63 (R)
- : Continuity should exist.
- - : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-60, "Work Flow" .

NG >> Repair harness.

ECM Circuit Check

1. CHECK CONNECTOR

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

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 F108 terminals 94 (L) and 86 (R).
 - 94 (L) 86 (R)

: Approx. 108 - 132 Ω

OK or NG

OK >> Replace ECM.

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



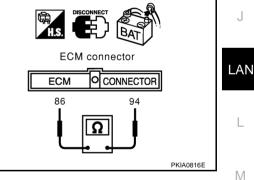
1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.



AKS009C6

VDC/TCS/ABS control

C/UNIT OCONNECTOR

SKIA1973E

AKS009C5

61,63

unit connector

SMJ harness connector

9G, 8G

SMJ

BAT

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CONNECTOR

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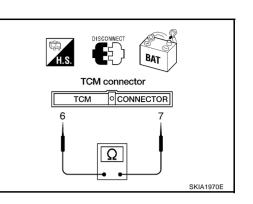
- 1. Disconnect TCM connector.
- 2. Check resistance between TCM harness connector F103 terminals 6 (L) and 7 (R).

6 (L) - 7 (R)

: Approx. 54 - 66Ω

OK or NG

- OK >> Replace TCM.
- NG >> Repair harness between harness connector F102 and TCM.



Combination Meter Circuit Check

1. CHECK CONNECTOR

AKS009C7

[CAN]

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

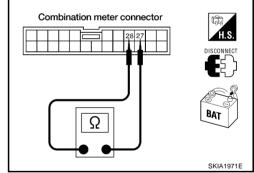
- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M20 terminals 28 (L) and 27 (R).

28 (L) - 27 (R)

: Approx. 54 - 66Ω

OK or NG

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



AKS009C8

BCM Circuit Check

1. CHECK CONNECTOR

- 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.

OK >> GO TO 2.

OK or NG

1. CHECK CONNECTOR

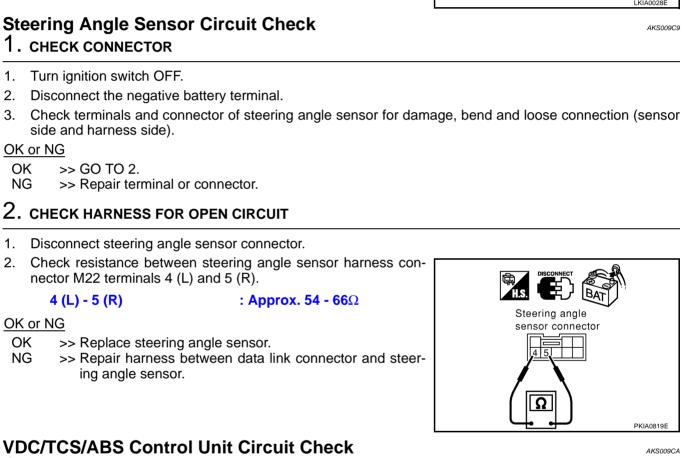
Turn ignition switch OFF.

NG >> Repair terminal or connector.

(control unit side and harness side).

Disconnect the negative battery terminal.

Check terminals and connector of VDC/TCS/ABS control unit for damage, bend and loose connection



OK or NG

1.

2

1.

2.

3.

1.

2.

1.

2.

3.

OK >> Replace BCM. Refer to BCS-23, "Removal and Installation of BCM" .

Check resistance between BCM harness connector M3 termi-

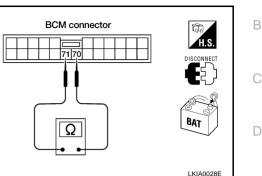
: Approx. 54 - 66 Ω

2. CHECK HARNESS FOR OPEN CIRCUIT

Disconnect BCM connector.

nals 70 (L) and 71 (R). 70 (L) - 71 (R)

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



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

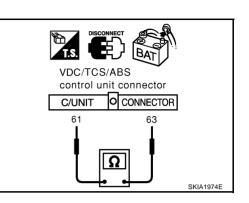
- 1. Disconnect VDC/TCS/ABS control unit connector.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (R).

61 (L) - 63 (R)

: Approx. 54 - 66Ω

OK or NG

- OK >> Replace VDC/TCS/ABS control unit.
- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.



IPDM E/R Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

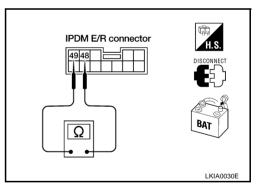
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (R).

48 (L) - 49 (R)

: Approx. 108 - 132 Ω

OK or NG

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



AKS009CB

	[CAN]
CAN Communication Circuit Check 1. CHECK CONNECTOR	AKS009CC
1. Turn ignition switch OFF.	
2. Disconnect the negative battery terminal.	
3. Check following terminals and connectors for damage, bend control unit side, meter side, sensor side and harness side).	and loose connection (control module side,
 ECM TCM 	
Combination meter	
BCM	
Steering angle sensor	
VDC/TCS/ABS control unit	
IPDM E/R	
Between ECM and IPDM E/R	
OK or NG	
OK >> GO TO 2.	
NG >> Repair terminal or connector.	
2. CHECK HARNESS FOR SHORT CIRCUIT	
1. Disconnect following connectors.	
 ECM connector 	
 TCM connector 	
- Harness connector F102	
 Check continuity between ECM harness connector F108 terr nals 94 (L) and 86 (R). 	
94 (L) - 86 (R) : Continuity should not exist.	
OK or NG	ECM connector
OK >> GO TO 3.	ECM CONNECTOR
NG >> • Repair harness between ECM and harness connect F102.	tor 86 94
 Repair harness between TCM and harness connect 	
F102.	
	PKIA0816E
3. CHECK HARNESS FOR SHORT CIRCUIT	
Check continuity between ECM harness connector F108 termina	als
94 (L), 86 (R) and ground.	
94 (L) - Ground : Continuity should not exist.	
86 (R) - Ground : Continuity should not exist.	
OK or NG	
OK >> GO TO 4.	86, 94
NG >> • Repair harness between ECM and harness connect F102.	
 Repair harness between TCM and harness connect F102. 	

Repair harness between TCM and harness connector F102.

- 1. Disconnect following connectors.
- Combination meter connector
- BCM connector
- Steering angle sensor connector
- Harness connector M15
- Check continuity between data link connector M8 terminals 6 (L) and 3 (R).

6 (L) - 3 (R)

: Continuity should not exist.

OK or NG

NG

OK >> GO TO 5.

- Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.
 - Repair harness between harness connector M72 and BCM.
 - Repair harness between harness connector M72 and steering angle sensor.

5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity	between	data link	connector	M8	terminals	6	(L), 3	3
(R) and ground.								

- 6 (L) Ground 3 (R) - Ground
- : Continuity should not exist.

: Continuity should not exist.

OK or NG

- OK >> GO TO 6.
- NG >> Repair harness between harness connector M72 and harness connector M15.
 - Repair harness between harness connector M72 and combination meter.
 - Repair harness between harness connector M72 and data link connector.

: Continuity should not exist.

- Repair harness between harness connector M72 and BCM.
- Repair harness between harness connector M72 and steering angle sensor.

6. CHECK HARNESS FOR SHORT CIRCUIT

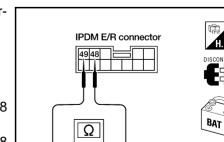
- 1. Disconnect VDC/TCS/ABS control unit connector and IPDM E/R connector.
- Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (R).

48 (L) - 49 (R)

OK or NG

OK >> GO TO 7.

- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.

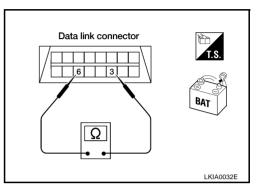


Data link connector

6 3

6, 3

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7. CHECK HARNESS FOR SHORT CIRCUIT

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

- 48 (L) Ground
- 49 (R) Ground

: Continuity should not exist.

: Continuity should not exist.

OK or NG

OK >> GO TO 8.

- NG >> Repair harness between harness connector E108 and VDC/TCS/ABS control unit.
 - Repair harness between harness connector E108 and IPDM E/R.

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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

- OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-60, "Work Flow"</u>.
- NG >> Replace ECM and/or IPDM E/R.

IPDM E/R Ignition Relay Circuit Check

Replace IPDM E/R if there is no malfunction after checking the following.

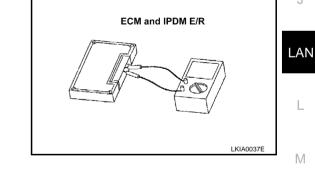
- IPDM E/R power circuit. Refer to <u>PG-26, "IPDM E/R Power/Ground Circuit Inspection"</u>.
- Ignition power supply circuit. Refer to <u>PG-10</u>, "IGNITION POWER SUPPLY IGNITION SW. IN "ON" <u>AND/OR "START"</u>.

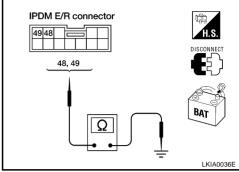
LAN-79

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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

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





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