

SECTION **LAN**

LAN SYSTEM

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CAN

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PRECAUTIONS

PFP:00001

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

EKS001U0

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. 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

EKS001U1

CAN SYSTEM

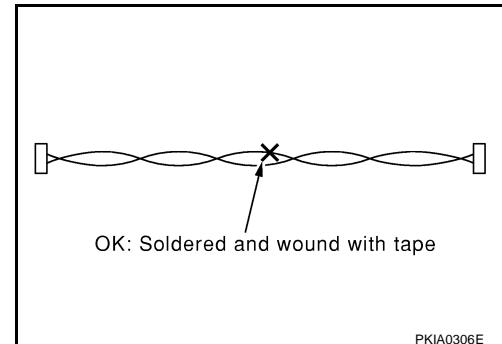
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch off and disconnect negative battery terminal before checking the circuit.

Precautions For Harness Repair

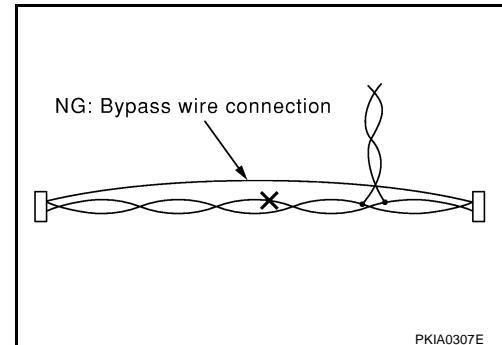
EKS001U2

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.)



CAN COMMUNICATION

PFP:23710

System Description

EKS001U3

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

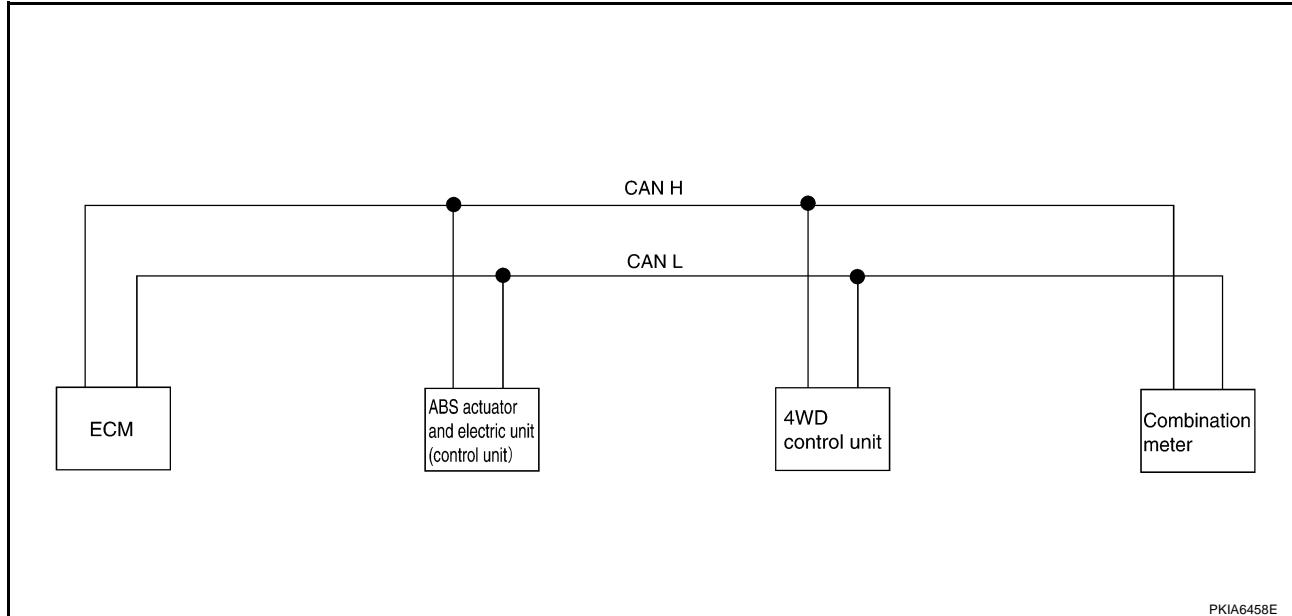
EKS00EGL

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

Body type	Wagon			
Axle	4WD			
Engine	QR20DE/QR25DE	QR25DE	YD22DDTi	QR25DE
Transmission	M/T	A/T	M/T	A/T
Brake control	ABS		ESP	
CAN system type	1	2	3	4
CAN system trouble diagnosis	LAN-9	LAN-25	LAN-50	LAN-68
				LAN-86

TYPE 1

System diagram



PKIA6458E

Input/output signal chart

T: Transmit R: Receive

Signals	ECM	ABS actuator and electric unit (control unit)	4WD control unit	Combination meter
Stop lamp switch signal		T	R	
Engine speed signal	T		R	R
Engine coolant temperature signal	T			R
Accelerator pedal position signal	T		R	
A/C compressor feedback signal	T			R
Vehicle speed signal		T	R	R
	R			T

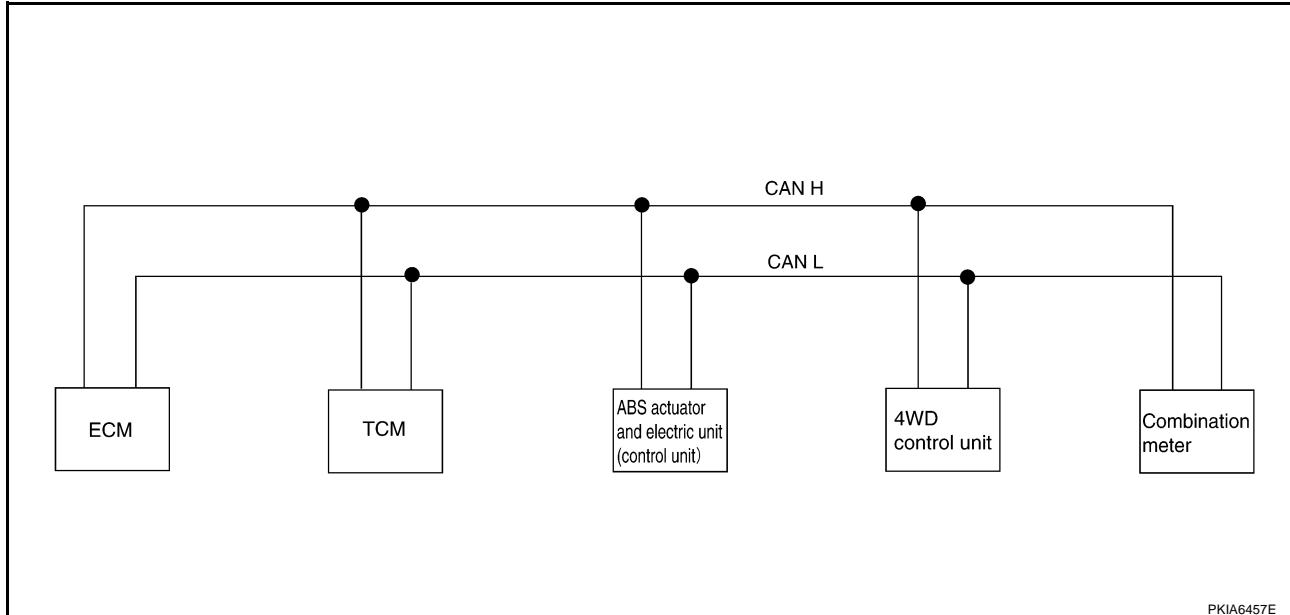
CAN COMMUNICATION

[CAN]

Signals	ECM	ABS actuator and electric unit (control unit)	4WD control unit	Combination meter
ABS warning lamp signal		T		R
4WD warning lamp signal			T	R
4WD mode indicator lamp signal			T	R
Parking brake switch signal			R	T
MI signal	T			R

TYPE 2

System diagram



Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	ABS actuator and electric unit (control unit)	4WD control unit	Combination meter
Stop lamp switch signal		R			T
			T	R	
P-N range signal		R			T
A/T position indicator lamp signal		T			R
Overdrive control switch signal		R			T
O/D OFF indicator signal		T			R
Closed throttle position signal	T	R			
Wide open throttle position signal	T	R			
Engine speed signal	T			R	R
Engine coolant temperature signal	T				R
Accelerator pedal position signal	T			R	
Output shaft revolution signal	R	T			
A/C compressor feedback signal	T				R
Vehicle speed signal			T	R	R
	R				T
ABS warning lamp signal			T		R

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LAN

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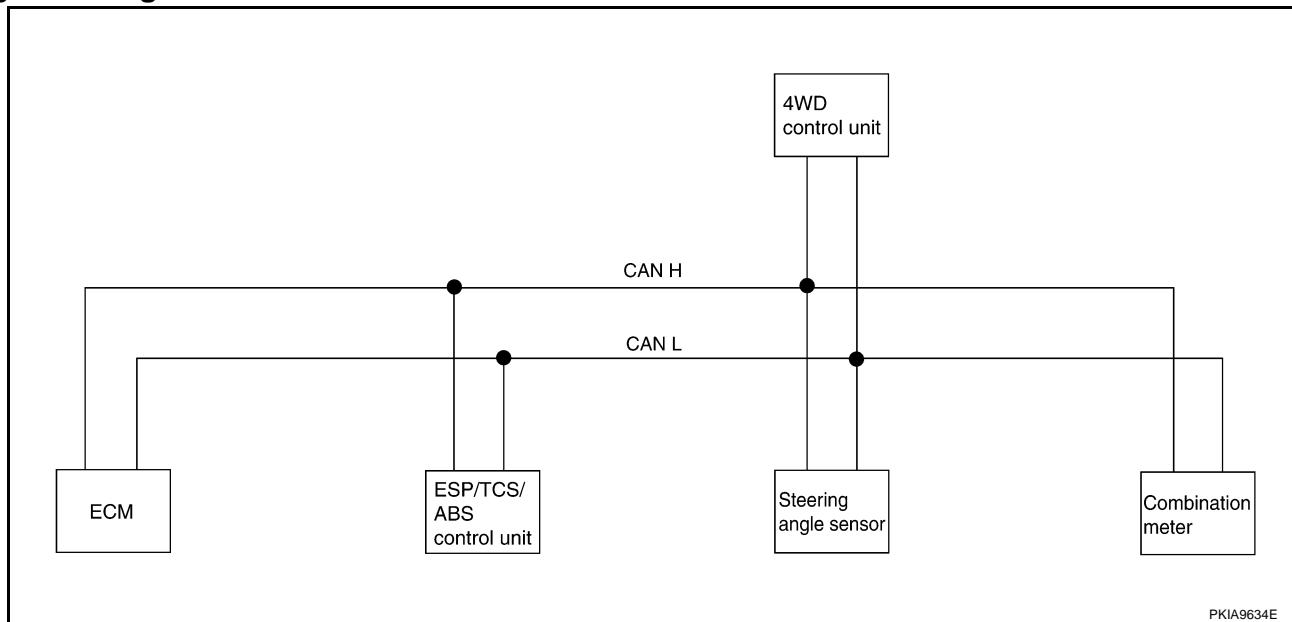
CAN COMMUNICATION

[CAN]

Signals	ECM	TCM	ABS actuator and electric unit (control unit)	4WD control unit	Combination meter
4WD warning lamp signal				T	R
4WD mode indicator lamp signal				T	R
Parking brake switch signal				R	T
MI signal	T				R
Engine A/T integrated control signal	T	R			
	R	T			
A/T self-diagnosis signal	R	T			

TYPE 3/TYPE4

System diagram



PKIA9634E

Input/output signal chart

T: Transmit R: Receive

Signals	ECM	ESP/TCS/ABS control unit	Steering angle sensor	4WD control unit	Combination meter
Stop lamp switch signal		T		R	
Engine speed signal	T	R		R	R
Engine coolant temperature signal	T				R
Accelerator pedal position signal	T	R		R	
A/C switch signal*1	R				T
A/C compressor feedback signal*2	T				R
Vehicle speed signal		T		R	R
	R				T
ABS warning lamp signal		T			R
Brake warning lamp signal		T			R
SLIP indicator lamp signal		T			R
ESP OFF indicator lamp signal		T			R
4WD warning lamp signal				T	R
4WD mode indicator lamp signal				T	R
Parking brake switch signal				R	T

CAN COMMUNICATION

[CAN]

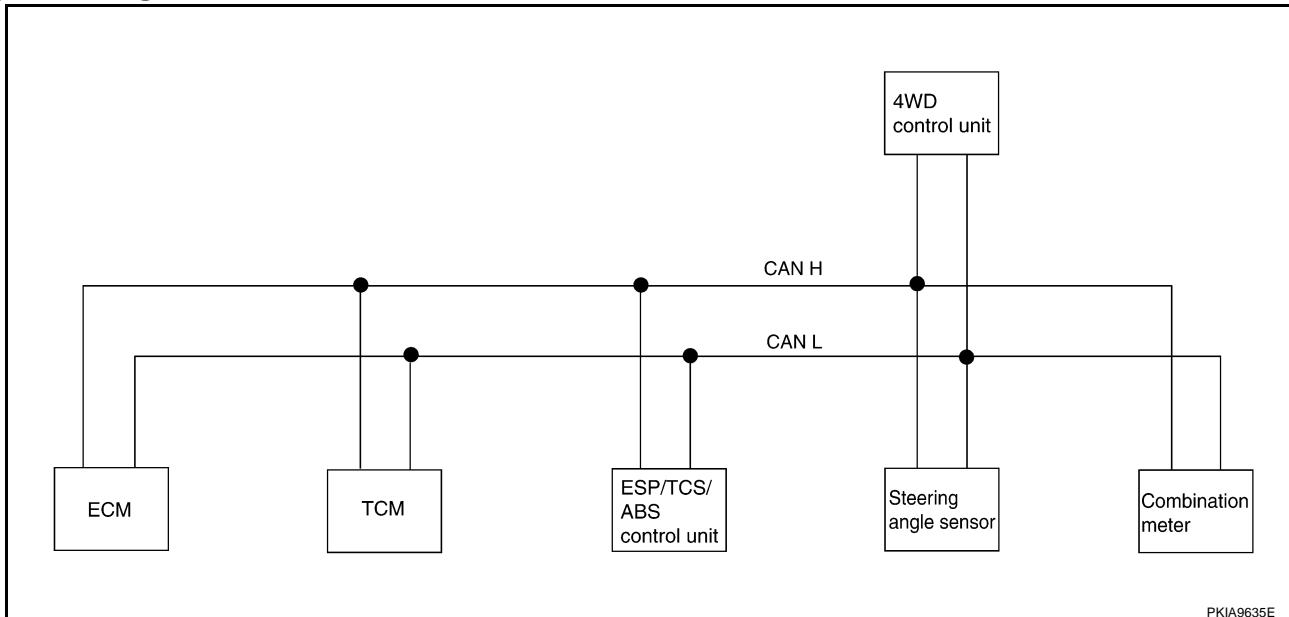
Signals	ECM	ESP/TCS/ABS control unit	Steering angle sensor	4WD control unit	Combination meter
MI signal	T				R
Glow indicator lamp signal*1	T				R
Steering angle sensor signal		R	T		

*1: YD engine models only

*2: QR engine models only

TYPE 5

System diagram



PKIA9635E

Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	ESP/TCS/ABS control unit	Steering angle sensor	4WD control unit	Combination meter	LAN
Stop lamp switch signal		R					T
			T			R	
P-N range signal		R					T
A/T position indicator lamp signal		T	R				R
O/D OFF indicator signal		T					R
Overdrive control switch signal		R					T
Closed throttle position signal	T	R					
Wide open throttle position signal	T	R					
Engine speed signal	T		R		R		R
Engine coolant temperature signal	T						R
Accelerator pedal position signal	T		R		R		
Output shaft revolution signal	R	T					
A/C compressor feedback signal	T						R
Vehicle speed signal			T		R		R
	R						T
ABS warning lamp signal			T				R
Brake warning lamp signal			T				R

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LAN

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CAN COMMUNICATION

[CAN]

Signals	ECM	TCM	ESP/TCS/ ABS control unit	Steering angle sensor	4WD control unit	Combination meter
SLIP indicator lamp signal			T			R
ESP OFF indicator lamp signal			T			R
4WD warning lamp signal					T	R
4WD mode indicator lamp signal					T	R
Parking brake switch signal					R	T
MI signal	T					R
Steering angle sensor signal			R	T		
Engine and A/T integrated	T	R				
	R	T				
A/T self-diagnosis signal	R	T				

CAN SYSTEM (TYPE 1)

PFP:23710

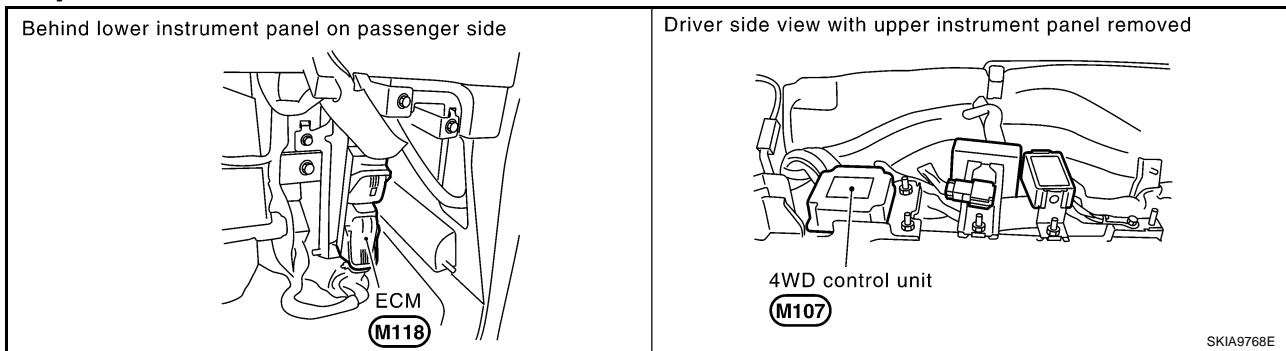
System Description

EKS00F07

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

EKS00F08



SKIA9768E

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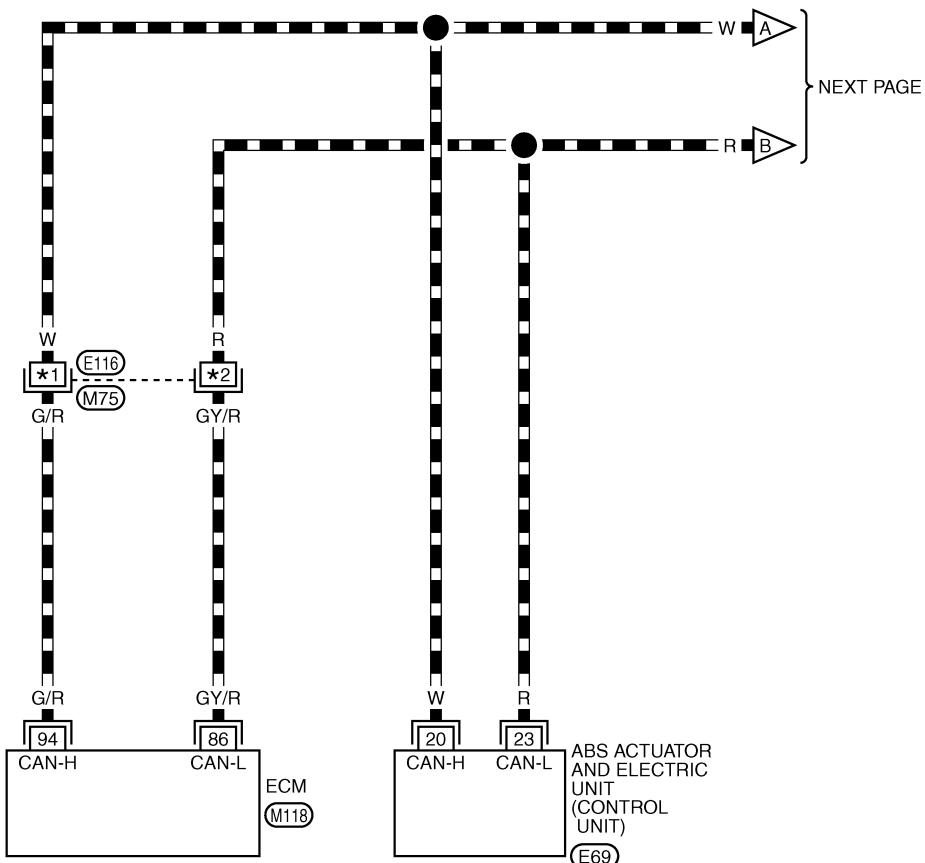
M

Wiring Diagram — CAN —

EKS00F09

LAN-CAN-01

- : DATA LINE
- ◀ : LHD MODELS
- ▶ : RHD MODELS
- *1 13 : ◀
- 10 : ▶
- *2 4 : ◀
- 3 : ▶



1	2	3	4	5	6	7	8	9		
10	11	12	13	14	15	16	17	18	19	20

(M75) : ◀
BR

1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15	16

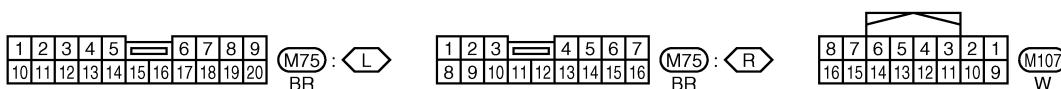
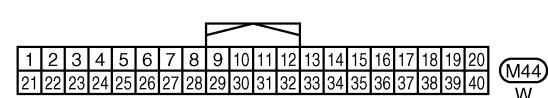
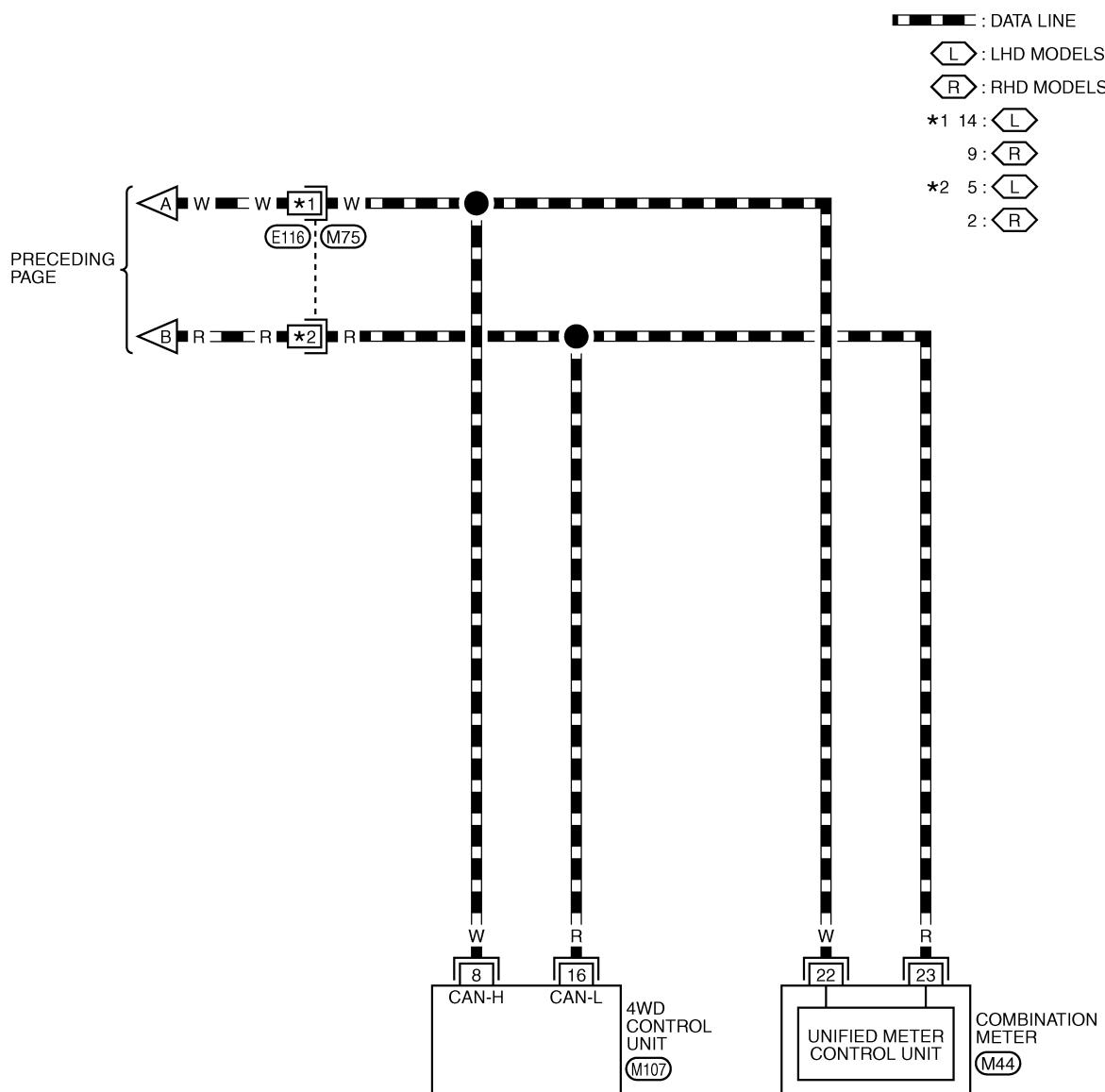
(M75) : ▶
BR

REFER TO THE FOLLOWING.
 (M118), (E69) -ELECTRICAL
 UNITS

CAN SYSTEM (TYPE 1)

[CAN]

LAN-CAN-02



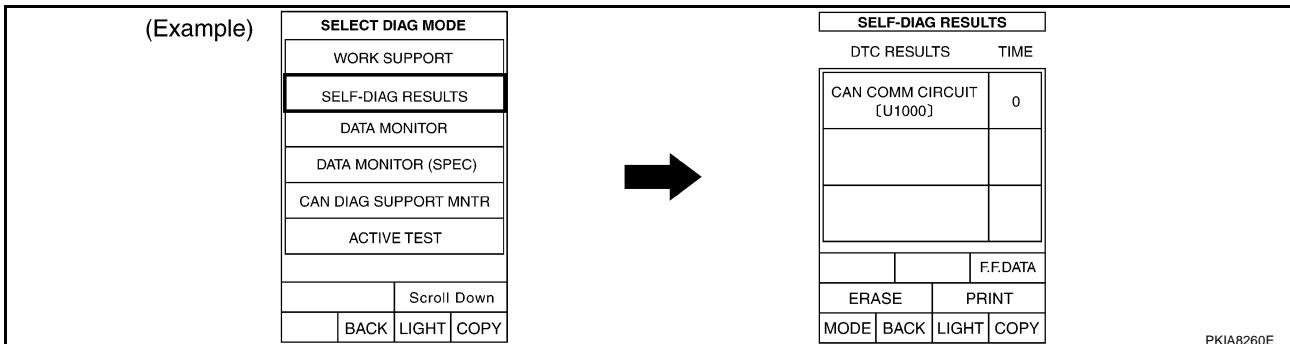
TKWB0107E

LAN-11

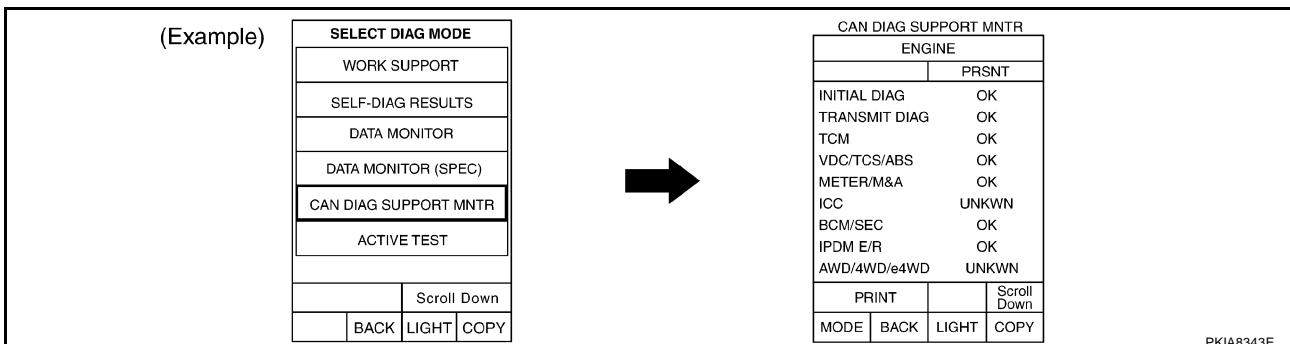
Work Flow

EKS00F0A

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



2. Print all the data of “CAN DIAG SUPPORT MNTR” for “ENGINE”, “ABS” and “ALL MODE AWD/4WD” displayed on CONSULT-II.



3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to [LAN-13, "CHECK SHEET"](#) .
4. 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 [LAN-13, "CHECK SHEET"](#) .

NOTE:

- If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", 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 [LAN-14, "CHECK SHEET RESULTS \(EXAMPLE\)"](#).

CAN SYSTEM (TYPE 1)

[CAN]

CHECK SHEET

NOTE:

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

Check sheet table

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

Symptoms:

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
ALL MODE AWD/4WD
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
ALL MODE AWD/4WD
CAN DIAG SUPPORT
MNTR

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CAN SYSTEM (TYPE 1)

[CAN]

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

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

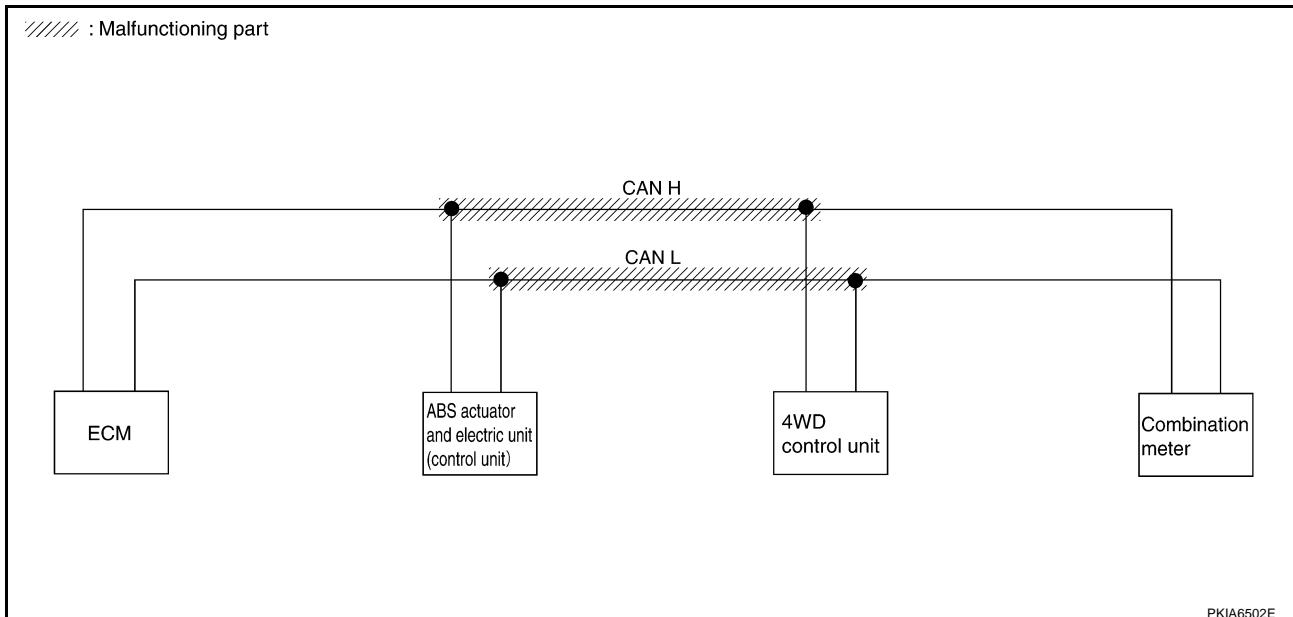
Case 1

Check harness between ABS actuator and electric unit (control unit) and 4WD control unit. Refer to [LAN-19, "Between ABS Actuator and Electric Unit \(Control Unit\) and 4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

PKIA9599E

////// : Malfunctioning part



PKIA6502E

CAN SYSTEM (TYPE 1)

[CAN]

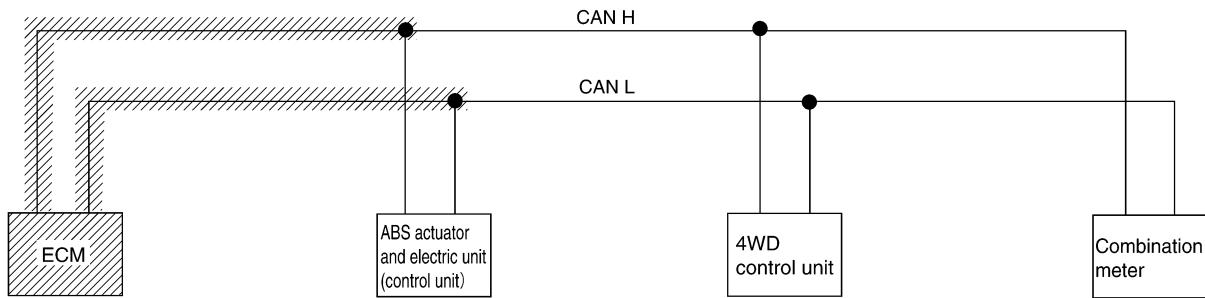
Case 2

Check ECM circuit. Refer to [LAN-20, "ECM Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

PKIA9600E

////// : Malfunctioning part



PKIA6503E

CAN SYSTEM (TYPE 1)

[CAN]

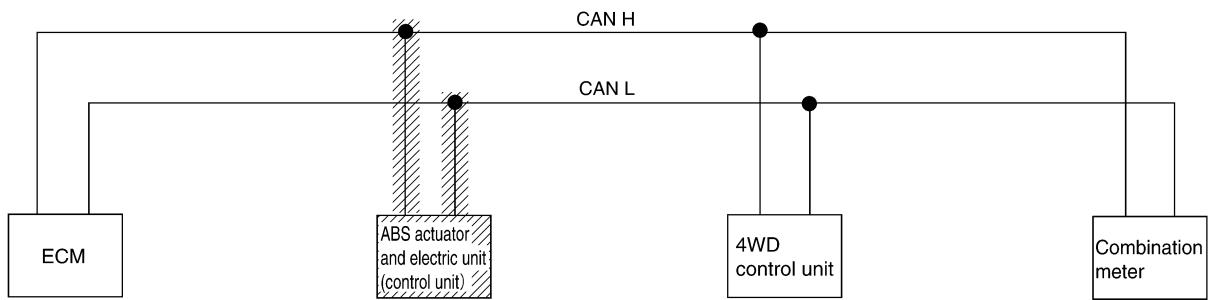
Case 3

Check ABS actuator and electric unit (control unit) circuit. Refer to [LAN-21, "ABS Actuator and Electric Unit \(Control Unit\) Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

PKIA9601E

////// : Malfunctioning part



PKIA6504E

CAN SYSTEM (TYPE 1)

[CAN]

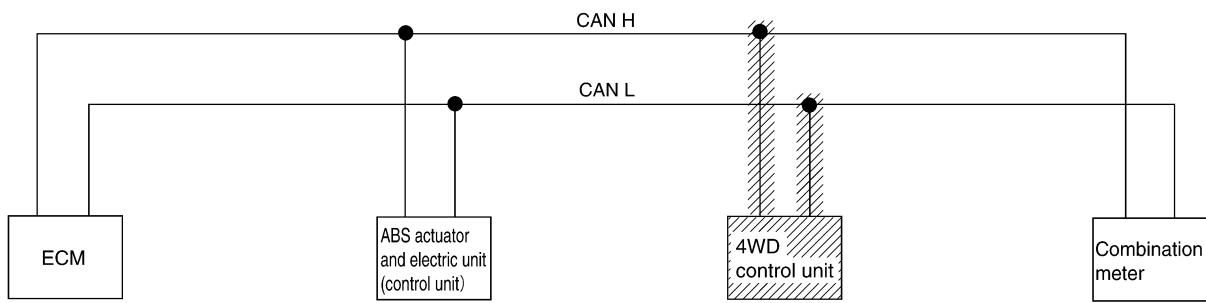
Case 4

Check 4WD control unit circuit. Refer to [LAN-21, "4WD Control Unit Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

PKIA9602E

////// : Malfunctioning part



PKIA6505E

CAN SYSTEM (TYPE 1)

[CAN]

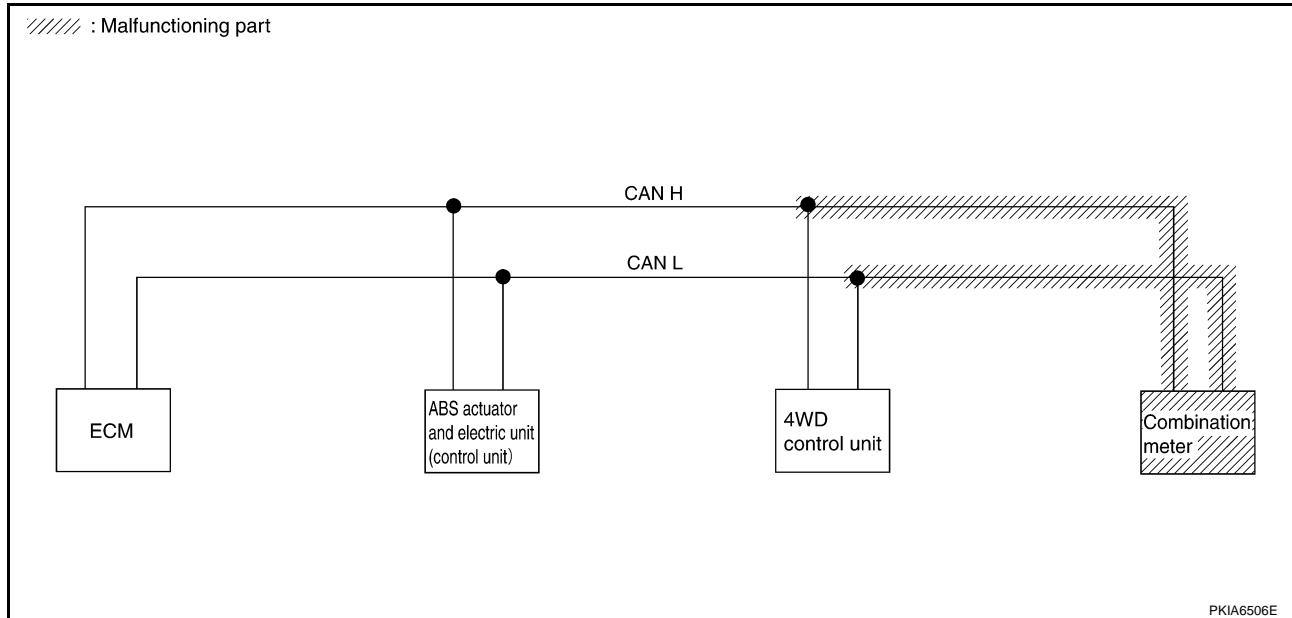
Case 5

Check combination meter circuit. Refer to [LAN-22, "Combination Meter Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—

PKIA9603E

////// : Malfunctioning part



Case 6

Check CAN communication circuit. Refer to [LAN-22, "CAN Communication Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKN	—	—	—	UNKN
ABS	NG	UNKN	UNKN	—	UNKN	—
ALL MODE AWD/4WD	NG	UNKN	UNKN	UNKN	—	—

PKIA9604E

Between ABS Actuator and Electric Unit (Control Unit) and 4WD Control Unit Circuit Inspection

EKS00FOE

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E116
 - Harness connector M75

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

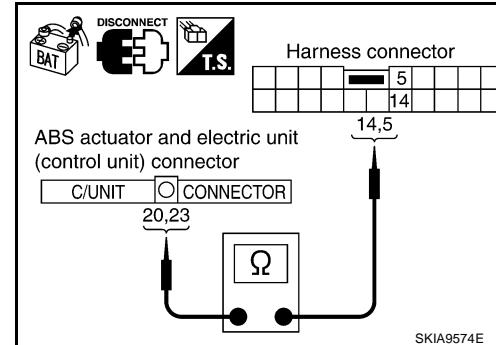
1. Disconnect ABS actuator and electric unit (control unit) connector and harness connector E116.
2. Check the following.
 - LHD models
 - Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and harness connector E116 terminals 14 (W), 5 (R).

20 (W) – 14 (W)

: Continuity should exist.

23 (R) – 5 (R)

: Continuity should exist.



SKIA9574E

- RHD models
- Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and harness connector E116 terminals 9 (W), 2 (R).

20 (W) – 9 (W)

: Continuity should exist.

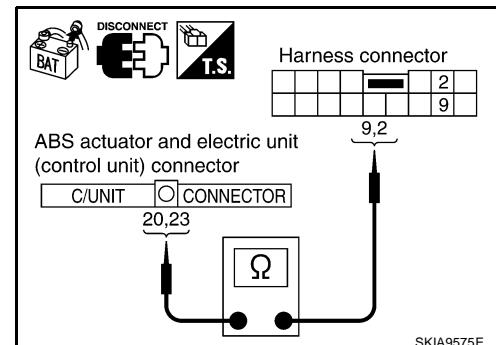
23 (R) – 2 (R)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



SKIA9575E

3. CHECK HARNESS FOR OPEN CIRCUIT

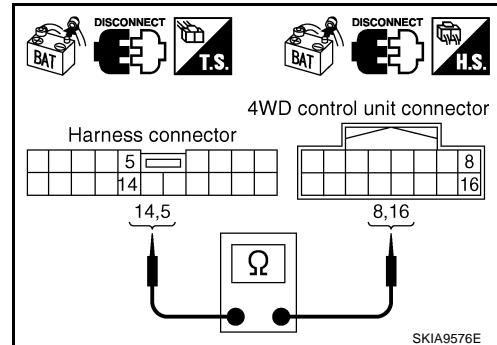
1. Disconnect 4WD control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector M75 terminals 14 (W), 5 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

14 (W) – 8 (W)

: Continuity should exist.

5 (R) – 16 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector M75 terminals 9 (W), 2 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

9 (W) – 8 (W)

: Continuity should exist.

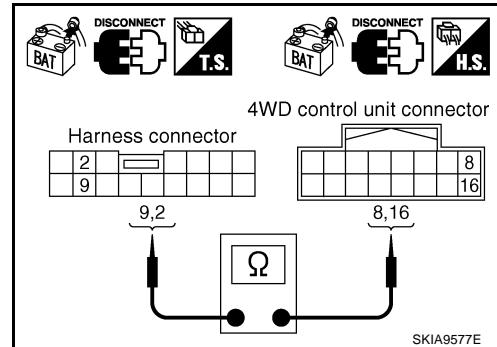
2 (R) – 16 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-12, "Work Flow"](#).

NG >> Repair harness.



ECM Circuit Inspection

EKS00F0F

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
 - ECM connector
 - Harness connector M75
 - Harness connector E116

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

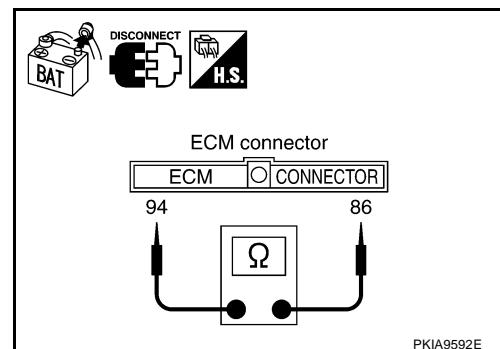
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ECM connector.
2. Check resistance between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Approx. 108 – 132Ω

OK or NG

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



EKS00F8C

ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

1. CHECK CONNECTOR

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

OK or NG

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

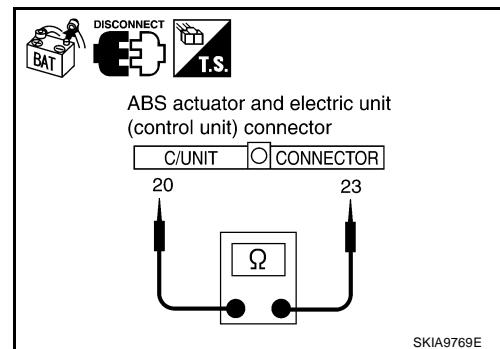
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check resistance between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W) and 23 (R).

20 (W) – 23 (R) : Approx. 54 – 66Ω

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 E116.



EKS00FAZ

4WD Control Unit Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of 4WD 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.

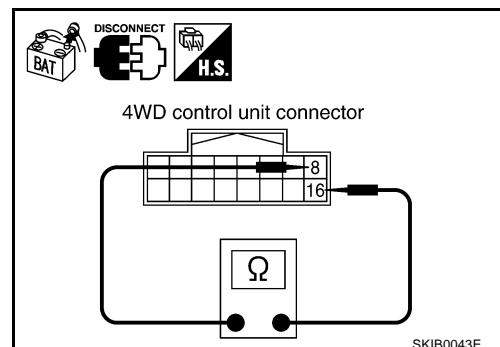
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector M107 terminals 8 (W) and 16 (R).

8 (W) – 16 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace 4WD control unit.
 NG >> Repair harness between 4WD control unit and combination meter.



EKS00FB0

Combination Meter Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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.

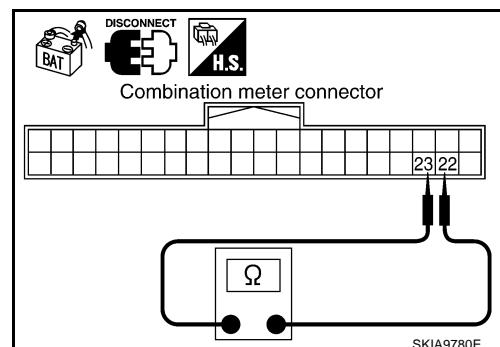
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect combination meter connector.
2. Check resistance between combination meter harness connector M44 terminals 22 (W) and 23 (R).

22 (W) – 23 (R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace combination meter.
 NG >> Repair harness between combination meter and 4WD control unit.



EKS00F0M

CAN Communication Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side, control unit side, meter side, connector side and harness side).
 - ECM
 - ABS actuator and electric unit (control unit)
 - 4WD control unit
 - Combination meter
 - Between ECM and combination meter

OK or NG

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

2. CHECK HARNESS FOR SHORT CIRCUIT

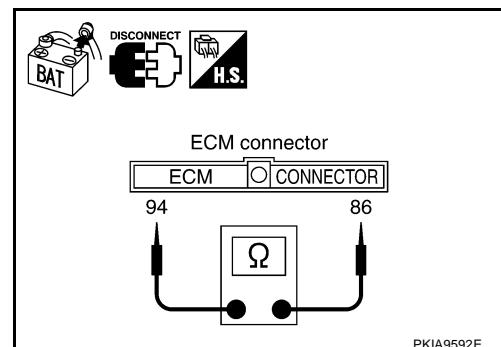
1. Disconnect ECM connector and harness connector M75.
2. Check continuity between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector M75.



3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ECM harness connector M118 terminals 94 (G/R), 86 (GY/R) and ground.

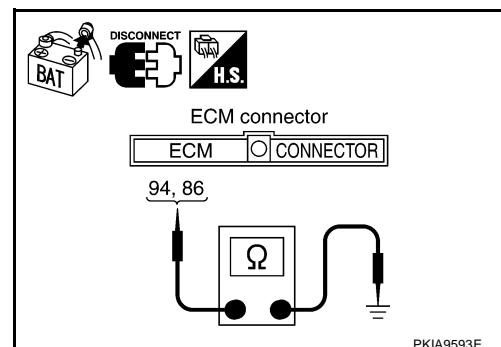
94 (G/R) – Ground : Continuity should not exist.

86 (GY/R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness between ECM and harness connector M75.



4. CHECK HARNESS FOR SHORT CIRCUIT

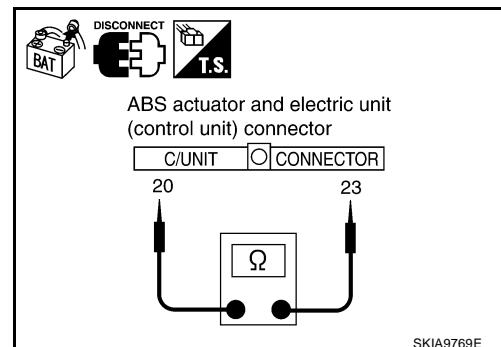
1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W) and 23 (R).

20 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 5.

NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.



5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and ground.

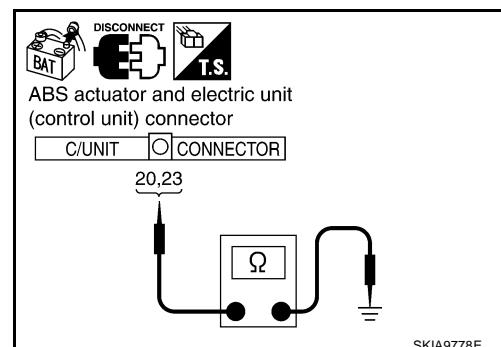
20 (W) – Ground : Continuity should not exist.

23 (R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 6.

NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.



6. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect 4WD control unit connector and combination meter connector.
2. Check continuity between combination meter harness connector M44 terminals 22 (W) and 23 (R).

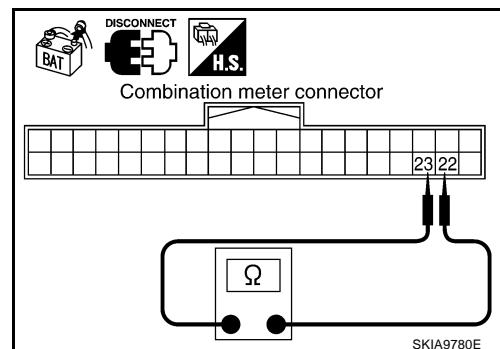
22 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and harness connector M75



7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between combination meter harness connector M44 terminals 22 (W), 23 (R) and ground.

22 (W) – Ground : Continuity should not exist.

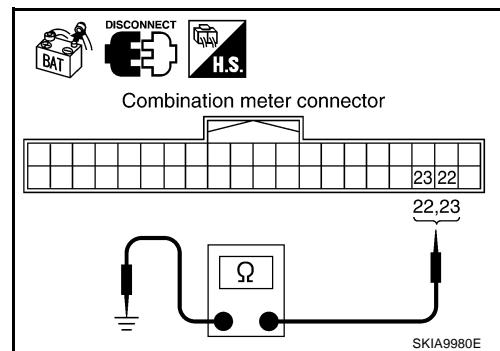
23 (R) – Ground : Continuity should not exist.

OK or NO

OK >> GO TO 8.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and harness connector M75



8. CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

Check components inspection. Refer to [LAN-24, "CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT"](#).

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-12, "Work Flow"](#).

NG >> Replace ECM and/or combination meter.

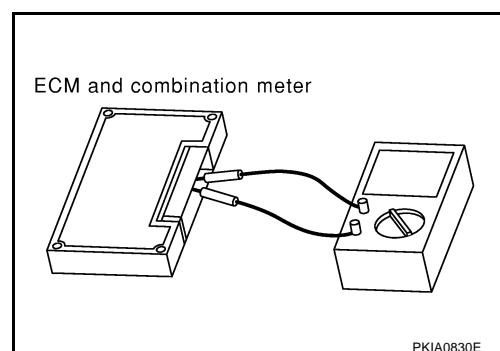
Component Inspection

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

EKS00F00

- Remove ECM and combination meter from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between combination meter terminals 22 and 23.

Unit	Terminal	Resistance (Ω) (Approx.)
ECM	94 – 86	108 – 132
Combination meter	22 – 23	



CAN SYSTEM (TYPE 2)

PFP:23710

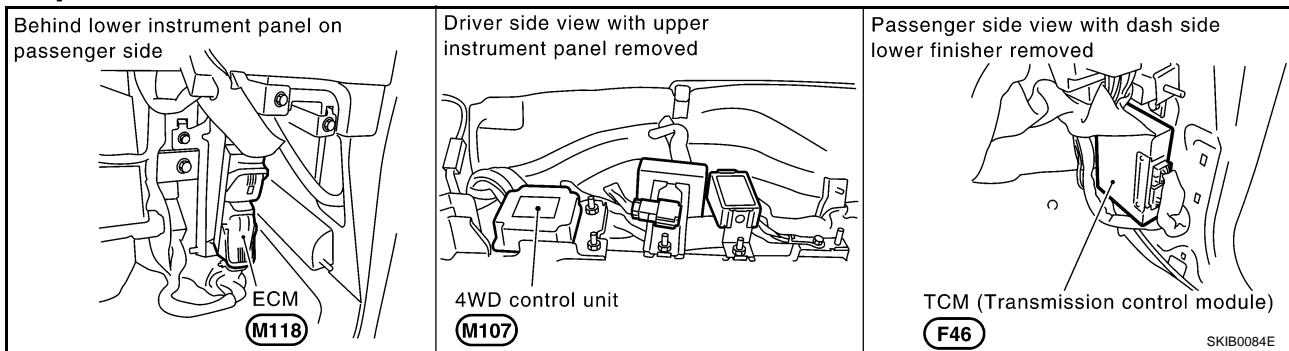
System Description

EKS00FHZ

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

EKS00F10



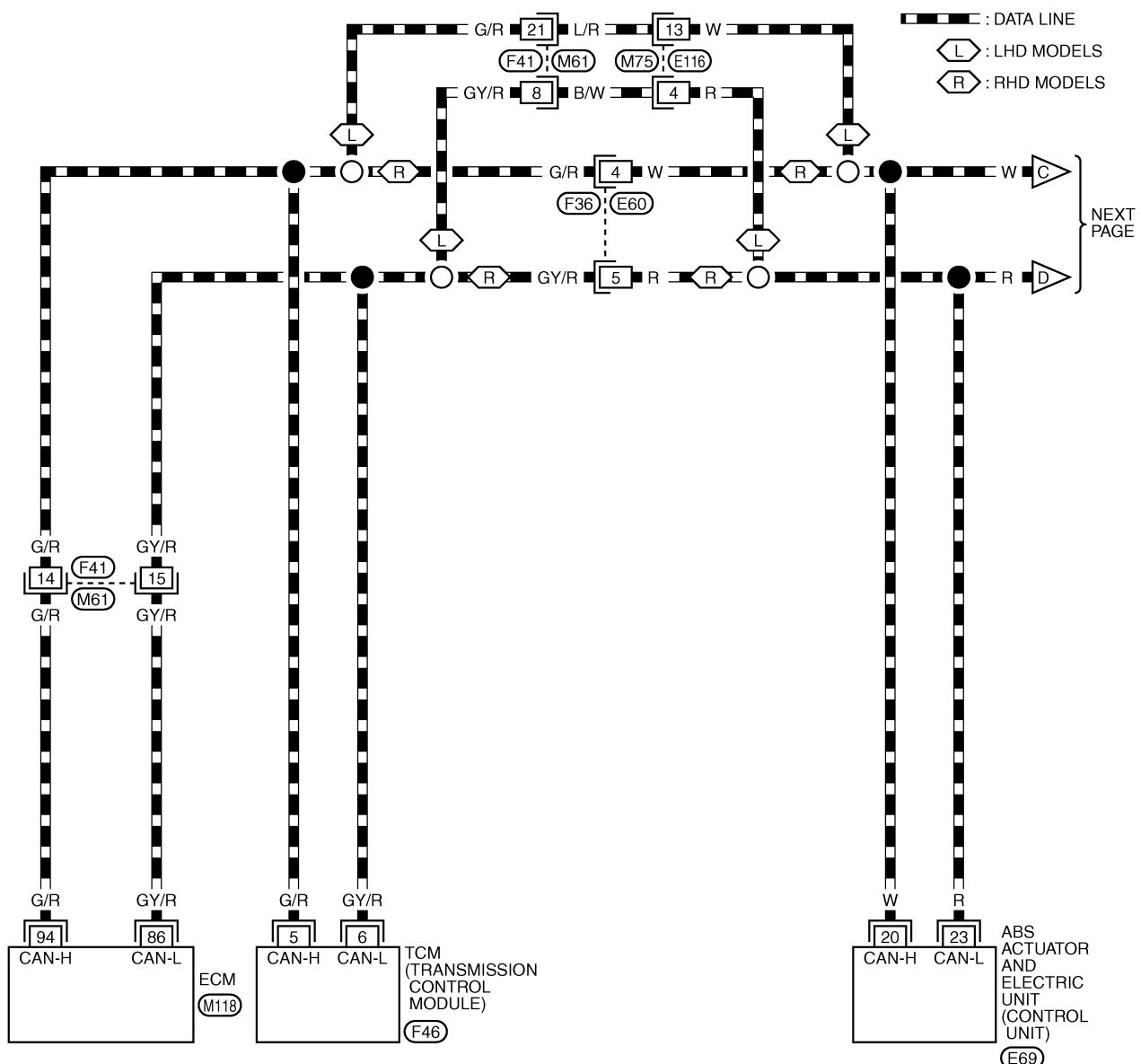
CAN SYSTEM (TYPE 2)

[CAN]

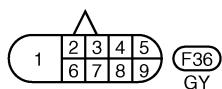
Wiring Diagram — CAN —

EKS00FI1

LAN-CAN-03



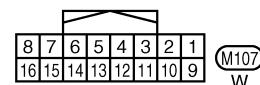
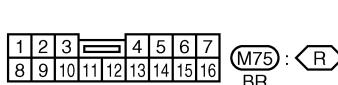
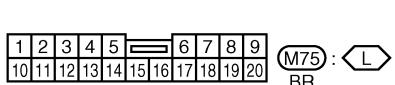
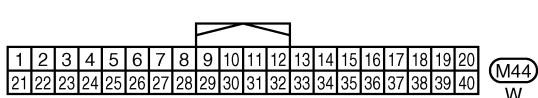
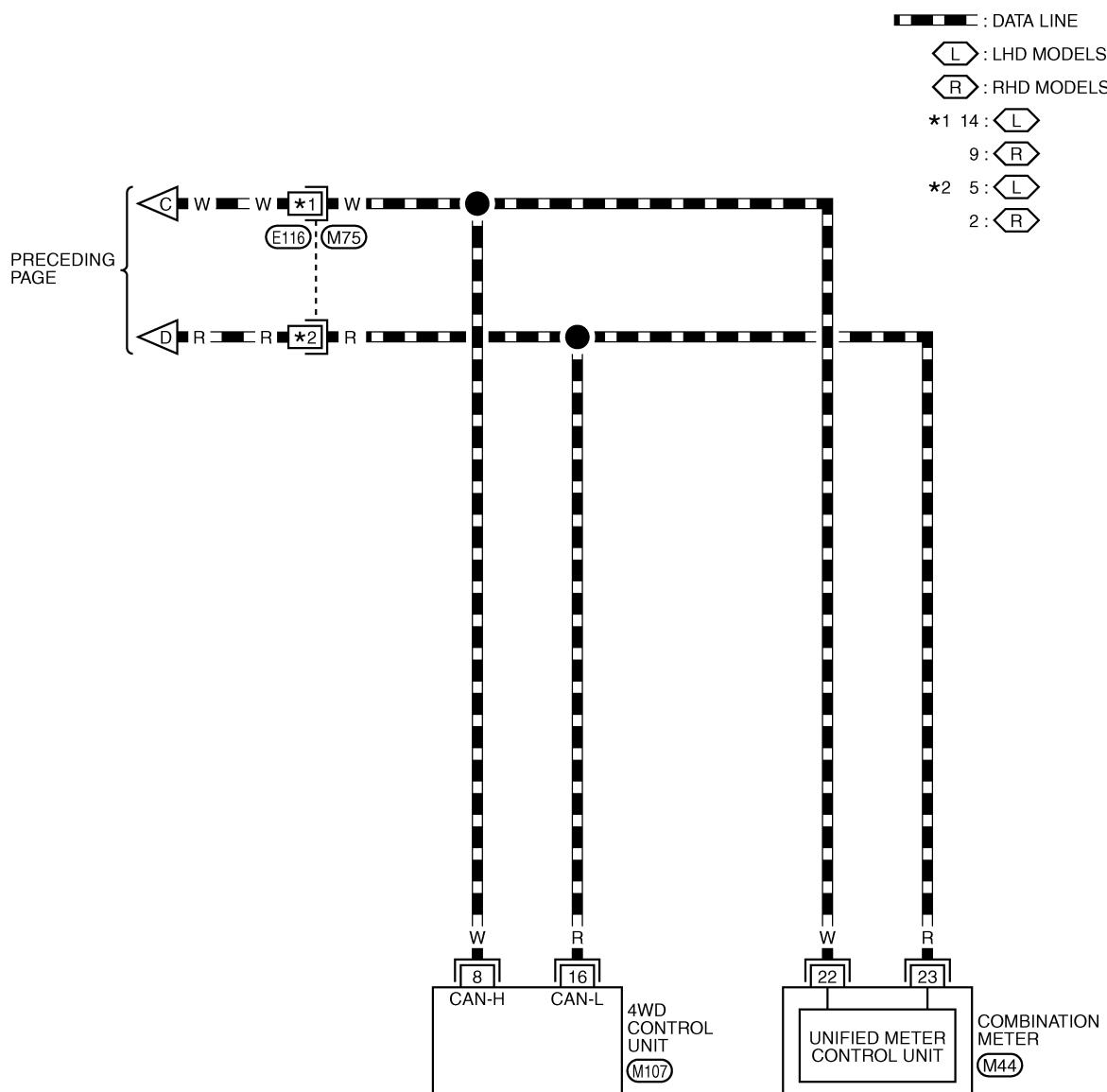
REFER TO THE FOLLOWING.
M118 , **E69** , **F46**
-ELECTRICAL UNITS



CAN SYSTEM (TYPE 2)

[CAN]

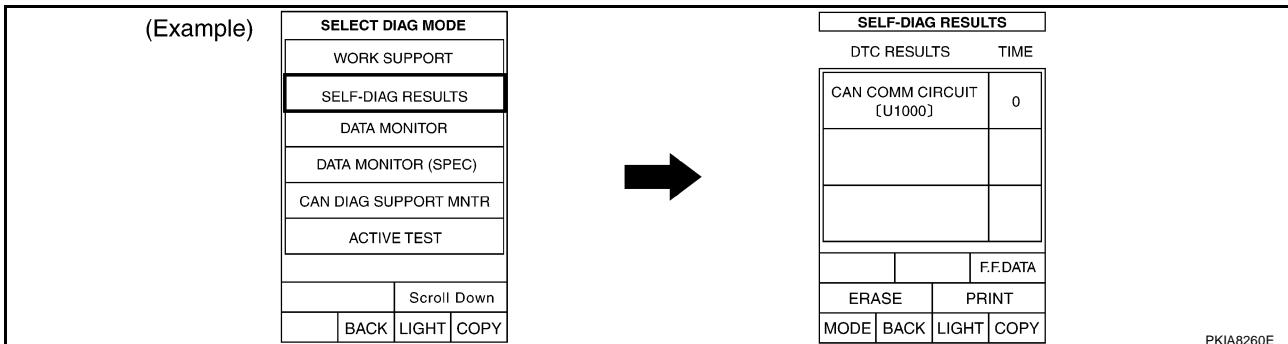
LAN-CAN-04



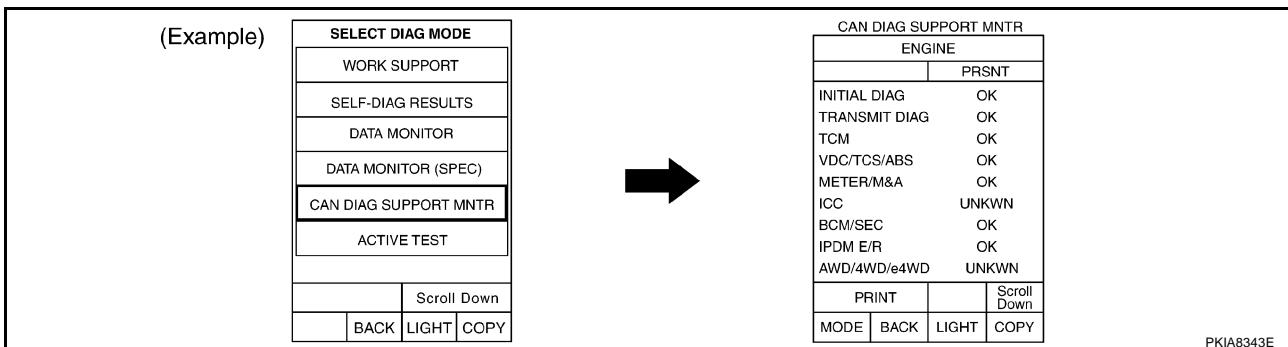
Work Flow

EKS00FIC

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



2. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to [LAN-29, "CHECK SHEET"](#) .
4. 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 [LAN-29, "CHECK SHEET"](#) .

NOTE:

- If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, 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 [LAN-30, "CHECK SHEET RESULTS \(EXAMPLE\)"](#).

CAN SYSTEM (TYPE 2)

[CAN]

CHECK SHEET

NOTE:

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

Check sheet table

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

Symptoms:

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
A/T
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
ALL MODE AWD/4WD
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
A/T
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
ALL MODE AWD/4WD
CAN DIAG SUPPORT
MNTR

A
B
C
D
E
F
G
H
I
J

LAN
L
M

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

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

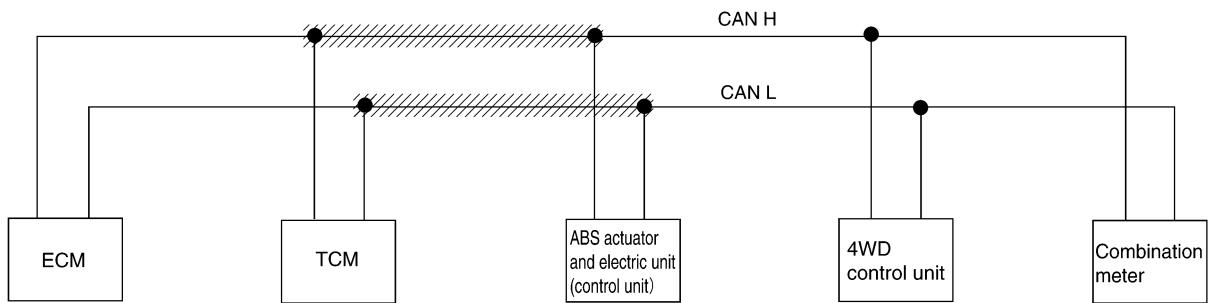
Case 1

Check harness between TCM and ABS actuator and electric unit (control unit). Refer to [LAN-37, "Between TCM and ABS Actuator and Electric Unit \(Control Unit\) Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	TCM	VDC/TCS /ABS	AWD/4WD
ENGINE	NG	UNKWN	—	UNKWN	—	—
A/T	NG	UNKWN	UNKWN	—	—	—
ABS	NG	UNKWN	UNKWN	—	—	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—

PKIA9606E

////// : Malfunctioning part



PKIA6495E

CAN SYSTEM (TYPE 2)

[CAN]

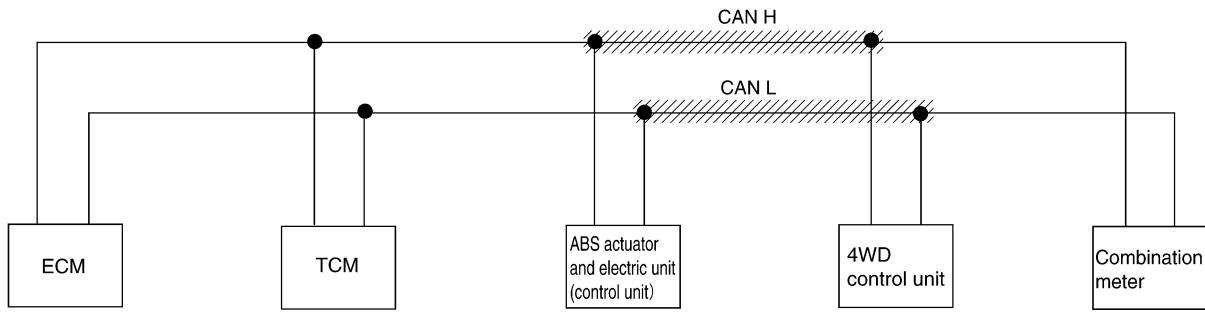
Case 2

Check harness between ABS actuator and electric unit (control unit) and 4WD control unit. Refer to [LAN-39, "Between ABS Actuator and Electric Unit \(Control Unit\) and 4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR					
	Initial diagnosis	Transmit diagnosis	Receive diagnosis			
			ECM	TCM	VDC/TCS /ABS	AWD/4WD
ENGINE	NG	UNKWN	—	UNKWN	—	—
A/T	NG	UNKWN	UNKWN	—	—	—
ABS	NG	UNKWN	UNKWN	—	—	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—

PKIA9607E

////// : Malfunctioning part



PKIA6496E

CAN SYSTEM (TYPE 2)

[CAN]

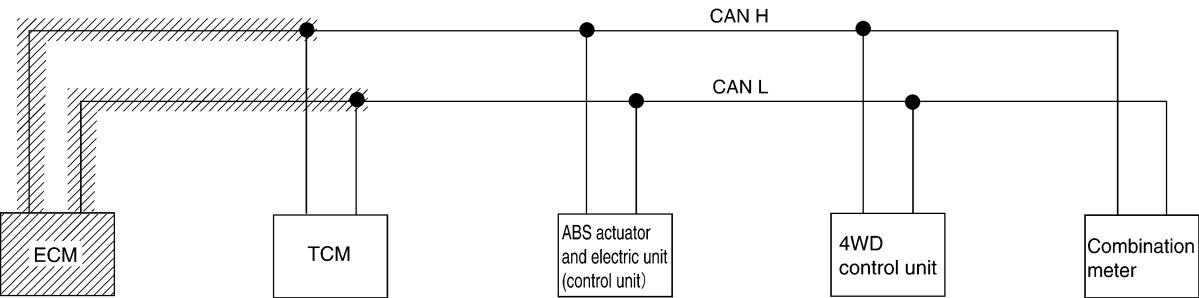
Case 3

Check ECM circuit. Refer to [LAN-41, "ECM Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

PKIA9608E

////// : Malfunctioning part



PKIA6497E

CAN SYSTEM (TYPE 2)

[CAN]

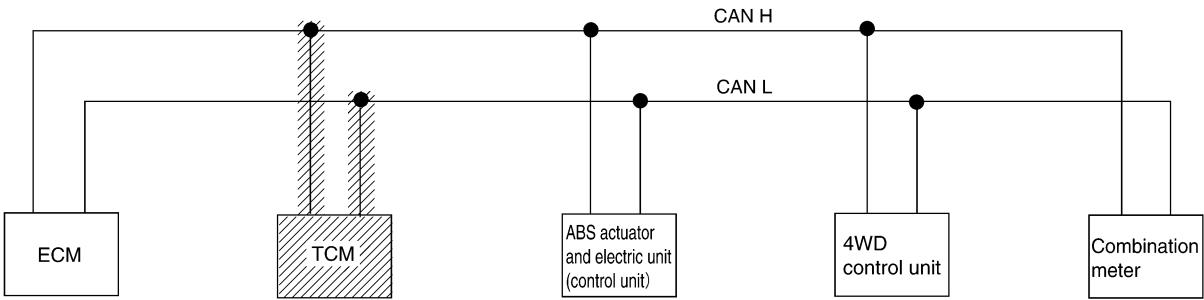
Case 4

Check TCM circuit. Refer to [LAN-42, "TCM Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

PKIA9609E

////// : Malfunctioning part



PKIA6498E

CAN SYSTEM (TYPE 2)

[CAN]

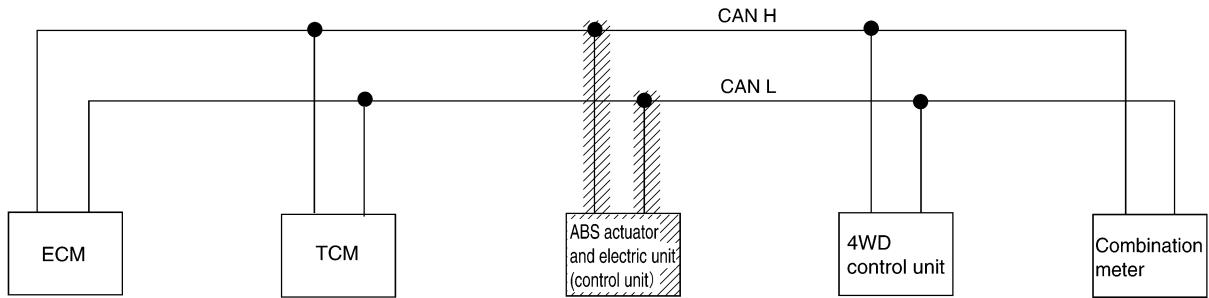
Case 5

Check ABS actuator and electric unit (control unit) circuit. Refer to [LAN-42, "ABS Actuator and Electric Unit \(Control Unit\) Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

PKIA9610E

////// : Malfunctioning part



PKIA6499E

CAN SYSTEM (TYPE 2)

[CAN]

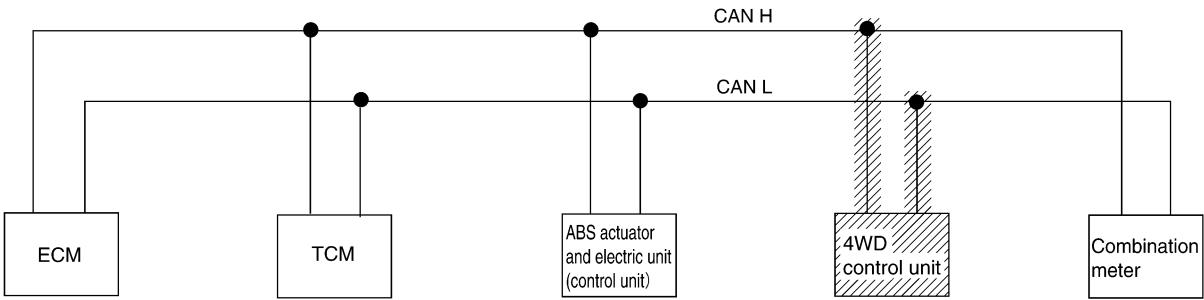
Case 6

Check 4WD control unit circuit. Refer to [LAN-43, "4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

PKIA9611E

////// : Malfunctioning part



PKIA6500E

CAN SYSTEM (TYPE 2)

[CAN]

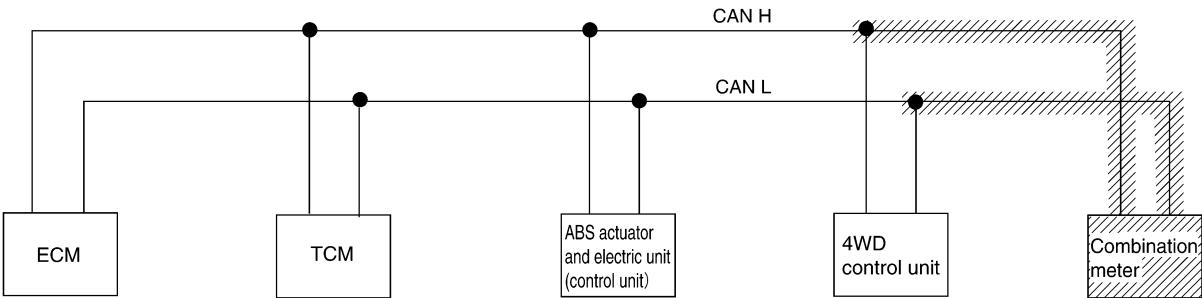
Case 7

Check combination meter circuit. Refer to [LAN-43, "Combination Meter Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	—	UNKWN	—
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—

PKIA9612E

////// : Malfunctioning part



PKIA6501E

Case 8

Check CAN communication circuit. Refer to [LAN-44, "CAN Communication Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	TCM	VDC/TCS /ABS	AWD/4WD	METER/M&A
ENGINE	NG	UN ✓ WN	—	UN ✓ WN	—	—	UN ✓ WN
A/T	NG	UN ✓ WN	UN ✓ WN	—	—	—	UN ✓ WN
ABS	NG	UN ✓ WN	UN ✓ WN	—	—	UN ✓ WN	—
ALL MODE AWD/4WD	NG	UN ✓ WN	UN ✓ WN	—	UN ✓ WN	—	—

PKIA9613E

Between TCM and ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

EKS00FI3

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - LHD models
 - Harness connector F41
 - Harness connector M61
 - Harness connector M75
 - Harness connector E116
 - RHD models
 - Harness connector F36
 - Harness connector E60

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

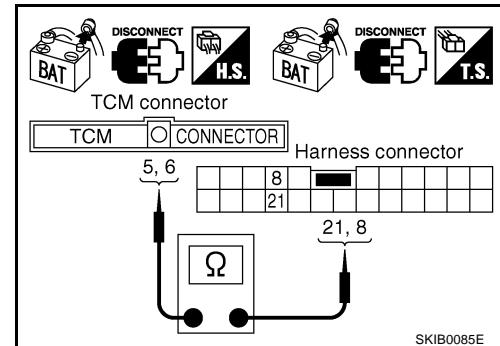
LAN

2. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

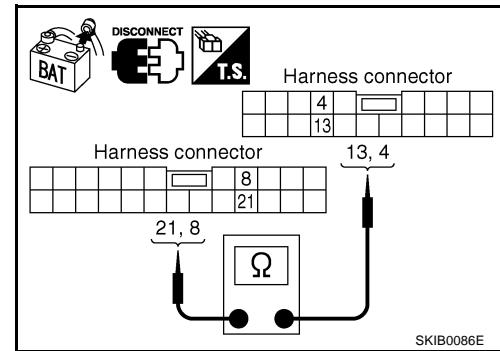
1. Disconnect TCM connector and harness connector F41.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F41 terminals 21 (G/R), 8 (GY/R).

5 (G/R) – 21 (G/R) : Continuity should exist.
6 (GY/R) – 8 (GY/R) : Continuity should exist.



3. Disconnect harness connector M75.
4. Check continuity between harness connector M61 terminals 21 (L/R), 8 (B/W) and harness connector M75 terminals 13 (L/R), 4 (B/W).

21 (L/R) – 13 (L/R) : Continuity should exist.
8 (B/W) – 4 (B/W) : Continuity should exist.



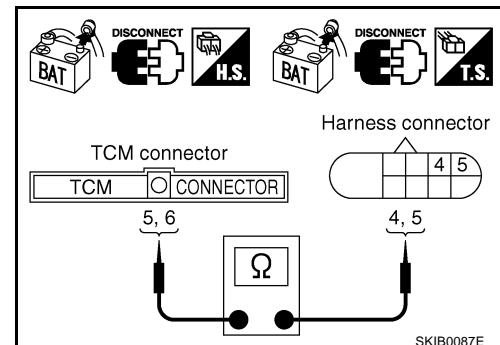
RHD models

1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F36 terminals 4 (G/R), 5 (GY/R).

5 (G/R) – 4 (G/R) : Continuity should exist.
6 (GY/R) – 5 (GY/R) : Continuity should exist.

OK or NG

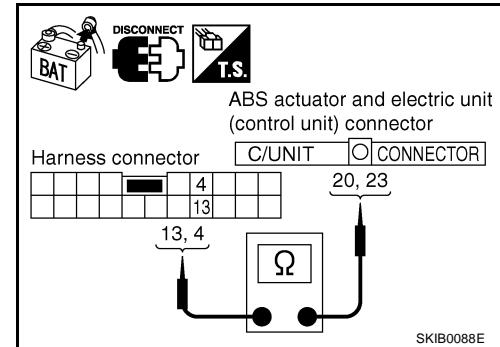
OK >> GO TO 3.
 NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

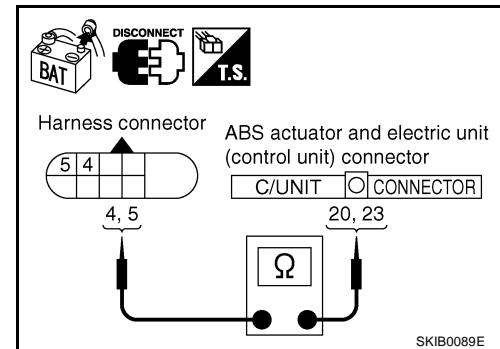
1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector E116 terminals 13 (W), 4 (R) and ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R).

13 (W) – 20 (W) : Continuity should exist.
4 (R) – 23 (R) : Continuity should exist.



- RHD models
- Check continuity between harness connector E60 terminals 4 (W), 5 (R) and ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R).

4 (W) – 20 (W) : Continuity should exist.
5 (R) – 23 (R) : Continuity should exist.



OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-28, "Work Flow"](#).
 NG >> Repair harness.

Between ABS Actuator and Electric Unit (Control Unit) and 4WD Control Unit Circuit Inspection

EKS00F14

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E116
 - Harness connector M75

OK or NG

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

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2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector and harness connector E116.

2. Check the following.

- LHD models

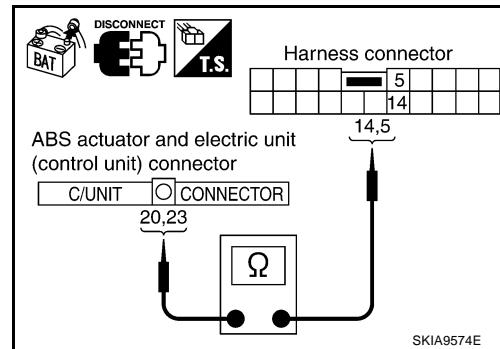
• Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and harness connector E116 terminals 14 (W), 5 (R).

20 (W) – 14 (W)

: Continuity should exist.

23 (R) – 5 (R)

: Continuity should exist.



- RHD models

• Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and harness connector E116 terminals 9 (W), 2 (R).

20 (W) – 9 (W)

: Continuity should exist.

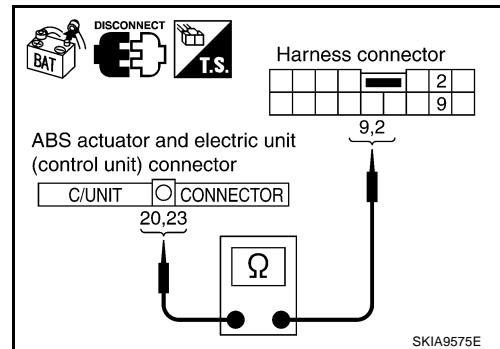
23 (R) – 2 (R)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

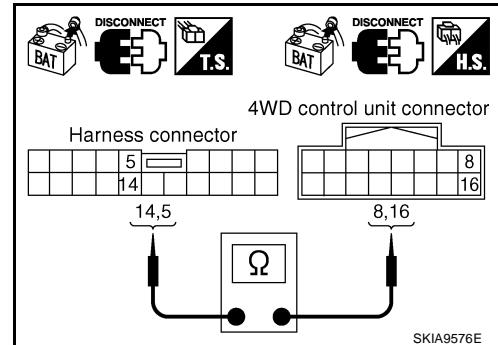
1. Disconnect 4WD control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector M75 terminals 14 (W), 5 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

14 (W) – 8 (W)

: Continuity should exist.

5 (R) – 16 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector M75 terminals 9 (W), 2 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

9 (W) – 8 (W)

: Continuity should exist.

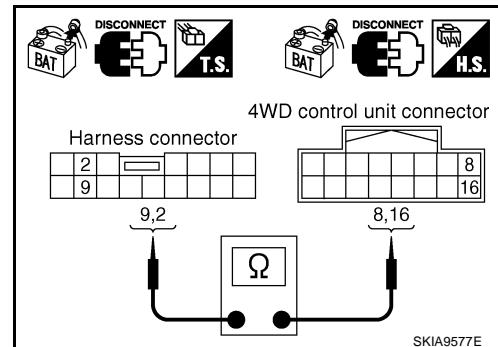
2 (R) – 16 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-28, "Work Flow"](#).

NG >> Repair harness.



ECM Circuit Inspection

EKS00F15

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
 - ECM connector
 - Harness connector M61
 - Harness connector F41

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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2. CHECK HARNESS FOR OPEN CIRCUIT

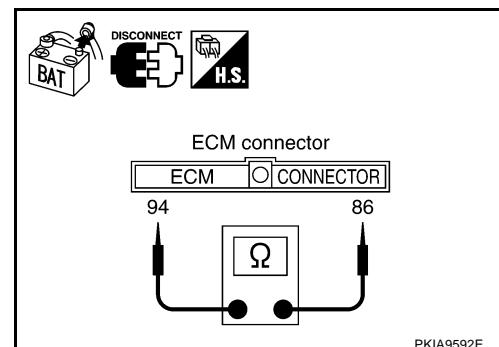
1. Disconnect ECM connector.
2. Check resistance between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace ECM.

NG >> Repair harness between ECM and TCM.



EKS00FI6

TCM Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect TCM connector.
2. Check resistance between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

5 (G/R) – 6 (GY/R) : Approx. 54 – 66Ω

OK or NG

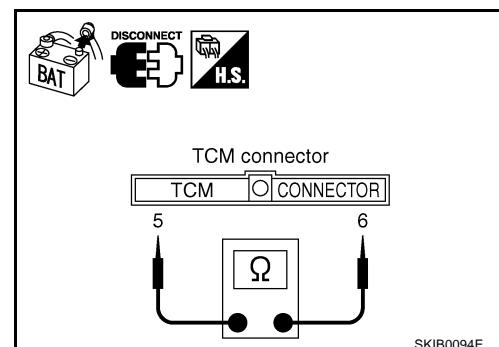
OK >> Replace TCM.

NG >> ● LHD models

– Repair harness between TCM and harness connector F41.

● RHD models

– Repair harness between TCM and harness connector F36.



SKIB0094E

ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

EKS00FI7

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

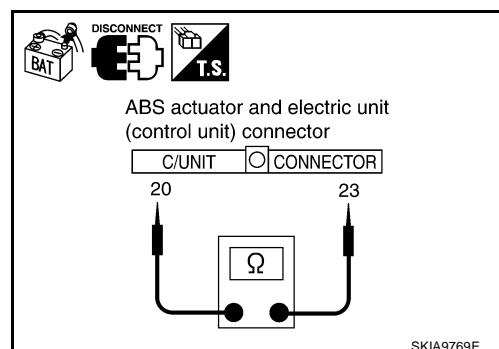
1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check resistance between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W) and 23 (R).

20 (W) – 23 (R)

: Approx. 54 – 66Ω

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 E116.



4WD Control Unit Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of 4WD 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

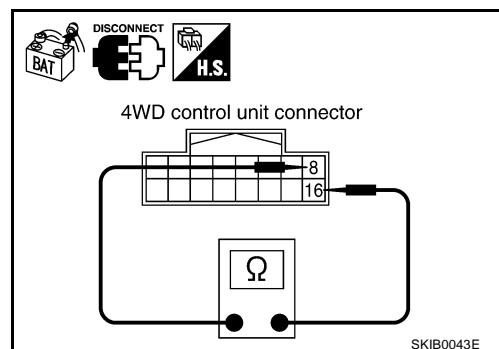
1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector M107 terminals 8 (W) and 16 (R).

8 (W) – 16 (R)

: Approx. 54 – 66Ω

OK or NG

OK >> Replace 4WD control unit.
 NG >> Repair harness between 4WD control unit and combination meter.



Combination Meter Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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 M44 terminals 22 (W) and 23 (R).

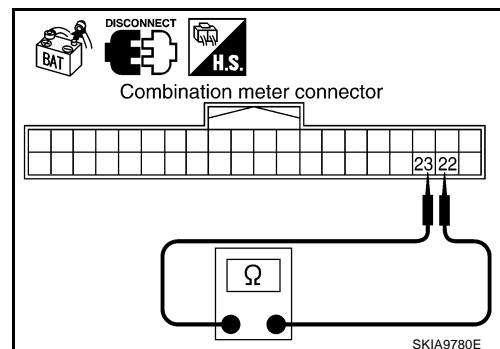
22 (W) – 23 (R)

: Approx. 108 – 132Ω

OK or NG

OK >> Replace combination meter.

NG >> Repair harness between combination meter and 4WD control unit.



EKS00FIA

CAN Communication Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side, control unit side, meter side, connector side and harness side).
 - ECM
 - TCM
 - ABS actuator and electric unit (control unit)
 - 4WD control unit
 - Combination meter
 - Between ECM and combination meter

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

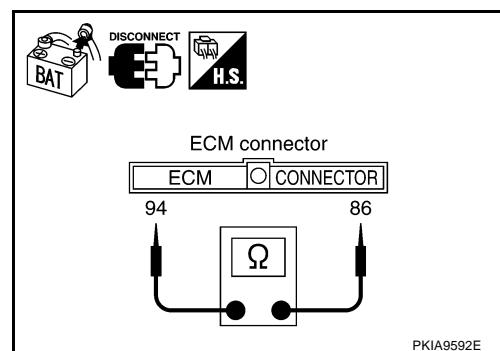
1. Disconnect ECM connector and harness connector M61.
2. Check continuity between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector M61.



3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ECM harness connector M118 terminals 94 (G/R), 86 (GY/R) and ground.

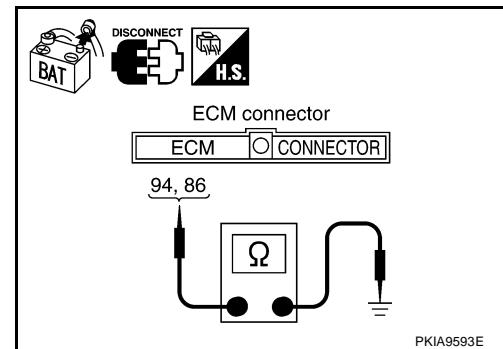
94 (G/R) – Ground : Continuity should not exist.

86 (GY/R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness between ECM and harness connector M61.



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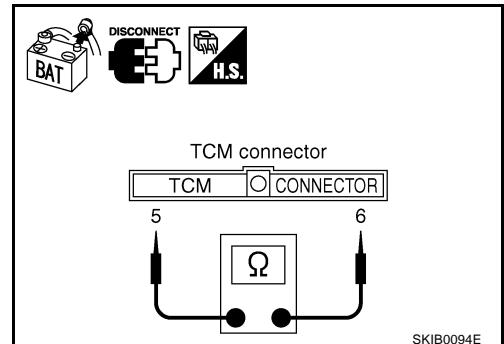
M

4. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

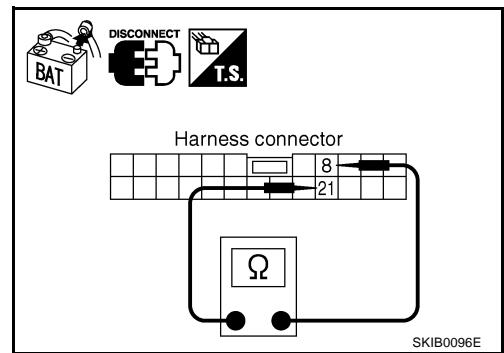
1. Disconnect TCM connector.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

5 (G/R) – 6 (GY/R) : Continuity should not exist.



3. Disconnect harness connector M75.
4. Check continuity between harness connector M61 terminals 21 (L/R) and 8 (B/W).

21 (L/R) – 8 (B/W) : Continuity should not exist.



RHD models

1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

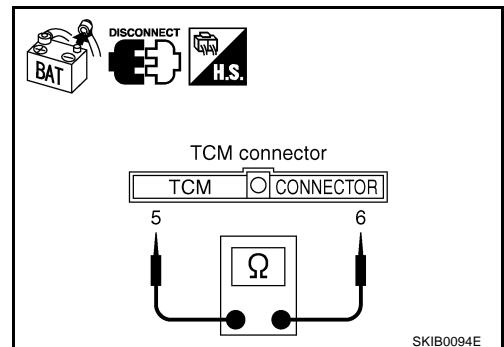
5 (G/R) – 6 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 5.
NG >> ● LHD models

Check the following harness. If any harness is damaged, repair the harness.

- Harness between TCM and harness connector F41
- Harness between harness connector M61 and harness connector M75
- RHD models
- Repair harness between TCM and harness connector F36.



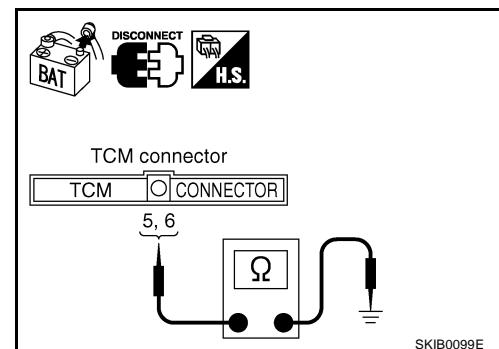
5. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

1. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and ground.

5 (G/R) – Ground : Continuity should not exist.

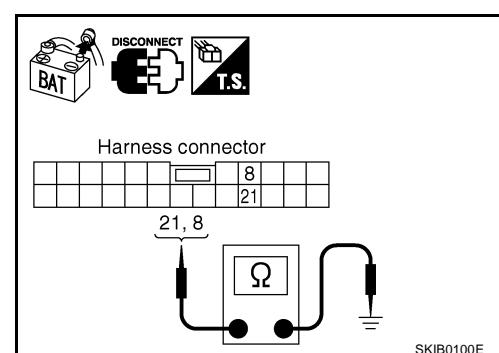
6 (GY/R) – Ground : Continuity should not exist.



2. Check continuity between harness connector M61 terminals 21 (L/R), 8 (B/W) and ground.

21 (L/R) – Ground : Continuity should not exist.

8 (B/W) – Ground : Continuity should not exist.



RHD models

- Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and ground.

5 (G/R) – Ground : Continuity should not exist.

6 (GY/R) – Ground : Continuity should not exist.

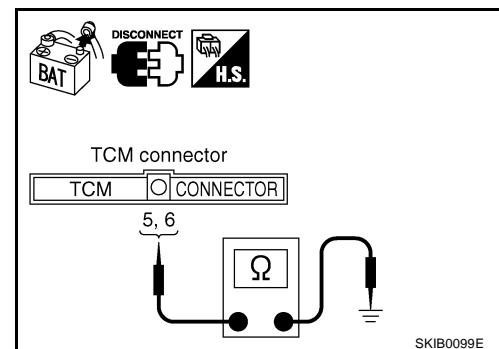
OK or NG

OK >> GO TO 6.

NG >> ● LHD models

Check the following harness. If any harness is damaged, repair the harness.

- Harness between TCM and harness connector F41
- Harness between harness connector M61 and Harness connector M75
- RHD models
- Repair harness between TCM and harness connector F36.

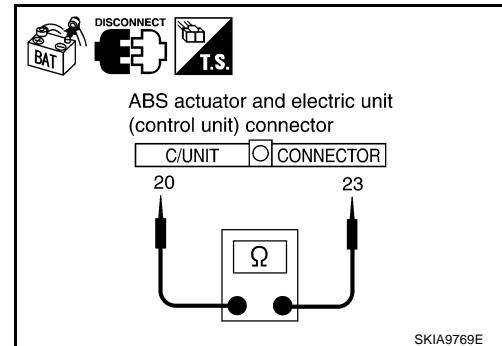


6. CHECK HARNESS FOR SHORT CIRCUIT

LHD models

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W) and 23 (R).

20 (W) – 23 (R) : Continuity should not exist.



RHD models

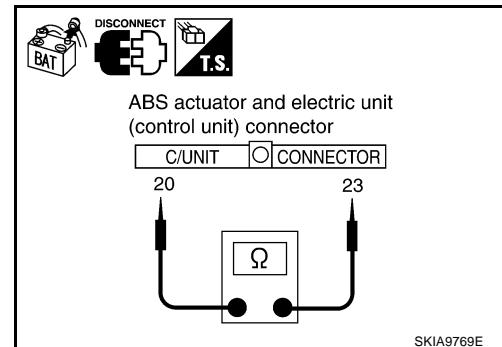
1. Disconnect ABS actuator and electric unit (control unit) connector and harness connector E116.
2. Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W) and 23 (R).

20 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.



7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E69 terminals 20 (W), 23 (R) and ground.

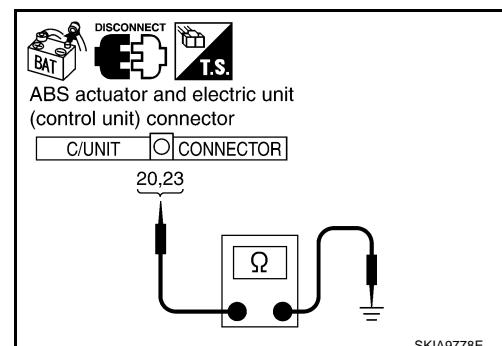
20 (W) – Ground : Continuity should not exist.

23 (R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 8.

NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.



8. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect 4WD control unit connector and combination meter connector.
2. Check continuity between combination meter harness connector M44 terminals 22 (W) and 23 (R).

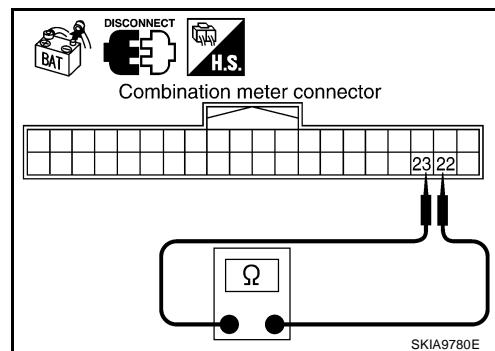
22 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 9.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and harness connector M75



9. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between combination meter harness connector M44 terminals 22 (W), 23 (R) and ground.

22 (W) – Ground : Continuity should not exist.

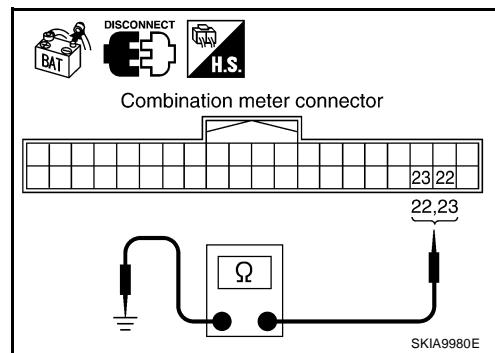
23 (R) – Ground : Continuity should not exist.

OK or NO

OK >> GO TO 10.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and harness connector M75



10. CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

Check components inspection. Refer to [LAN-49, "CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT"](#).

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OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-28, "Work Flow"](#).

NG >> Replace ECM and/or combination meter.

Component Inspection

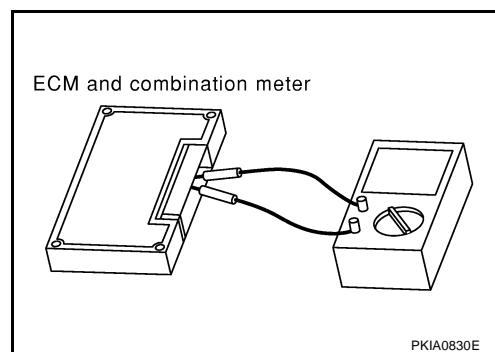
CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

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- Remove ECM and combination meter from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between combination meter terminals 22 and 23.

Unit	Terminal	Resistance (Ω) (Approx.)
ECM	94 – 86	108 – 132
Combination meter	22 – 23	



CAN SYSTEM (TYPE 3)

PFP:23710

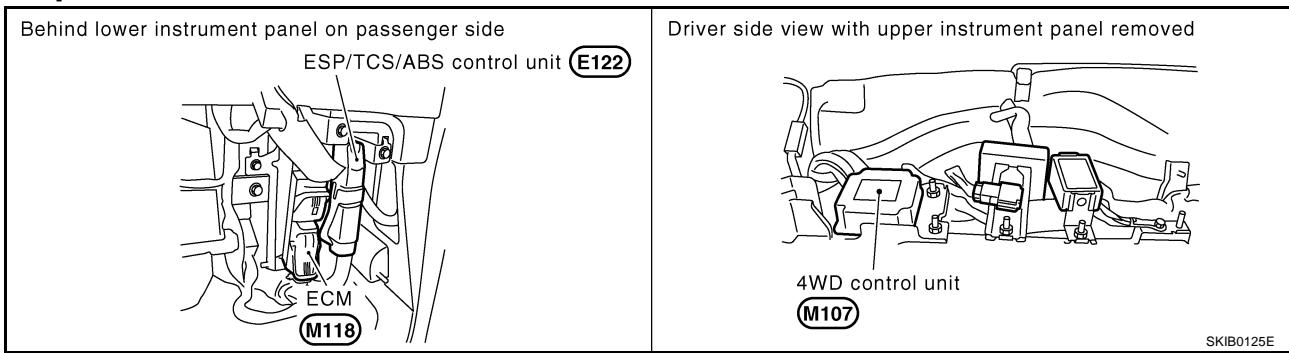
System Description

EKS00FV3

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

EKS00FV4



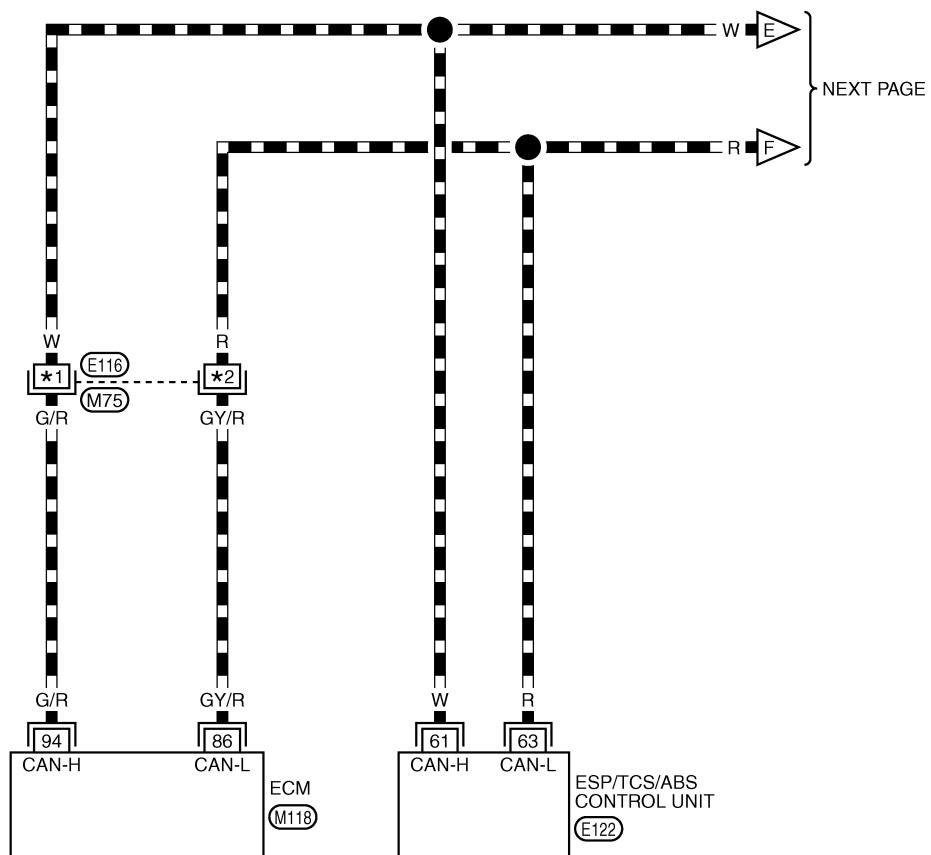
SKIB0125E

Wiring Diagram — CAN —

EKS00FV5

LAN-CAN-05

- : DATA LINE
- ◀ (L) : LHD MODELS
- ◀ (R) : RHD MODELS
- *1 13 : ◀ (L)
- 10 : ◀ (R)
- *2 4 : ◀ (L)
- 3 : ◀ (R)



1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20 (M75) : ◀ (L)
BR

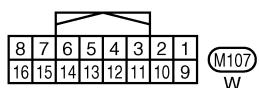
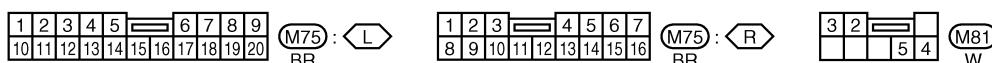
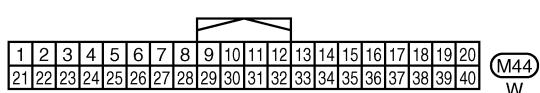
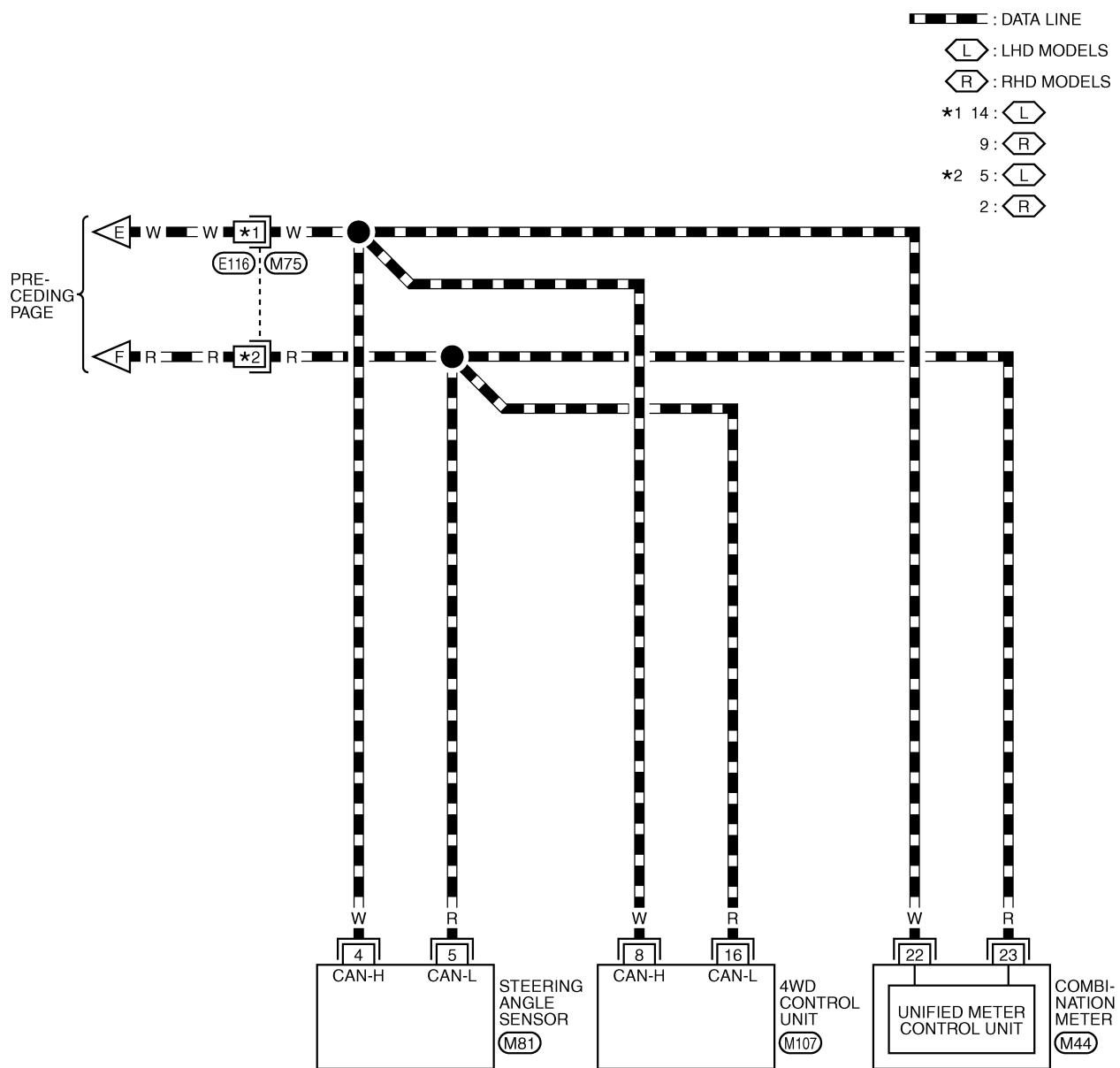
1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 (M75) : ◀ (R)
BR

REFER TO THE FOLLOWING.
(M118, E122) -ELECTRICAL
UNITS

CAN SYSTEM (TYPE 3)

[CAN]

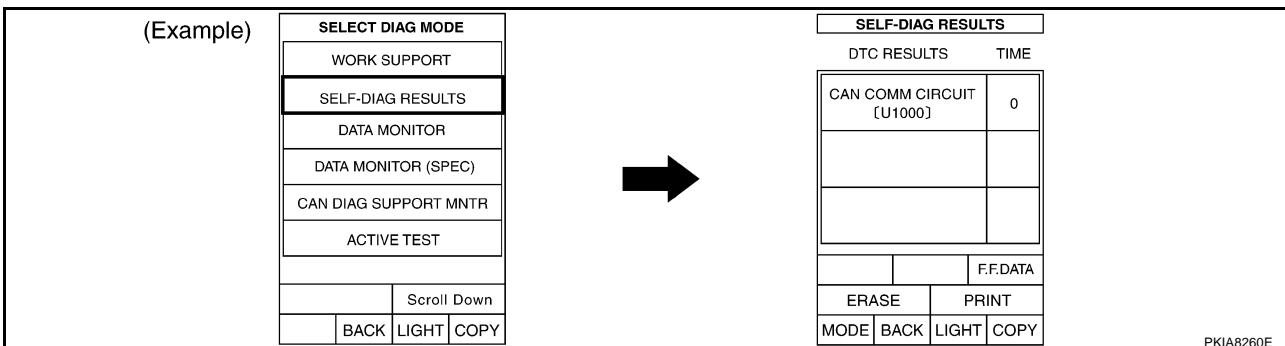
LAN-CAN-06



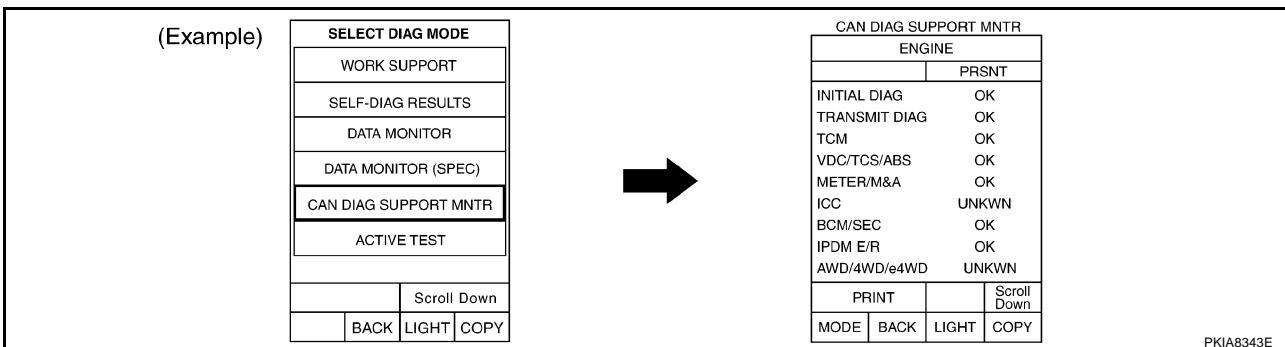
Work Flow

EKS00FV6

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



2. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to [LAN-54, "CHECK SHEET"](#).
4. 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 [LAN-54, "CHECK SHEET"](#).

NOTE:

- If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", 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 [LAN-55, "CHECK SHEET RESULTS \(EXAMPLE\)"](#).

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CAN SYSTEM (TYPE 3)

[CAN]

CHECK SHEET

NOTE:

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

Check sheet table

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

Symptoms:

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
ALL MODE AWD/4WD
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
ALL MODE AWD/4WD
CAN DIAG SUPPORT
MNTR

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

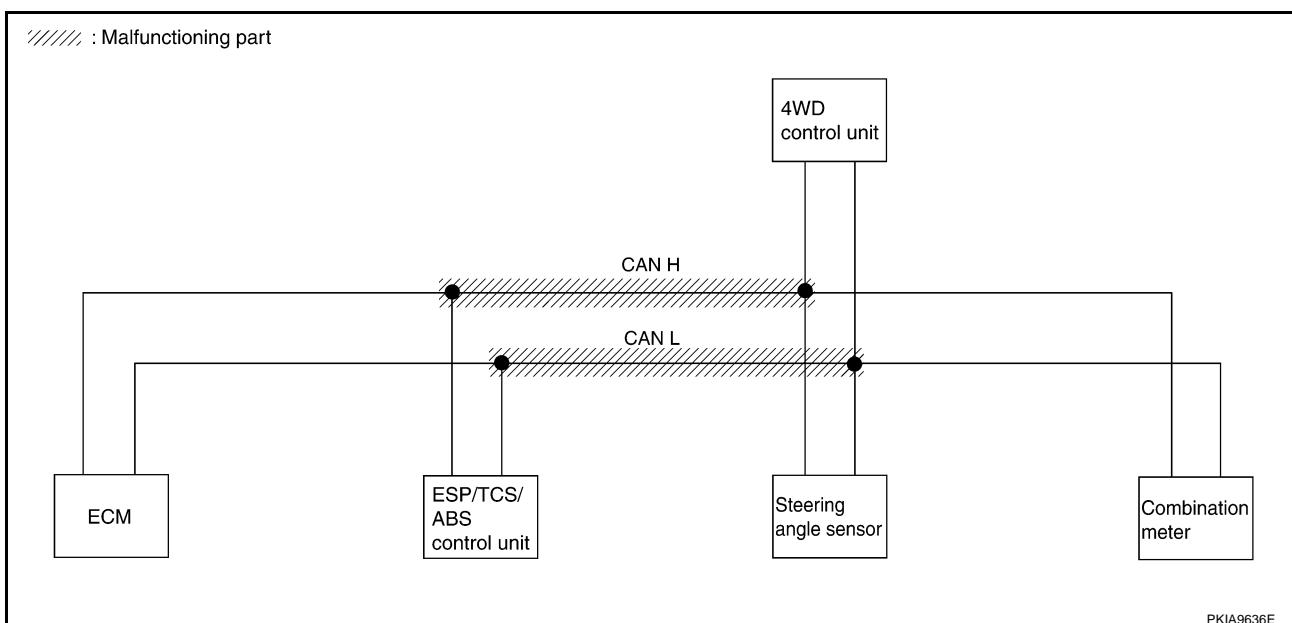
If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

Case 1

Check harness between ESP/TCS/ABS control unit and 4WD control unit. Refer to [LAN-61, "Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9615E



CAN SYSTEM (TYPE 3)

[CAN]

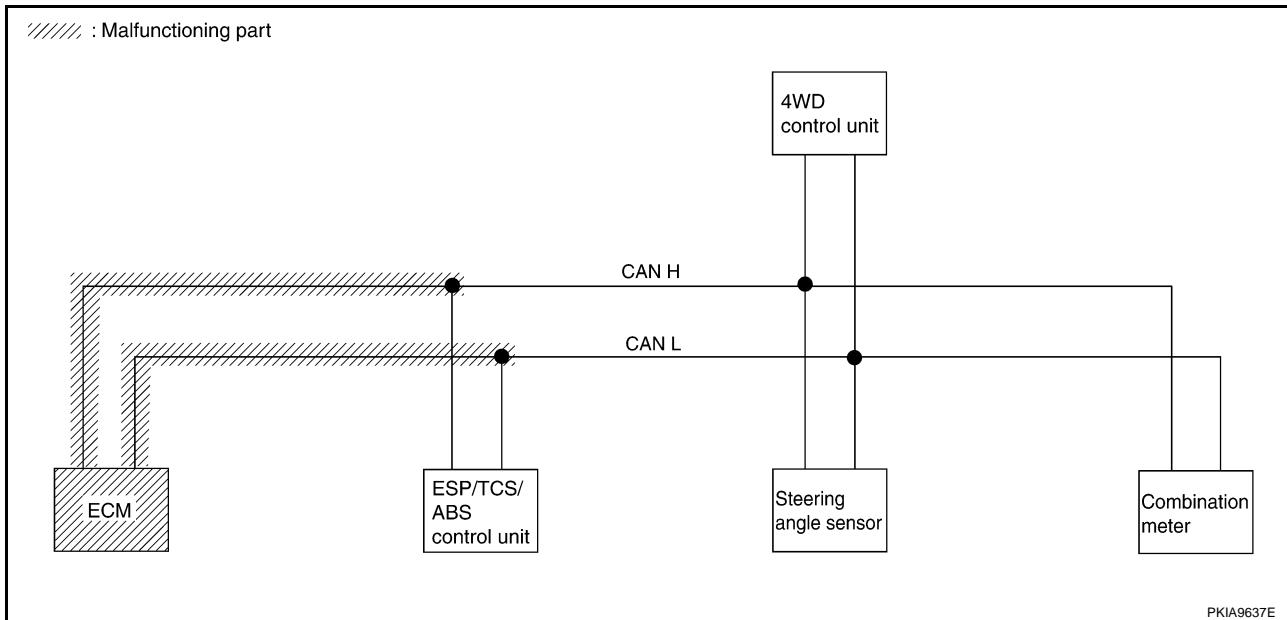
Case 2

Check ECM circuit. Refer to [LAN-62, "ECM Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

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////// : Malfunctioning part



CAN SYSTEM (TYPE 3)

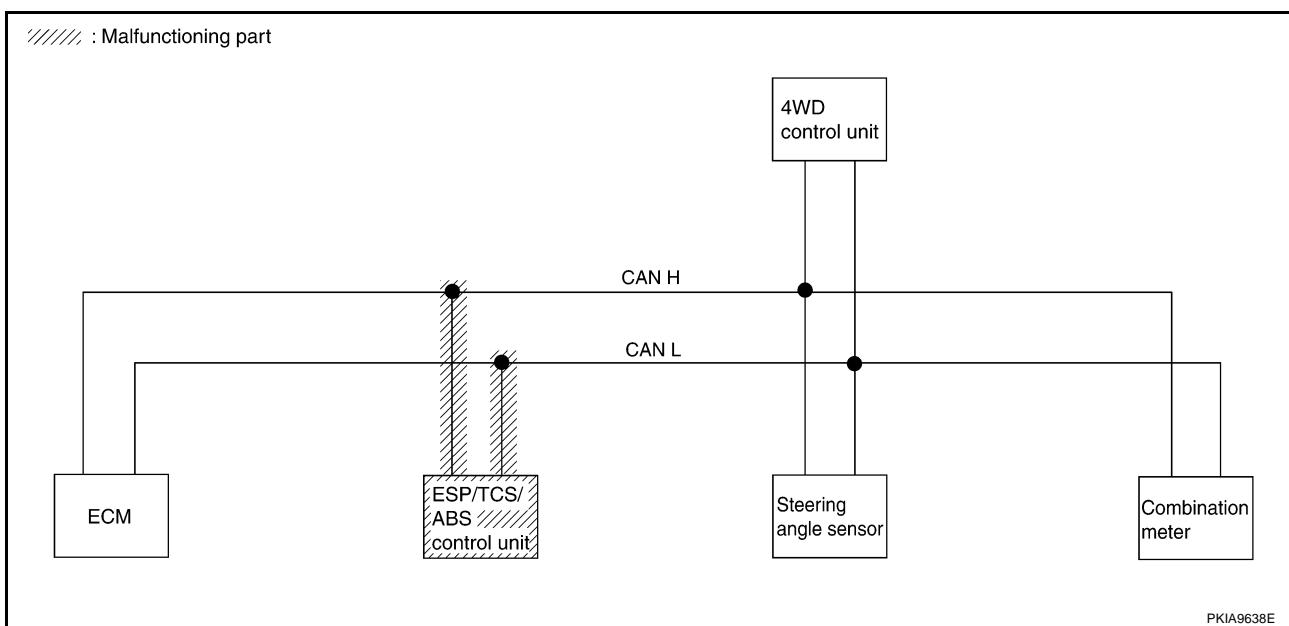
[CAN]

Case 3

Check ESP/TCS/ABS control unit circuit. Refer to [LAN-63, "ESP/TCS/ABS Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9617E



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CAN SYSTEM (TYPE 3)

[CAN]

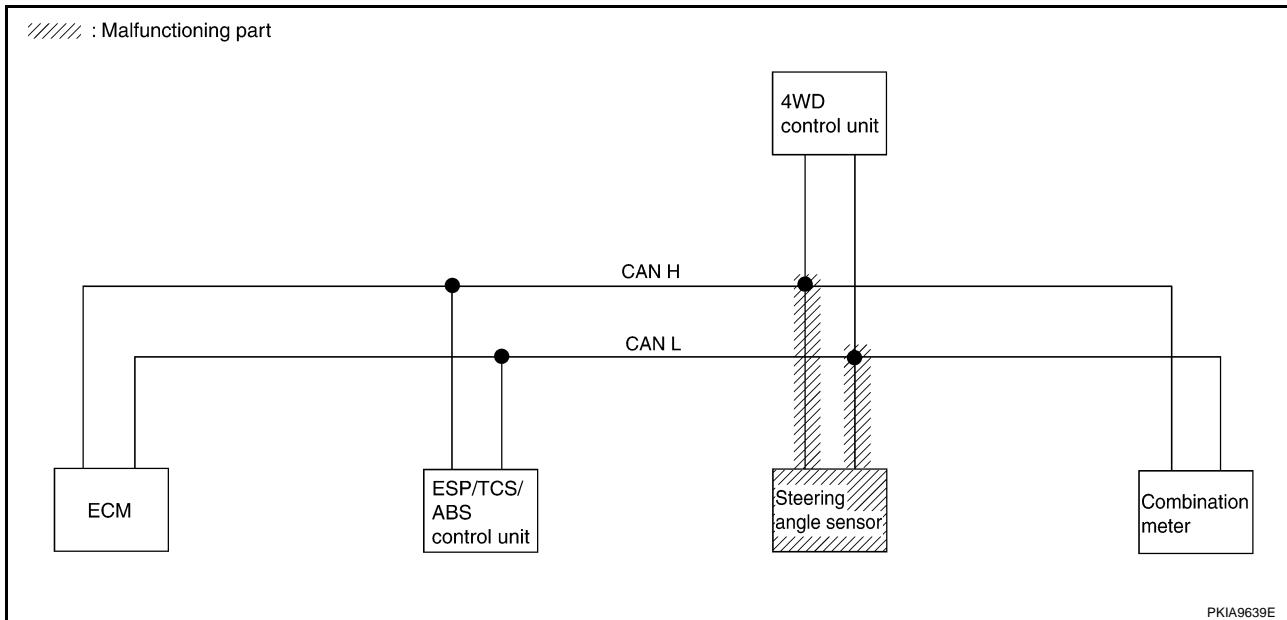
Case 4

Check steering angle sensor circuit. Refer to [LAN-63, "Steering Angle Sensor Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9619E

////// : Malfunctioning part



CAN SYSTEM (TYPE 3)

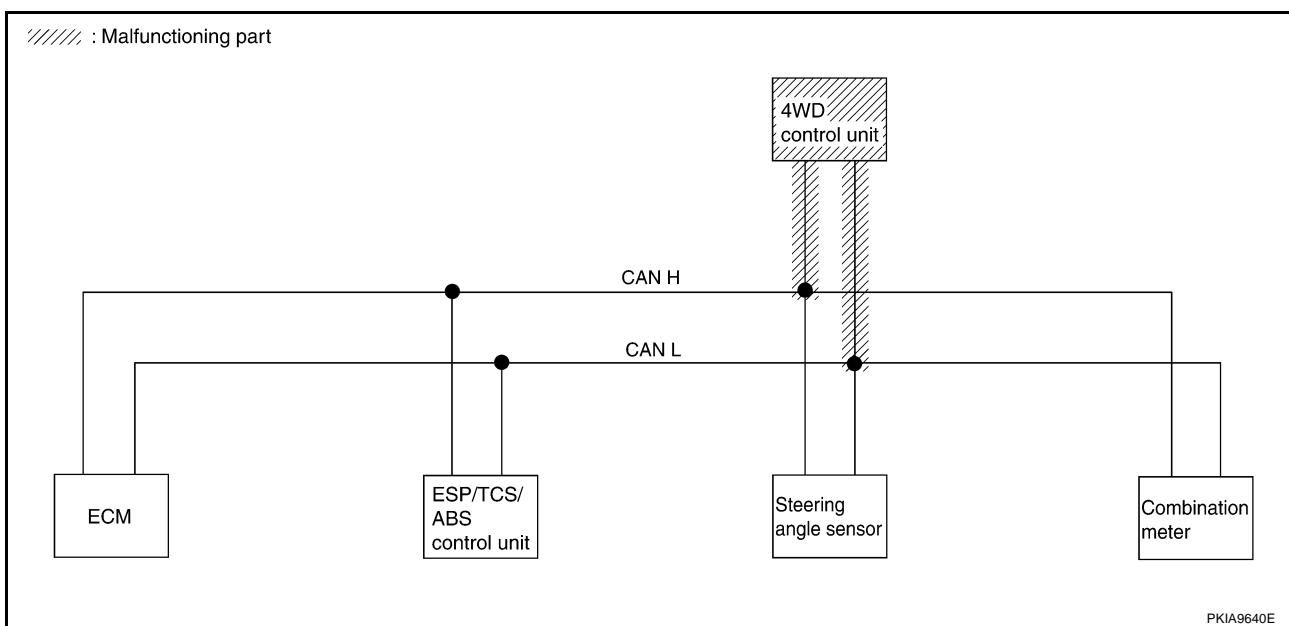
[CAN]

Case 5

Check 4WD control unit circuit. Refer to [LAN-64, "4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9618E



CAN SYSTEM (TYPE 3)

[CAN]

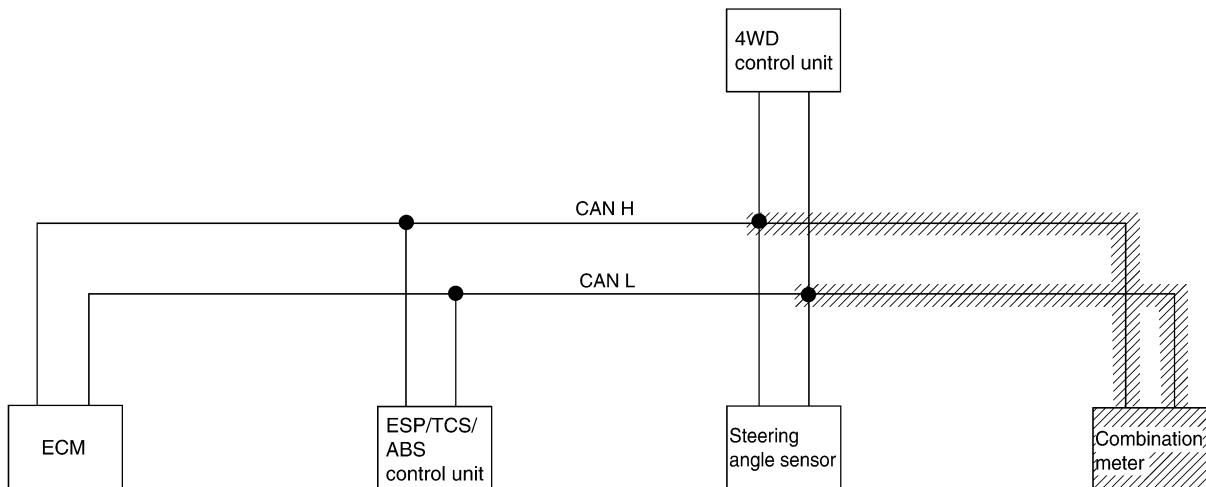
Case 6

Check combination meter circuit. Refer to [LAN-64, "Combination Meter Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9620E

////// : Malfunctioning part



PKIA9641E

Case 7

Check CAN communication circuit. Refer to [LAN-65, "CAN Communication Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKN	—	UNKN	—	—	UNKN
ABS	NG	UNKN	UNKN	—	UNKN	UNKN	UNKN
ALL MODE AWD/4WD	NG	UNKN	UNKN	UNKN	—	—	—

PKIA9621E

Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection

EKS00FV7

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E116
 - Harness connector M75

OK or NG

OK >> GO TO 2.

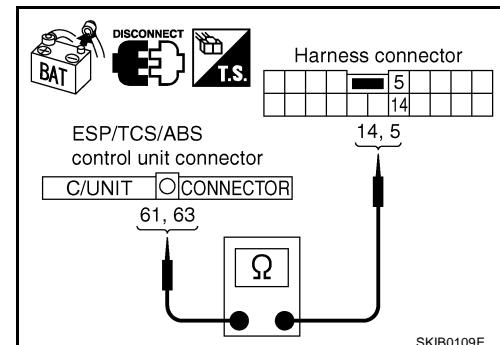
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector and harness connector E116.
2. Check the following.
 - LHD models
 - Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 14 (W), 5 (R).

61 (W) – 14 (W) : Continuity should exist.

63 (R) – 5 (R) : Continuity should exist.

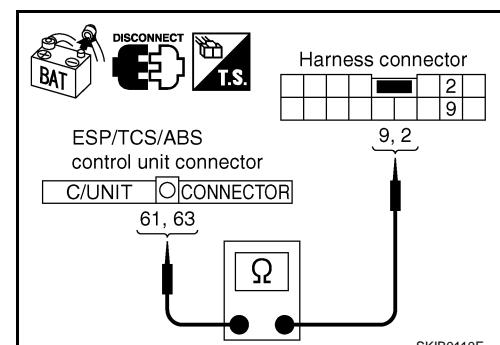


SKIB0109E

- RHD models
- Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 9 (W), 2 (R).

61 (W) – 9 (W) : Continuity should exist.

63 (R) – 2 (R) : Continuity should exist.



SKIB0110E

OK or NG

OK >> GO TO 3.

NG >> Repair harness.

3. CHECK HARNESS FOR OPEN CIRCUIT

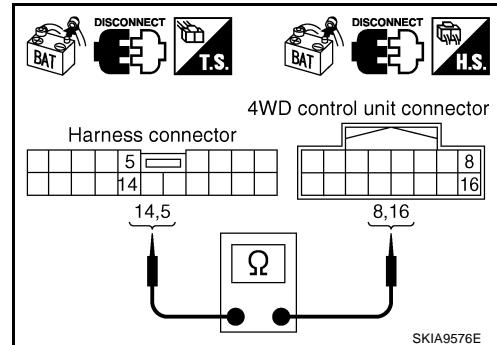
1. Disconnect 4WD control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector M75 terminals 14 (W), 5 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

14 (W) – 8 (W)

: Continuity should exist.

5 (R) – 16 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector M75 terminals 9 (W), 2 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

9 (W) – 8 (W)

: Continuity should exist.

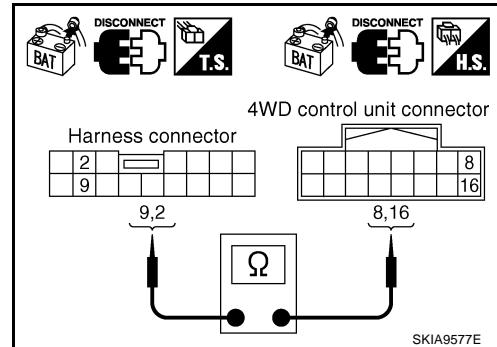
2 (R) – 16 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-53, "Work Flow"](#).

NG >> Repair harness.



ECM Circuit Inspection

EKS00FV8

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
 - ECM connector
 - Harness connector M75
 - Harness connector E116

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

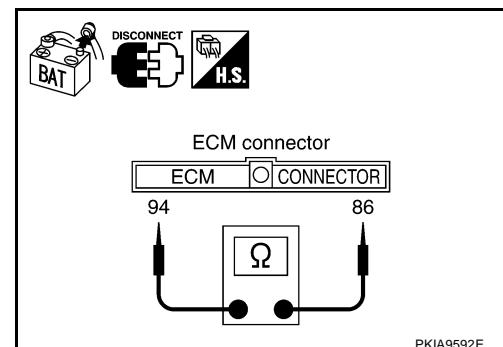
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ECM connector.
2. Check resistance between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace ECM.
NG >> Repair harness between ECM and ESP/TCS/ABS control unit.



EKS00FV9

ESP/TCS/ABS Control Unit Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of ESP/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.

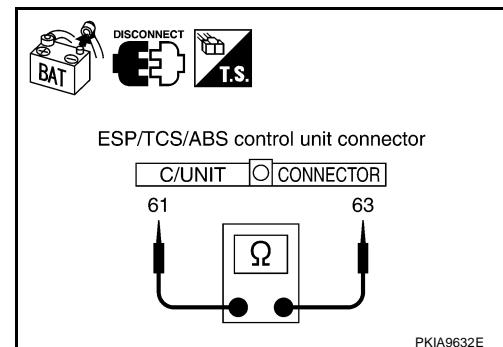
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector.
2. Check resistance between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace ESP/TCS/ABS control unit.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



EKS00FVE

Steering Angle Sensor Circuit Inspection

1. CHECK CONNECTOR

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

OK or NG

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

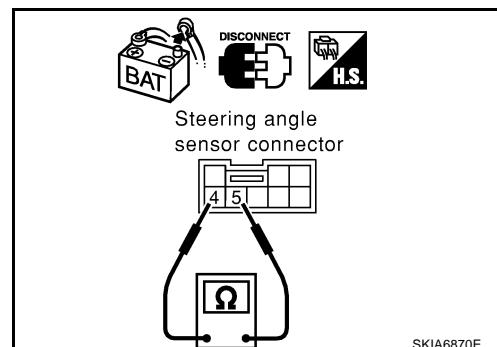
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect steering angle sensor connector.
2. Check resistance between steering angle sensor harness connector M81 terminals 4 (W) and 5 (R).

4 (W) – 5 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace steering angle sensor.
 NG >> Repair harness between steering angle sensor and 4WD control unit.



4WD Control Unit Circuit Inspection

EKS00FVA

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of 4WD 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.

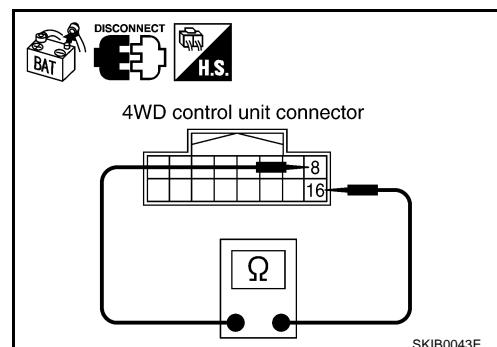
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector M107 terminals 8 (W) and 16 (R).

8 (W) – 16 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace 4WD control unit.
 NG >> Repair harness between 4WD control unit and steering angle sensor.



Combination Meter Circuit Inspection

EKS00FVB

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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 M44 terminals 22 (W) and 23 (R).

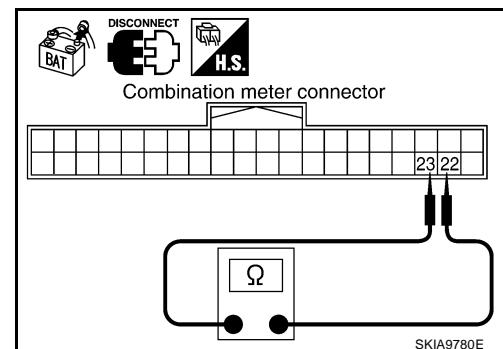
22 (W) – 23 (R)

: Approx. 108 – 132Ω

OK or NG

OK >> Replace combination meter.

NG >> Repair harness between combination meter and 4WD control unit.



EKS00FVC

CAN Communication Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side, control unit side, sensor side, meter side, connector side and harness side).
 - ECM
 - ESP/TCS/ABS control unit
 - Steering angle sensor
 - 4WD control unit
 - Combination meter
 - Between ECM and combination meter

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

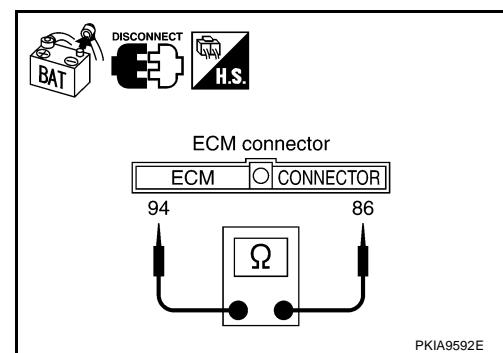
1. Disconnect ECM connector and harness connector M75.
2. Check continuity between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector M75.



A

B

C

D

E

F

G

H

I

J

LAN

L

M

3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ECM harness connector M118 terminals 94 (G/R), 86 (GY/R) and ground.

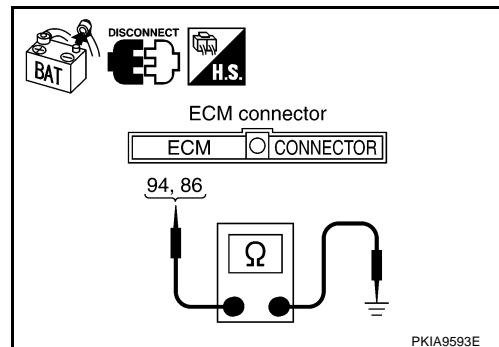
94 (G/R) – Ground : Continuity should not exist.

86 (GY/R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness between ECM and harness connector M75.



4. CHECK HARNESS FOR SHORT CIRCUIT

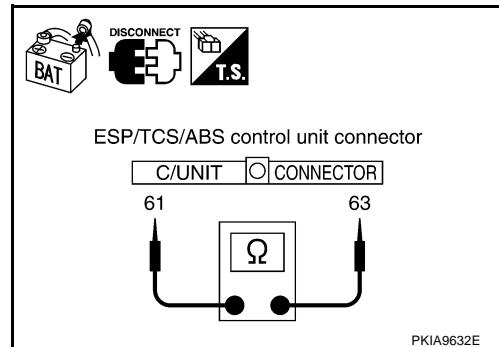
1. Disconnect ESP/TCS/ABS control unit connector.
2. Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 5.

NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and ground.

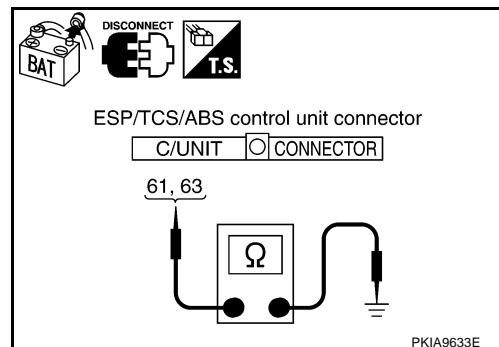
61 (W) – Ground : Continuity should not exist.

63 (R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 6.

NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



6. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect steering angle sensor connector, 4WD control unit connector and combination meter connector.
2. Check continuity between combination meter harness connector M44 terminals 22 (W) and 23 (R).

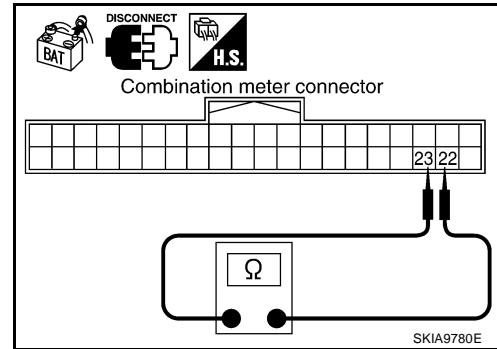
22 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between combination meter harness connector M44 terminals 22 (W), 23 (R) and ground.

22 (W) – Ground : Continuity should not exist.

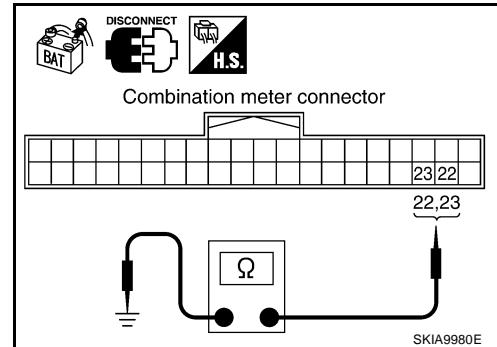
23 (R) – Ground : Continuity should not exist.

OK or NO

OK >> GO TO 8.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



8. CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

Check components inspection. Refer to [LAN-67, "CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT"](#).

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-53, "Work Flow"](#).

NG >> Replace ECM and/or combination meter.

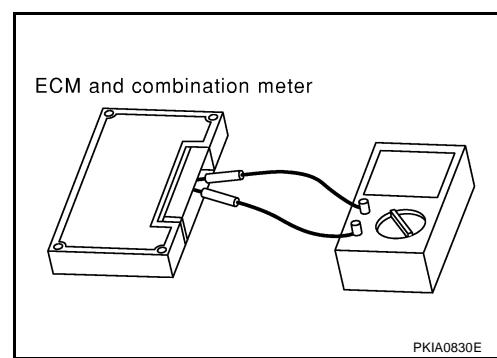
Component Inspection

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

EKS00FVD

- Remove ECM and combination meter from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between combination meter terminals 22 and 23.

Unit	Terminal	Resistance (Ω) (Approx.)
ECM	94 – 86	108 – 132
Combination meter	22 – 23	



CAN SYSTEM (TYPE 4)

PFP:23710

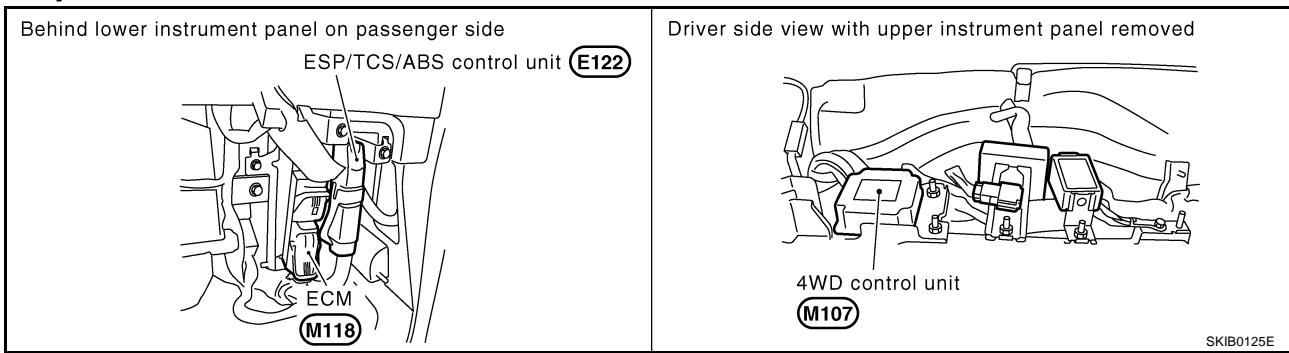
System Description

EKS00FVG

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

EKS00FVG



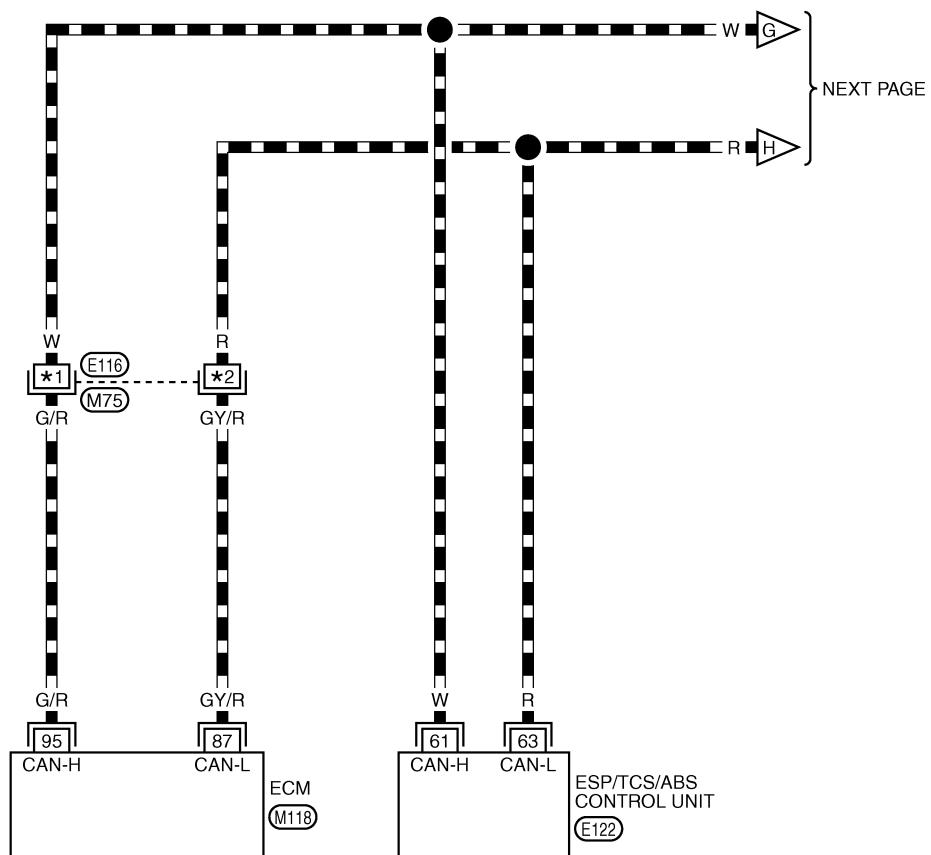
SKIB0125E

Wiring Diagram — CAN —

EKS00FVH

LAN-CAN-07

- : DATA LINE
- ◀ (L) : LHD MODELS
- ▶ (R) : RHD MODELS
- *1 13 : ▲ (L)
- 10 : ▲ (R)
- *2 4 : ▲ (L)
- 3 : ▲ (R)



1	2	3	4	5			6	7	8	9
10	11	12	13	14	15	16	17	18	19	20

(M75) : ▲ (L)
BR

1	2	3			4	5	6	7
8	9	10	11	12	13	14	15	16

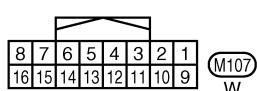
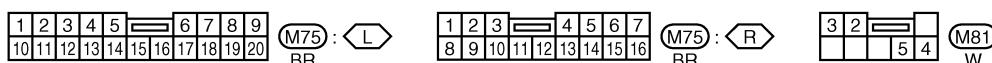
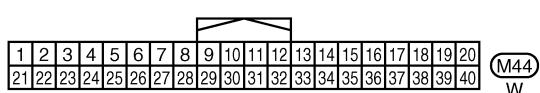
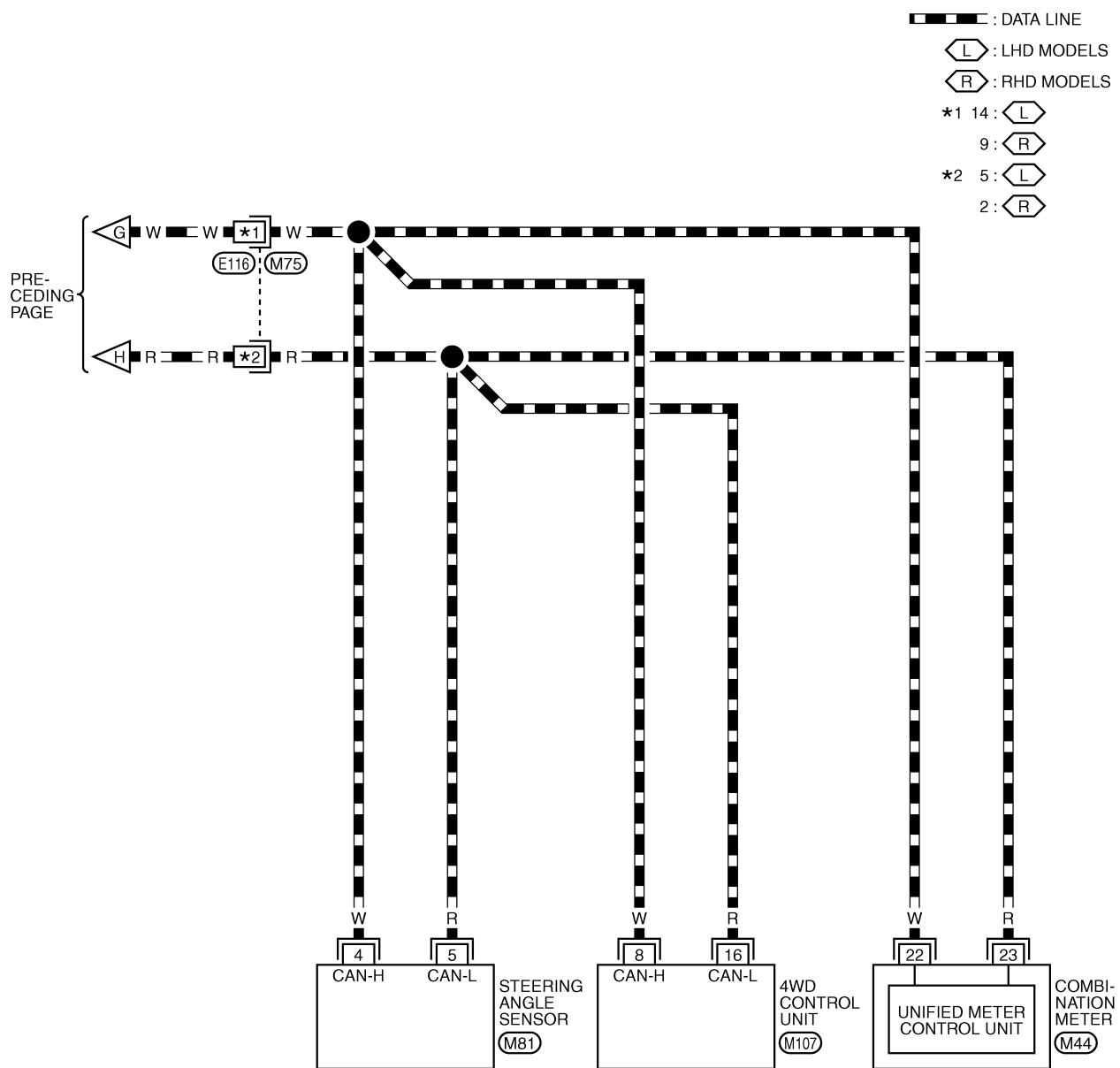
(M75) : ▲ (R)
BR

REFER TO THE FOLLOWING.
(M118, E122) -ELECTRICAL
UNITS

CAN SYSTEM (TYPE 4)

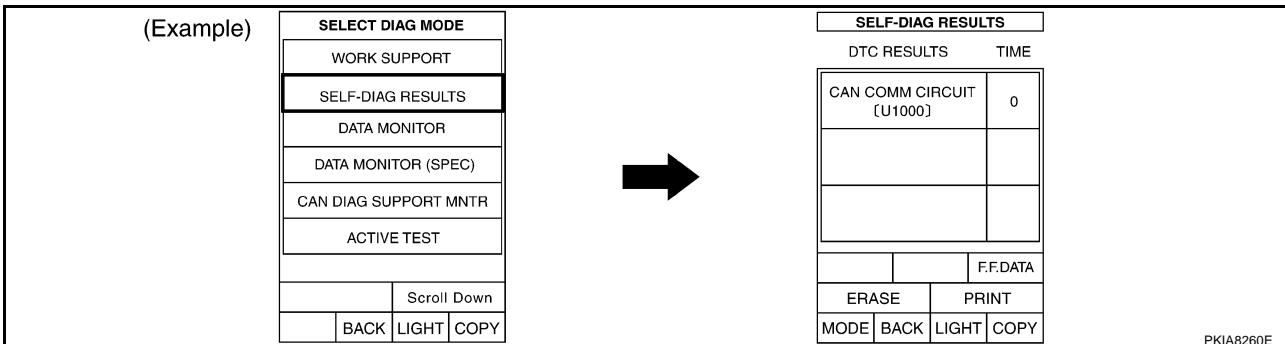
[CAN]

LAN-CAN-08

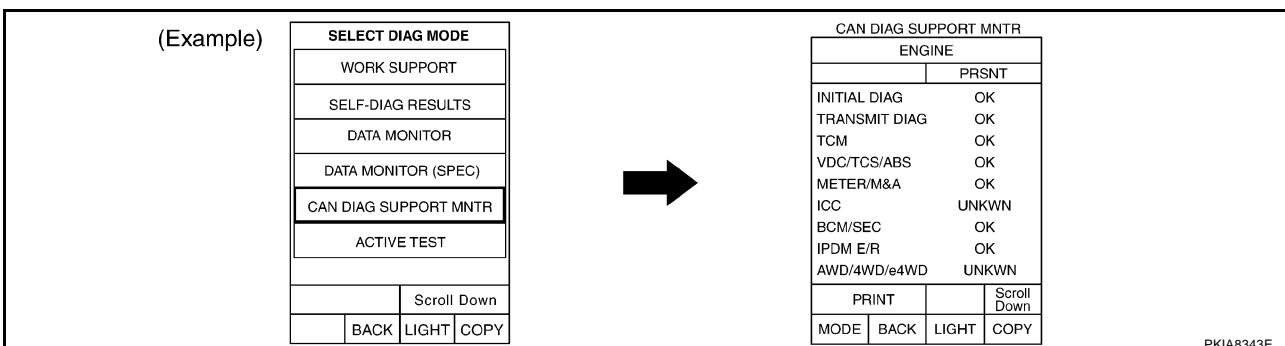


Work Flow

1. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



- Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to [LAN-72, "CHECK SHEET"](#) .
4. 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 [LAN-72, "CHECK SHEET"](#) .

NOTE:

- If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", 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 [LAN-73, "CHECK SHEET RESULTS \(EXAMPLE\)"](#).

CAN SYSTEM (TYPE 4)

[CAN]

CHECK SHEET

NOTE:

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

Check sheet table

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

Symptoms:

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
ALL MODE AWD/4WD
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
ALL MODE AWD/4WD
CAN DIAG SUPPORT
MNTR

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

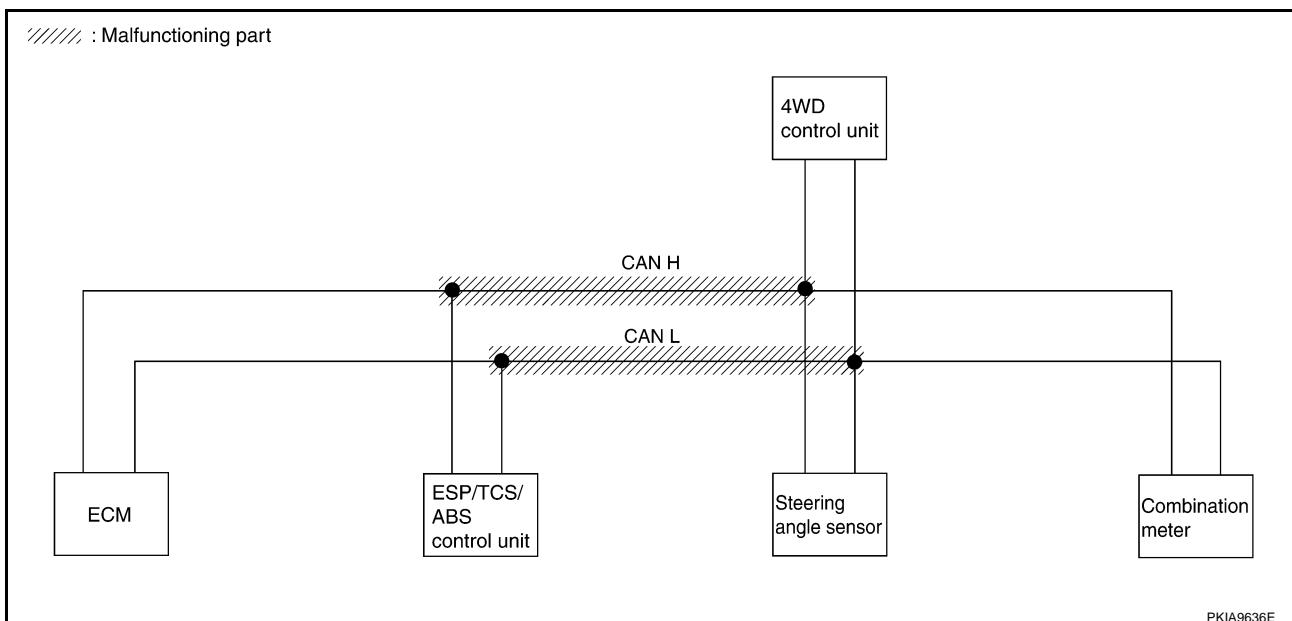
If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

Case 1

Check harness between ESP/TCS/ABS control unit and 4WD control unit. Refer to [LAN-79, "Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9615E



CAN SYSTEM (TYPE 4)

[CAN]

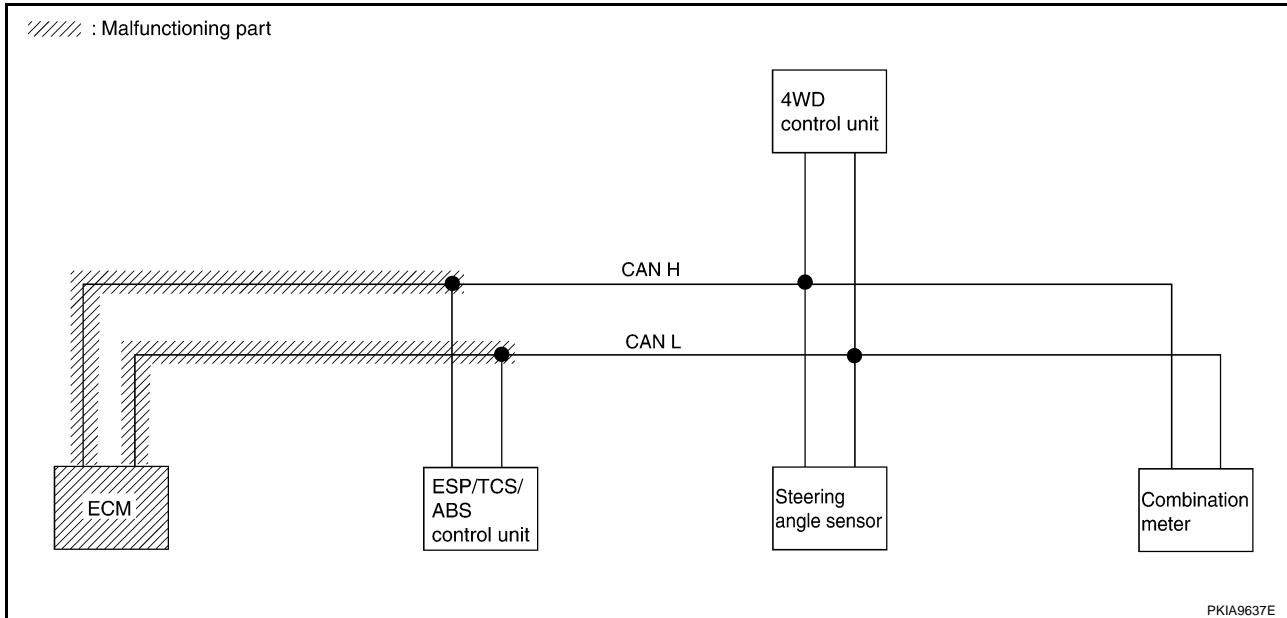
Case 2

Check ECM circuit. Refer to [LAN-80, "ECM Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9616E

////// : Malfunctioning part



CAN SYSTEM (TYPE 4)

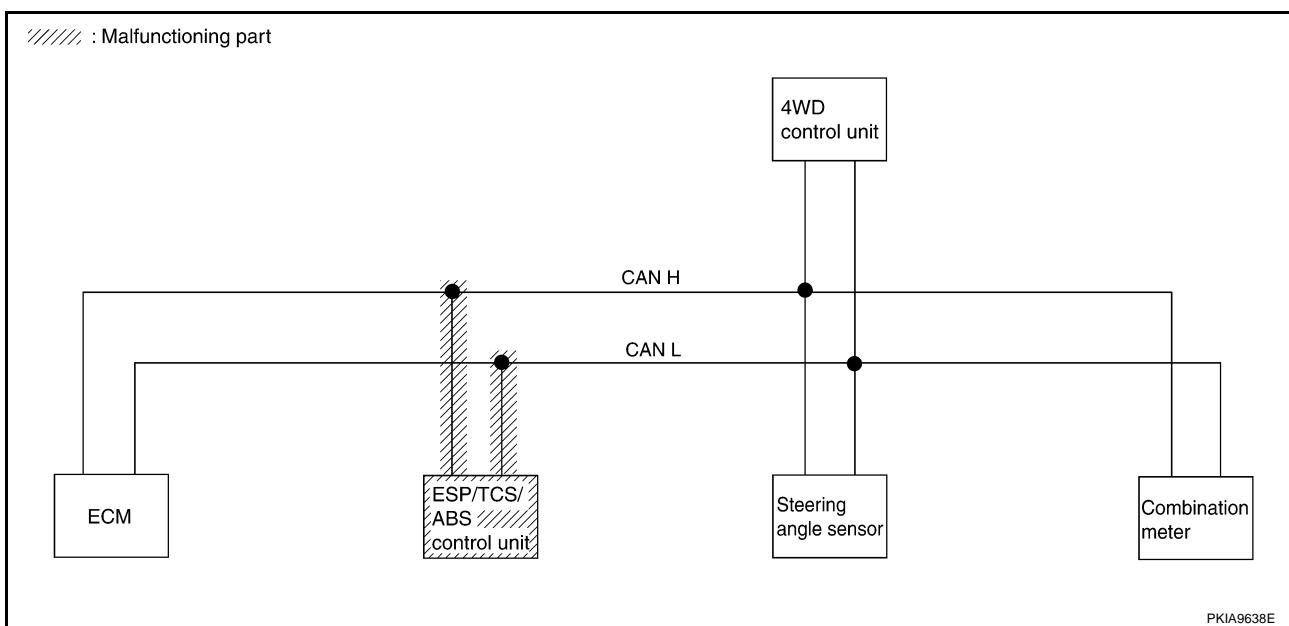
[CAN]

Case 3

Check ESP/TCS/ABS control unit circuit. Refer to [LAN-81, "ESP/TCS/ABS Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9617E



CAN SYSTEM (TYPE 4)

[CAN]

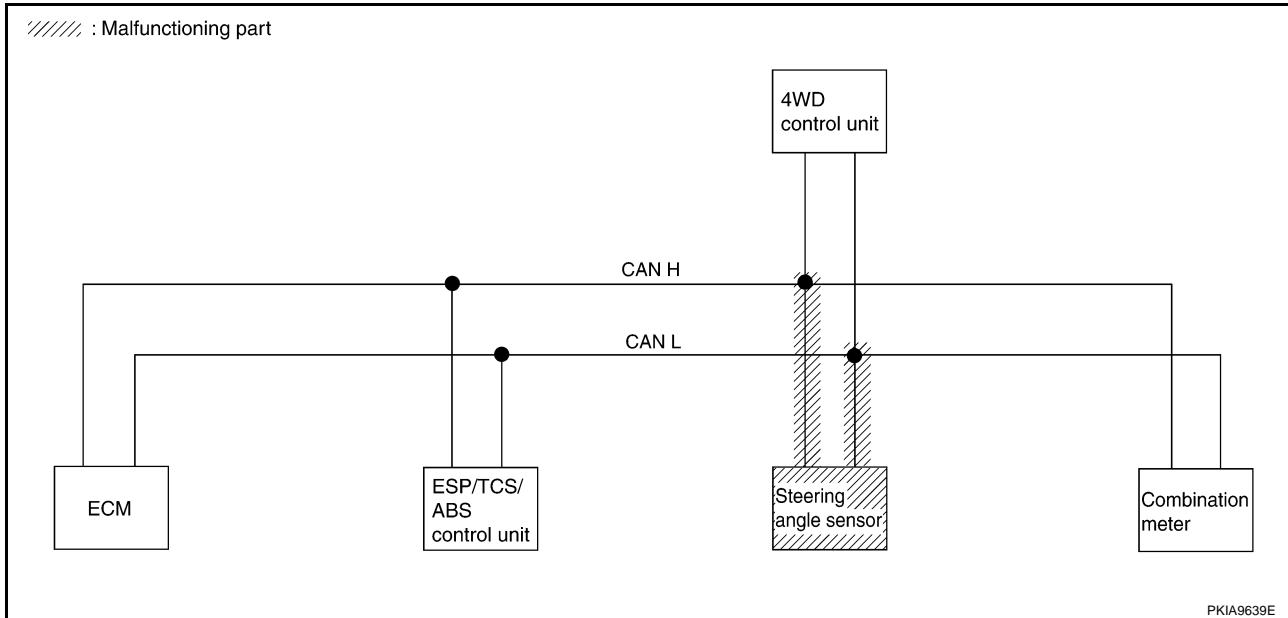
Case 4

Check steering angle sensor circuit. Refer to [LAN-81, "Steering Angle Sensor Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9619E

////// : Malfunctioning part



CAN SYSTEM (TYPE 4)

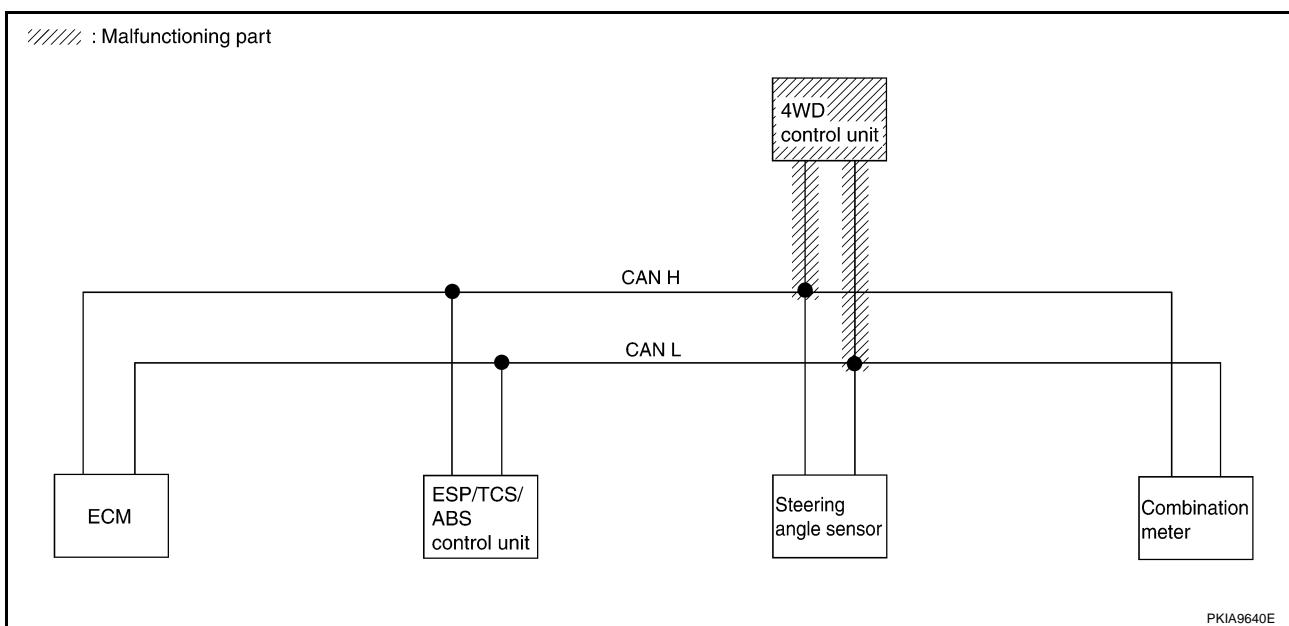
[CAN]

Case 5

Check 4WD control unit circuit. Refer to [LAN-82, "4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9618E



A
B
C
D
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F
G
H
I
J

LAN
L
M

CAN SYSTEM (TYPE 4)

[CAN]

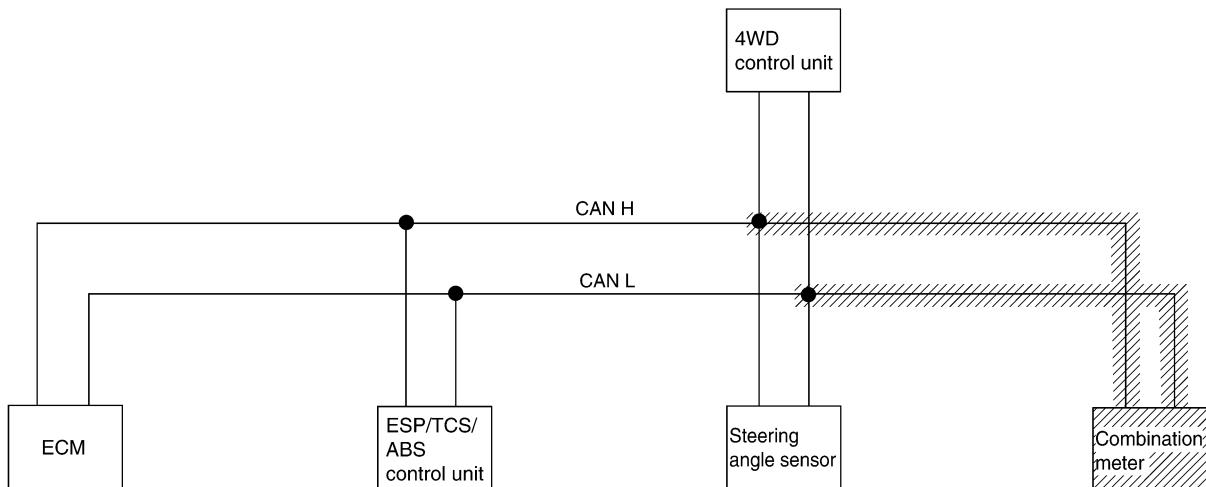
Case 6

Check combination meter circuit. Refer to [LAN-82, "Combination Meter Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	—	—	—

PKIA9620E

////// : Malfunctioning part



PKIA9641E

Case 7

Check CAN communication circuit. Refer to [LAN-83, "CAN Communication Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR						
	Initial diagnosis	Transmit diagnosis	Receive diagnosis				
			ECM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKN	—	UNKN	—	—	UNKN
ABS	NG	UNKN	UNKN	—	UNKN	UNKN	UNKN
ALL MODE AWD/4WD	NG	UNKN	UNKN	UNKN	—	—	—

PKIA9621E

Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection

EKS00FVJ

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E116
 - Harness connector M75

OK or NG

OK >> GO TO 2.

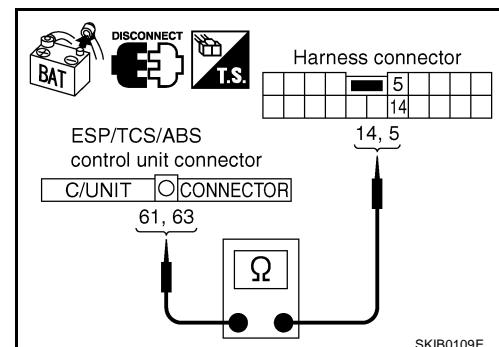
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector and harness connector E116.
2. Check the following.
 - LHD models
 - Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 14 (W), 5 (R).

61 (W) – 14 (W) : Continuity should exist.

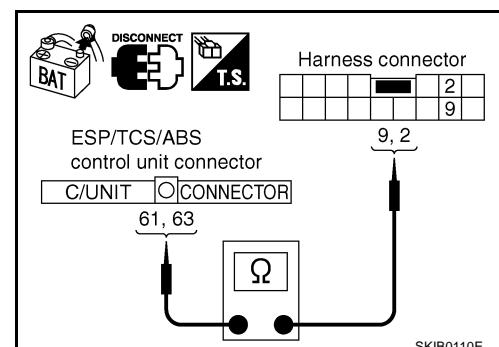
63 (R) – 5 (R) : Continuity should exist.



- RHD models
- Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 9 (W), 2 (R).

61 (W) – 9 (W) : Continuity should exist.

63 (R) – 2 (R) : Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.

3. CHECK HARNESS FOR OPEN CIRCUIT

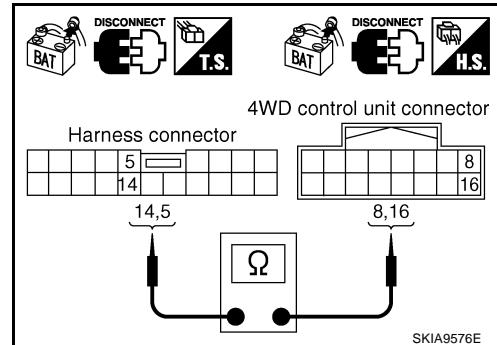
1. Disconnect 4WD control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector M75 terminals 14 (W), 5 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

14 (W) – 8 (W)

: Continuity should exist.

5 (R) – 16 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector M75 terminals 9 (W), 2 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

9 (W) – 8 (W)

: Continuity should exist.

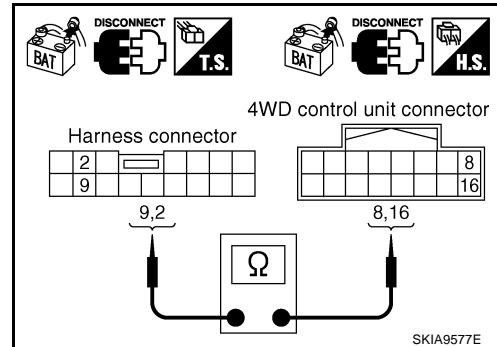
2 (R) – 16 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-71, "Work Flow"](#).

NG >> Repair harness.



ECM Circuit Inspection

EKS00FVK

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
 - ECM connector
 - Harness connector M75
 - Harness connector E116

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

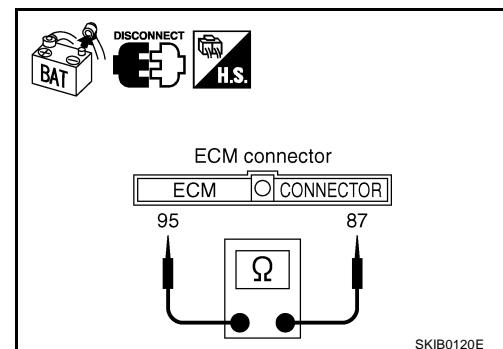
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ECM connector.
2. Check resistance between ECM harness connector M118 terminals 95 (G/R) and 87 (GY/R).

95 (G/R) – 87 (GY/R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace ECM.
NG >> Repair harness between ECM and ESP/TCS/ABS control unit.



EKS00FVL

ESP/TCS/ABS Control Unit Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of ESP/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.

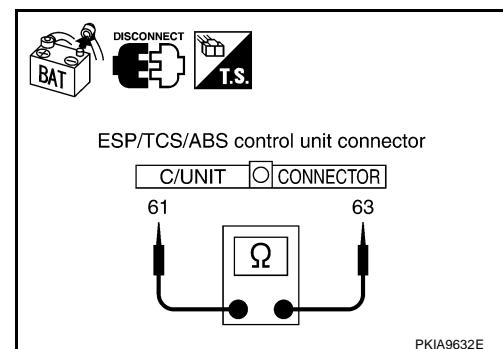
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector.
2. Check resistance between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace ESP/TCS/ABS control unit.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



EKS00FVM

Steering Angle Sensor Circuit Inspection

1. CHECK CONNECTOR

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

OK or NG

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

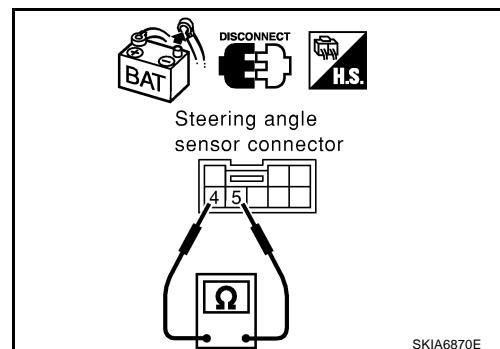
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect steering angle sensor connector.
2. Check resistance between steering angle sensor harness connector M81 terminals 4 (W) and 5 (R).

4 (W) – 5 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace steering angle sensor.
 NG >> Repair harness between steering angle sensor and 4WD control unit.



4WD Control Unit Circuit Inspection

EKS00FVN

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of 4WD 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.

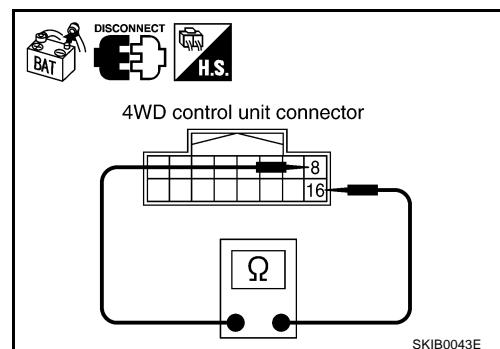
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector M107 terminals 8 (W) and 16 (R).

8 (W) – 16 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace 4WD control unit.
 NG >> Repair harness between 4WD control unit and steering angle sensor.



Combination Meter Circuit Inspection

EKS00FVO

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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 M44 terminals 22 (W) and 23 (R).

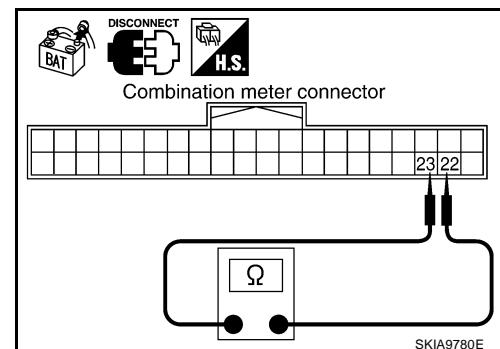
22 (W) – 23 (R)

: Approx. 108 – 132Ω

OK or NG

OK >> Replace combination meter.

NG >> Repair harness between combination meter and 4WD control unit.



EKS00FVP

CAN Communication Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side, control unit side, sensor side, meter side, connector side and harness side).
 - ECM
 - ESP/TCS/ABS control unit
 - Steering angle sensor
 - 4WD control unit
 - Combination meter
 - Between ECM and combination meter

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

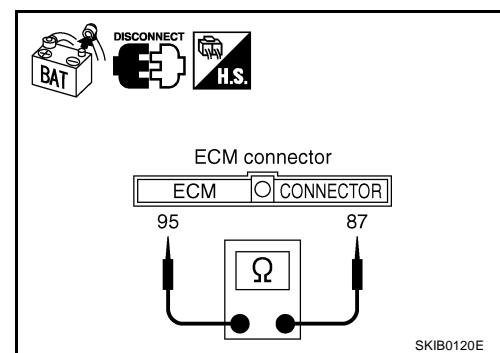
1. Disconnect ECM connector and harness connector M75.
2. Check continuity between ECM harness connector M118 terminals 95 (G/R) and 87 (GY/R).

95 (G/R) – 87 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector M75.



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3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ECM harness connector M118 terminals 95 (G/R), 87 (GY/R) and ground.

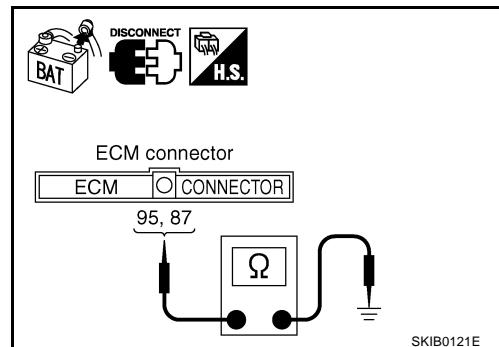
95 (G/R) – Ground : Continuity should not exist.

87 (GY/R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness between ECM and harness connector M75.



4. CHECK HARNESS FOR SHORT CIRCUIT

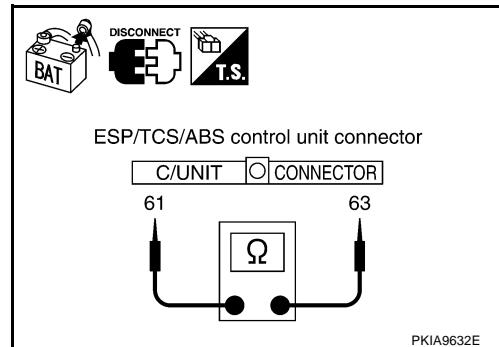
1. Disconnect ESP/TCS/ABS control unit connector.
2. Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 5.

NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and ground.

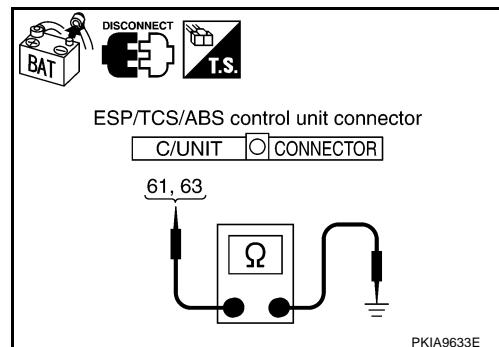
61 (W) – Ground : Continuity should not exist.

63 (R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 6.

NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



6. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect steering angle sensor connector, 4WD control unit connector and combination meter connector.
2. Check continuity between combination meter harness connector M44 terminals 22 (W) and 23 (R).

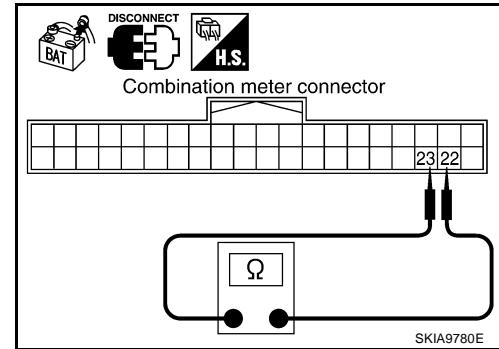
22 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between combination meter harness connector M44 terminals 22 (W), 23 (R) and ground.

22 (W) – Ground : Continuity should not exist.

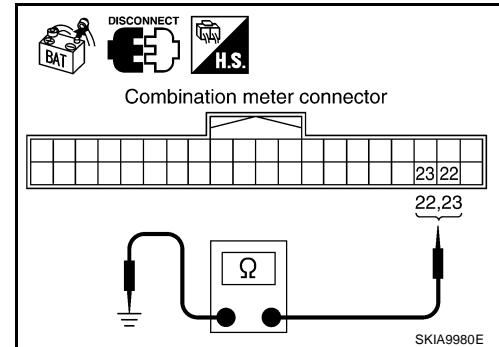
23 (R) – Ground : Continuity should not exist.

OK or NO

OK >> GO TO 8.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



8. CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

Check components inspection. Refer to [LAN-85, "CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT"](#).

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-71, "Work Flow"](#).

NG >> Replace ECM and/or combination meter.

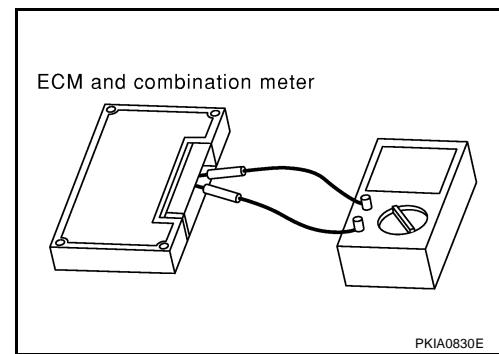
Component Inspection

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

EKS00FVQ

- Remove ECM and combination meter from vehicle.
- Check resistance between ECM terminals 95 and 87.
- Check resistance between combination meter terminals 22 and 23.

Unit	Terminal	Resistance (Ω) (Approx.)
ECM	95 – 87	108 – 132
Combination meter	22 – 23	



CAN SYSTEM (TYPE 5)

PFP:23710

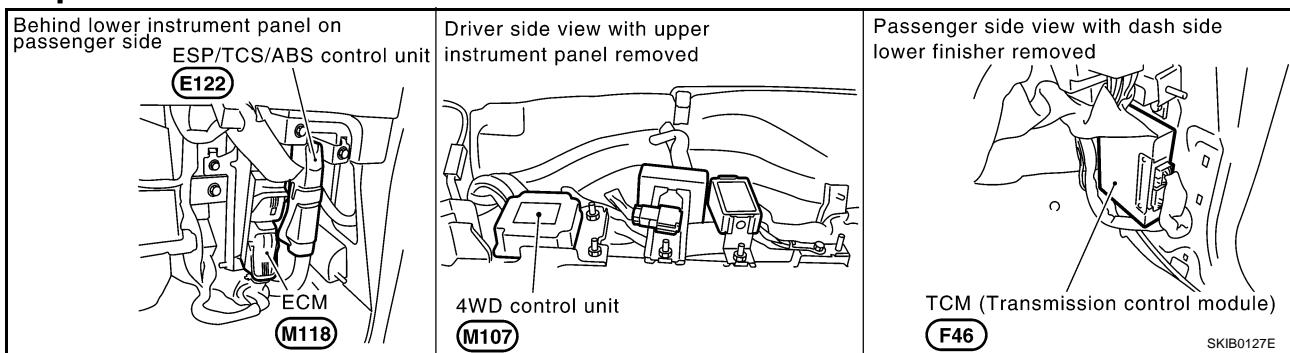
System Description

EKS00FWG

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

EKS00FWH



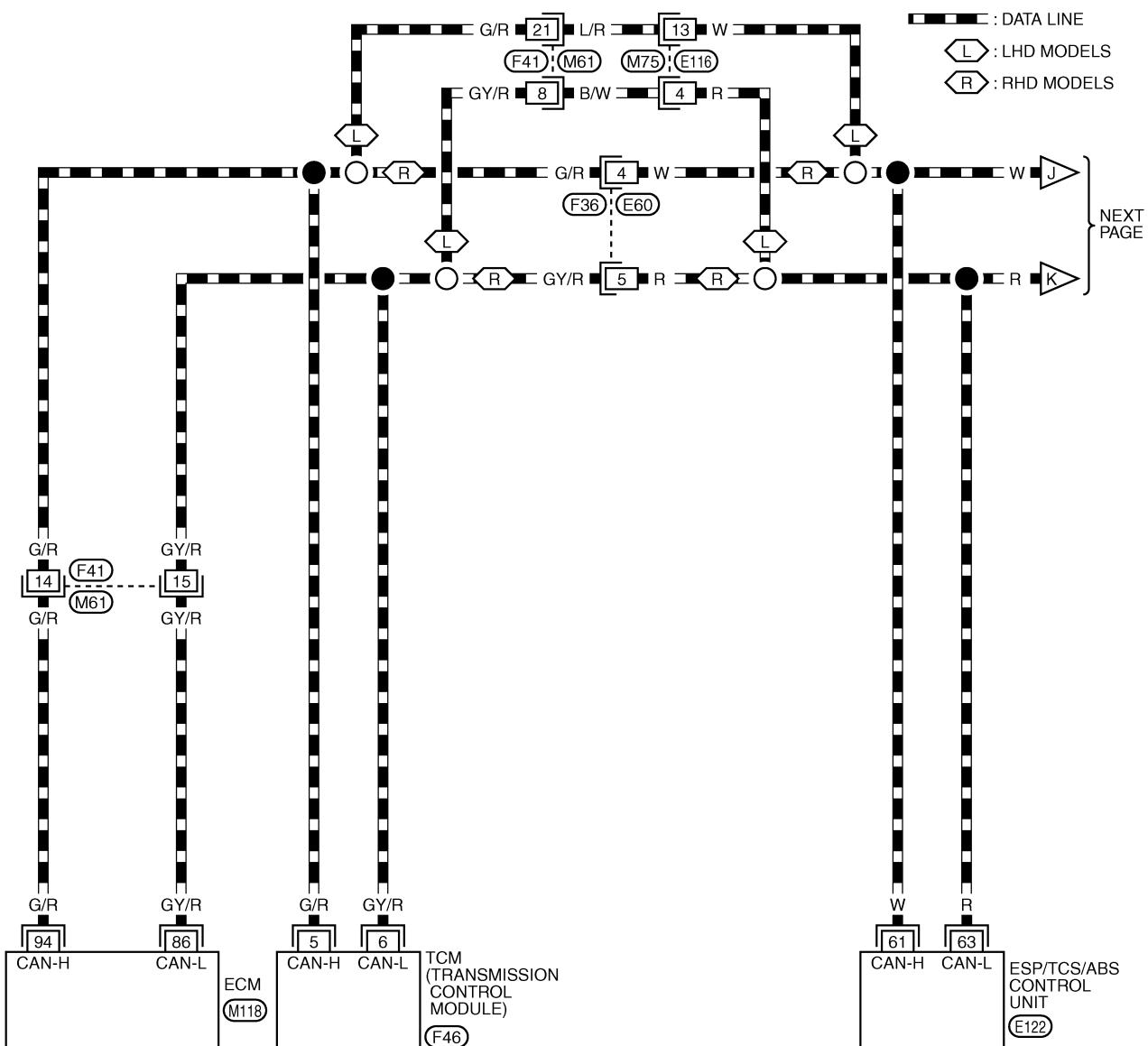
CAN SYSTEM (TYPE 5)

[CAN]

Wiring Diagram — CAN —

EKS00FWI

LAN-CAN-09

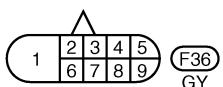
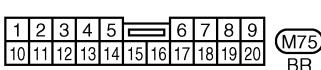


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REFER TO THE FOLLOWING.
 (M118), (E122), (F46)
 -ELECTRICAL UNITS

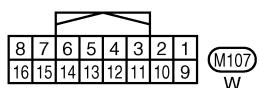
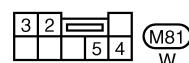
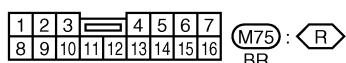
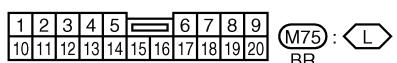
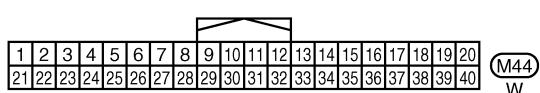
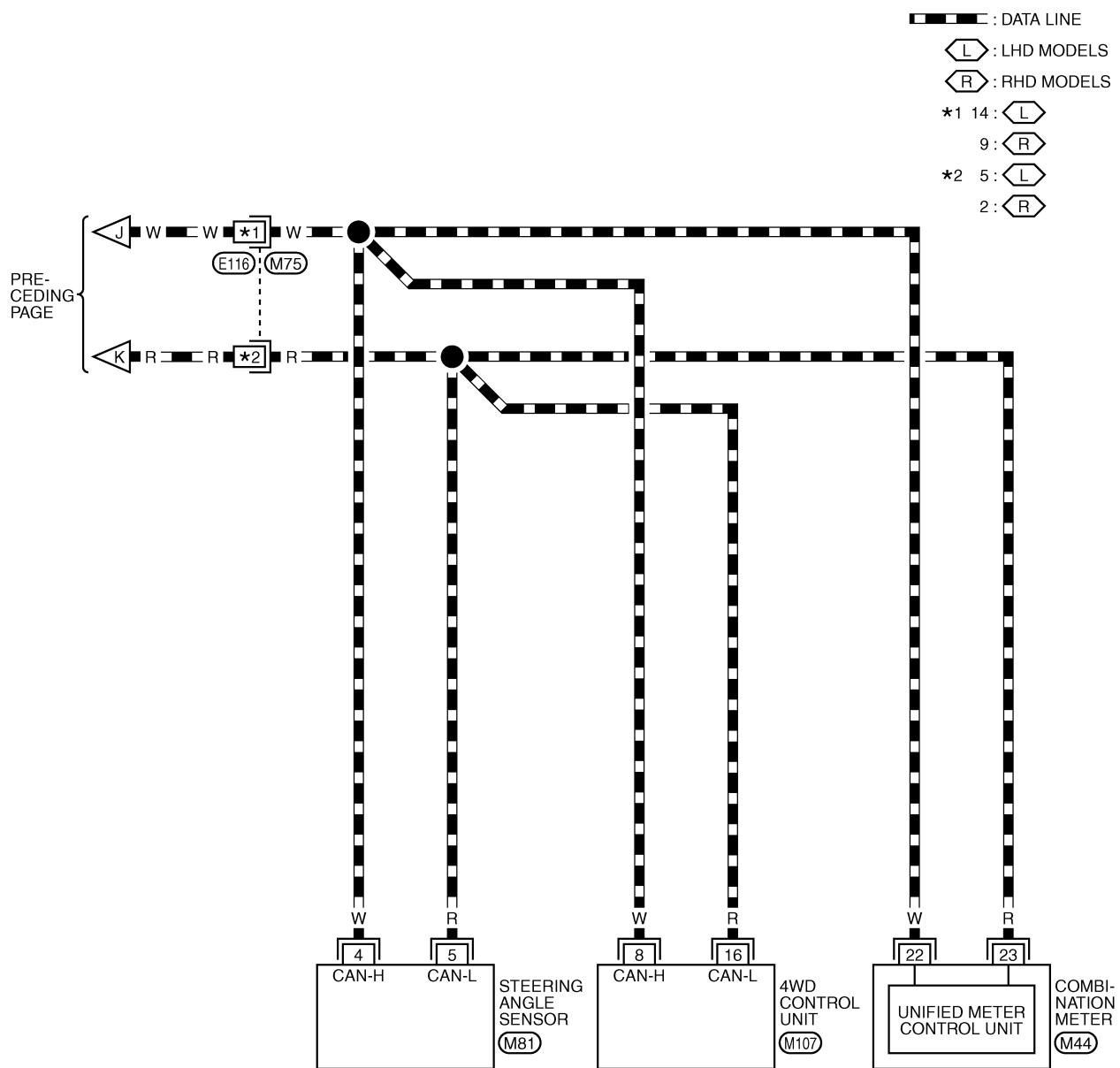
TKWB0114E

LAN-87

CAN SYSTEM (TYPE 5)

[CAN]

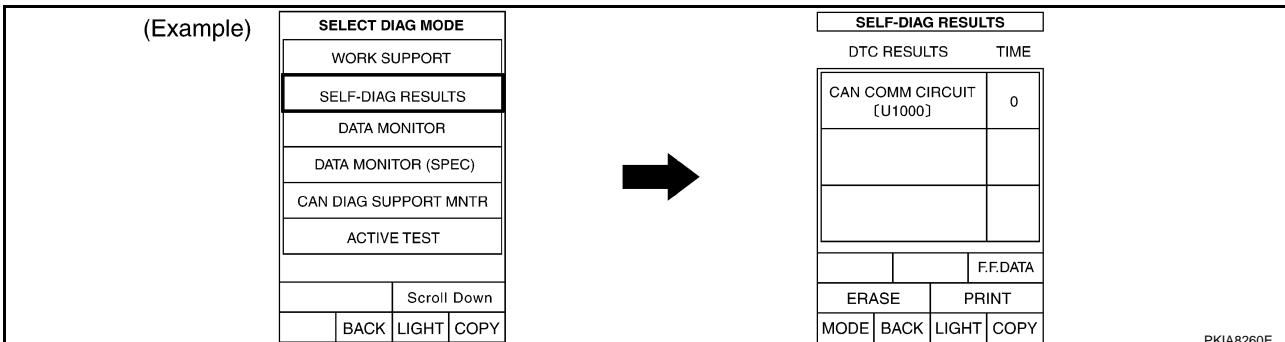
LAN-CAN-10



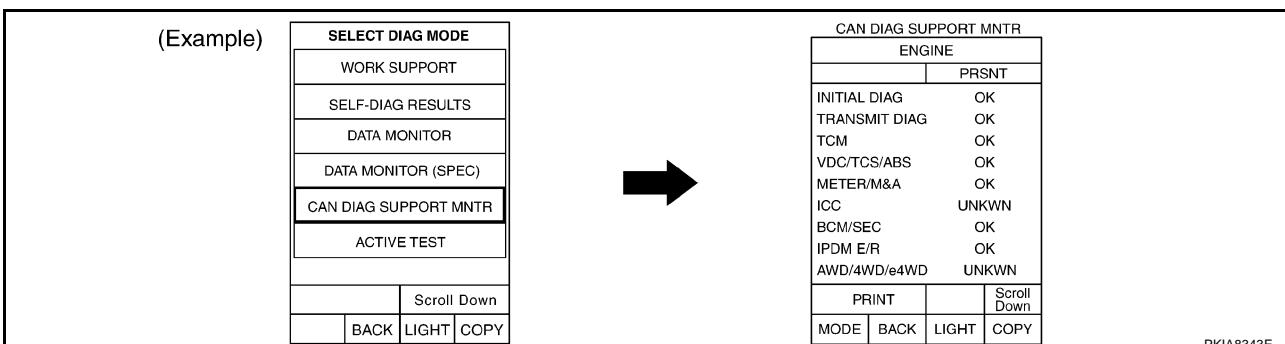
TKWB0115E

LAN-88

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



2. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "ABS" and "ALL MODE AWD/4WD" displayed on CONSULT-II.



3. Attach the printed sheet of "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to [LAN-90, "CHECK SHEET"](#) .
4. 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 [LAN-90, "CHECK SHEET"](#) .

NOTE:

NOTE:

- If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, 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 [LAN-91, "CHECK SHEET RESULTS \(EXAMPLE\)"](#).

CAN SYSTEM (TYPE 5)

[CAN]

CHECK SHEET

NOTE:

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

Check sheet table

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

Symptoms:

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
A/T
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
ALL MODE AWD/4WD
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
A/T
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
ALL MODE AWD/4WD
CAN DIAG SUPPORT
MNTR

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

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

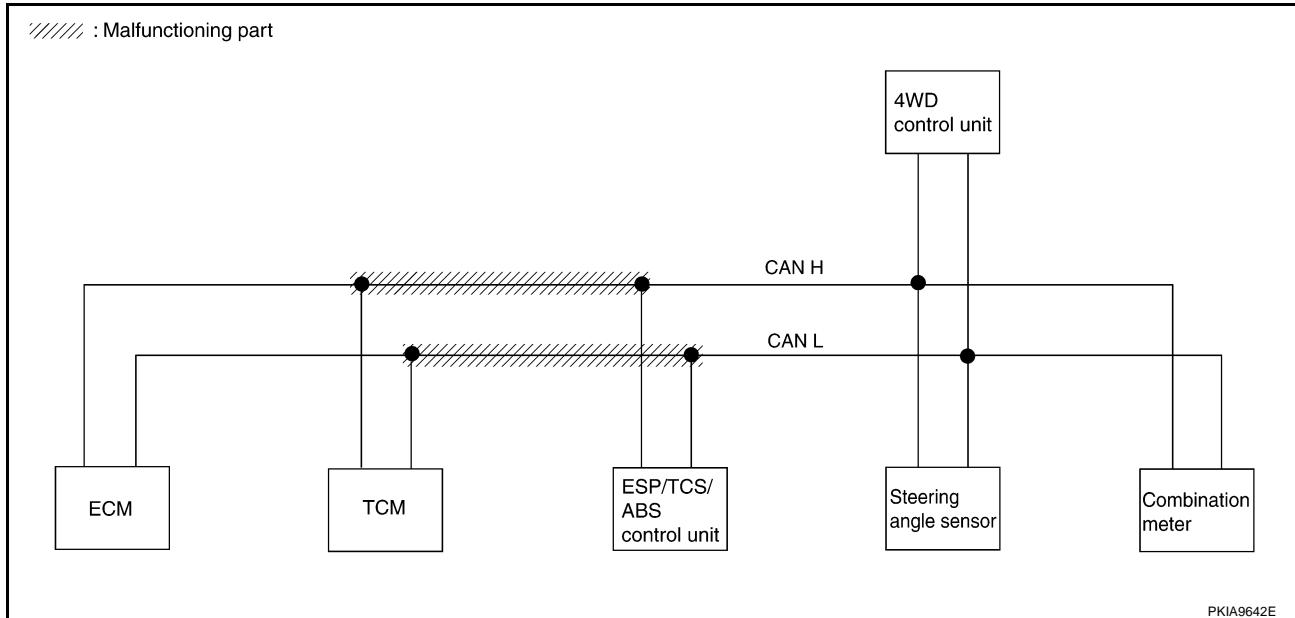
Case 1

Check harness between TCM and ESP/TCS/ABS control unit. Refer to [LAN-99, "Between TCM and ESP/TCS/ABS Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9623E

////// : Malfunctioning part



PKIA9642E

CAN SYSTEM (TYPE 5)

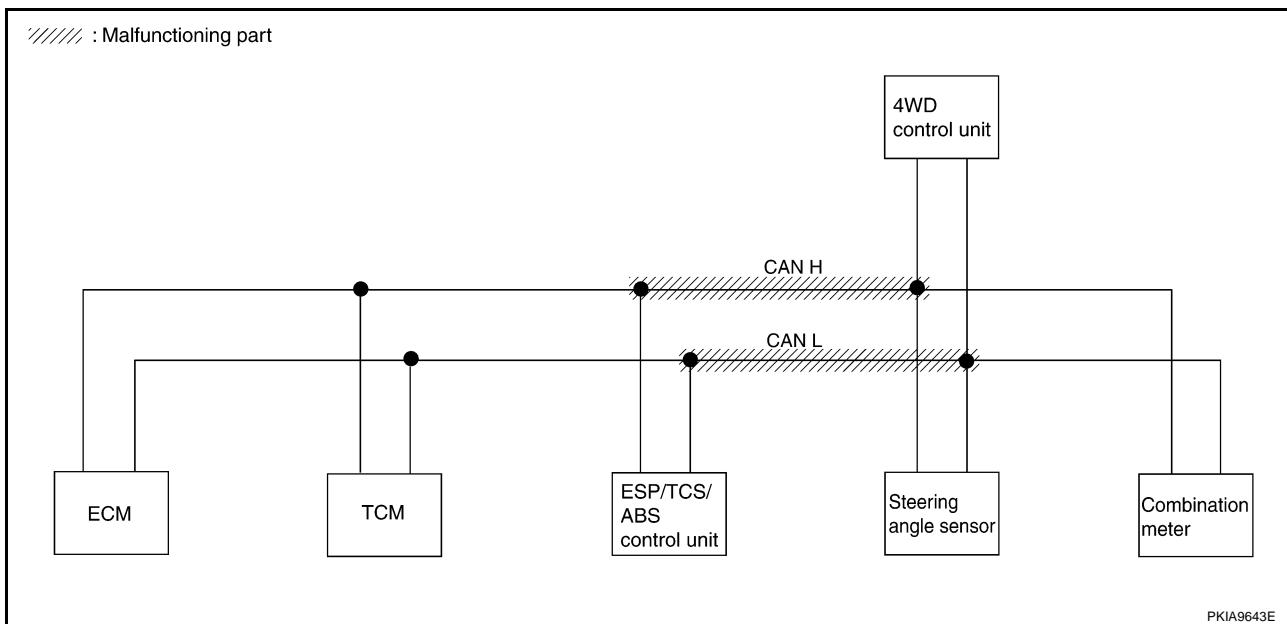
[CAN]

Case 2

Check harness between ESP/TCS/ABS control unit and 4WD control unit. Refer to [LAN-101, "Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9624E



CAN SYSTEM (TYPE 5)

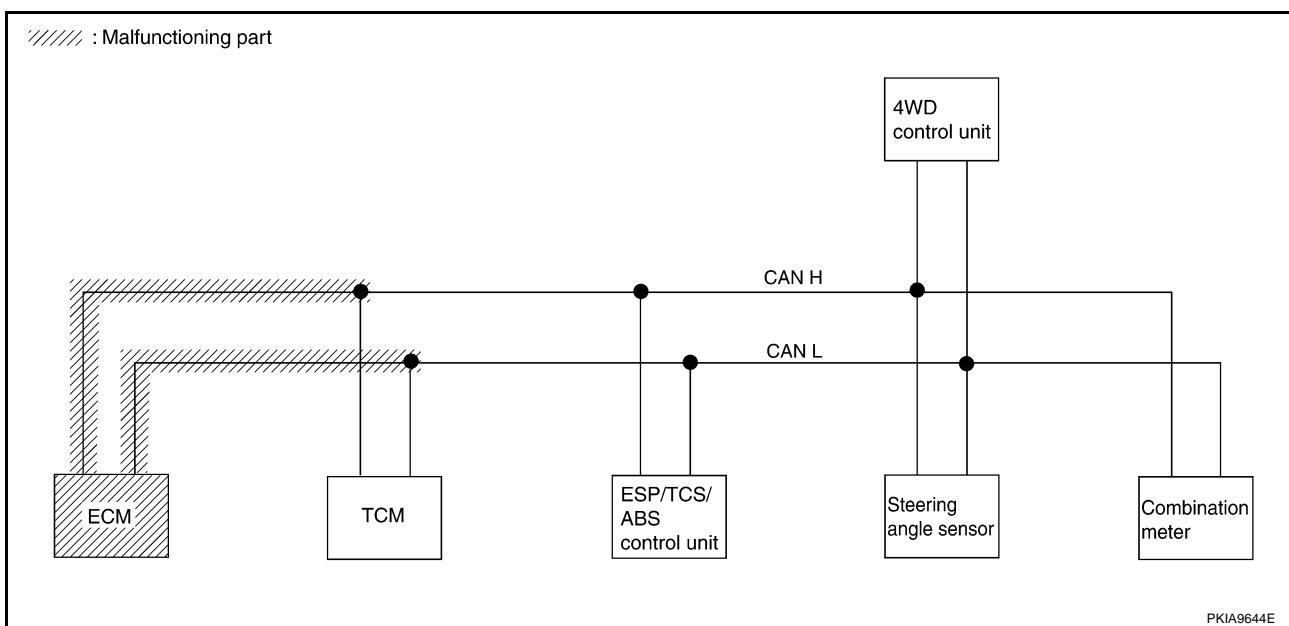
[CAN]

Case 3

Check ECM circuit. Refer to [LAN-103, "ECM Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

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CAN SYSTEM (TYPE 5)

[CAN]

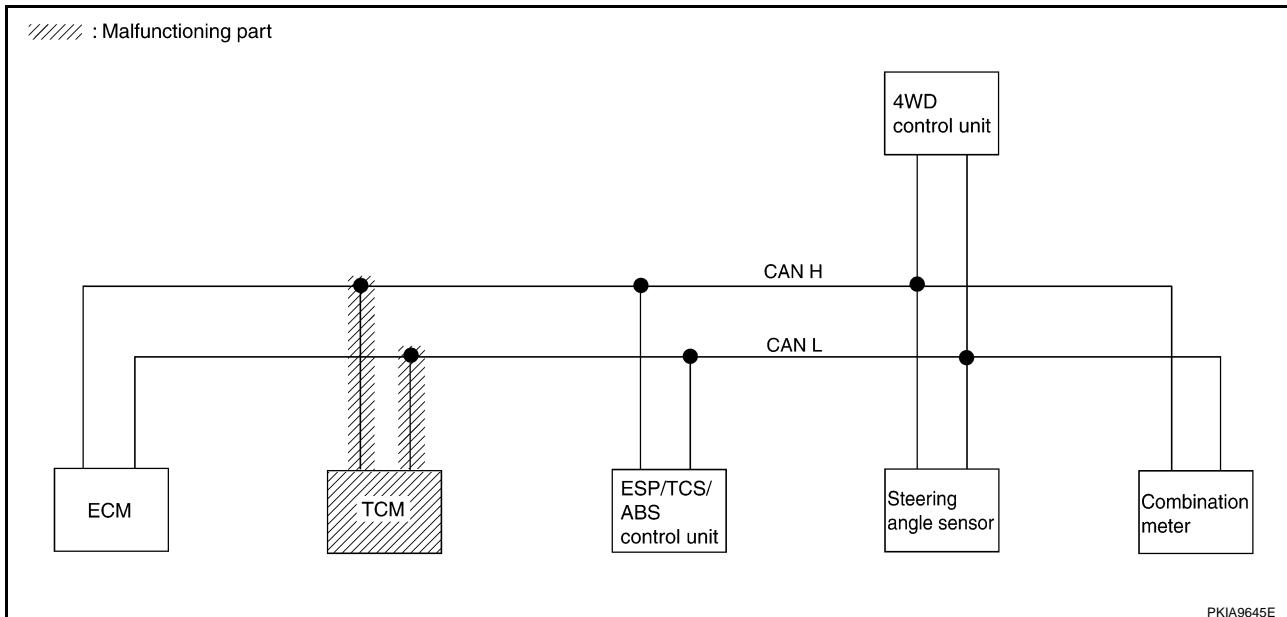
Case 4

Check TCM circuit. Refer to [LAN-104, "TCM Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9626E

////// : Malfunctioning part



PKIA9645E

CAN SYSTEM (TYPE 5)

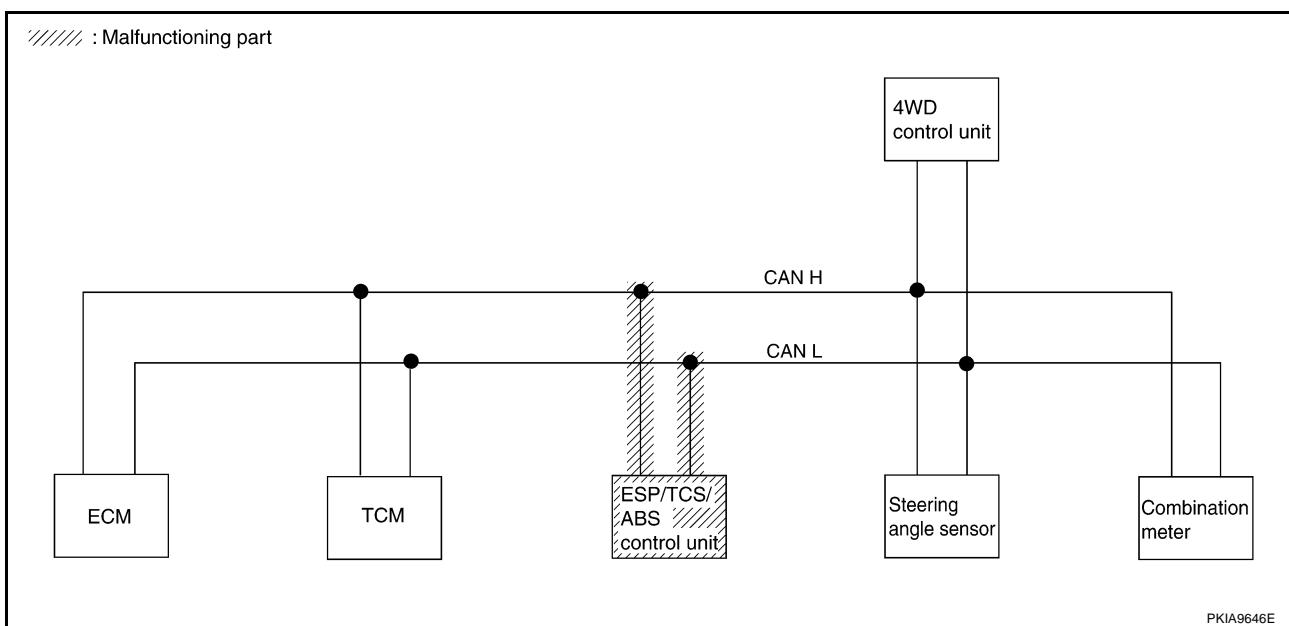
[CAN]

Case 5

Check ESP/TCS/ABS control unit circuit. Refer to [LAN-104, "ESP/TCS/ABS Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9627E



PKIA9646E

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CAN SYSTEM (TYPE 5)

[CAN]

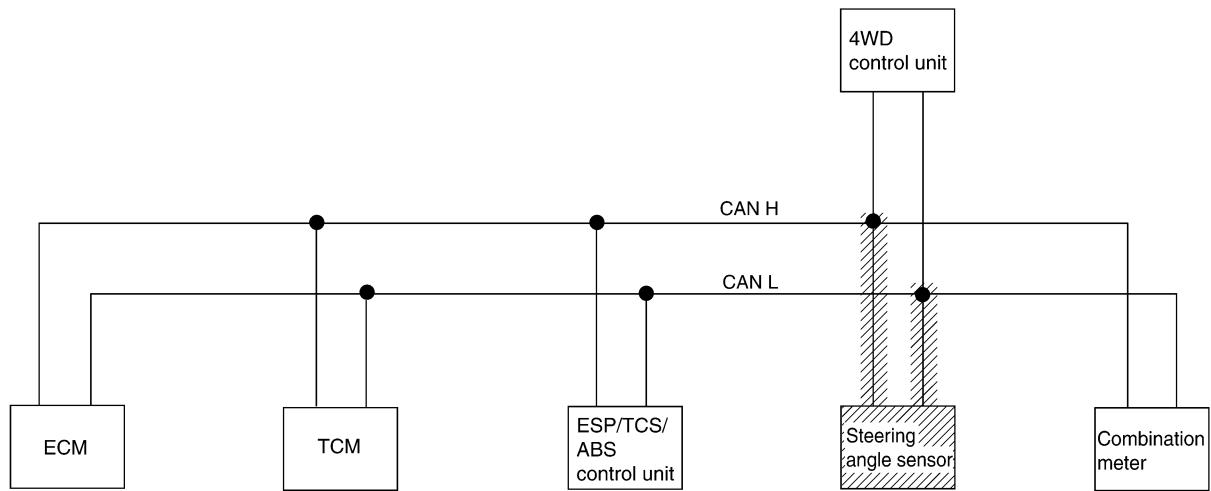
Case 6

Check steering angle sensor circuit. Refer to [LAN-105, "Steering Angle Sensor Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9629E

////// : Malfunctioning part



PKIA9647E

CAN SYSTEM (TYPE 5)

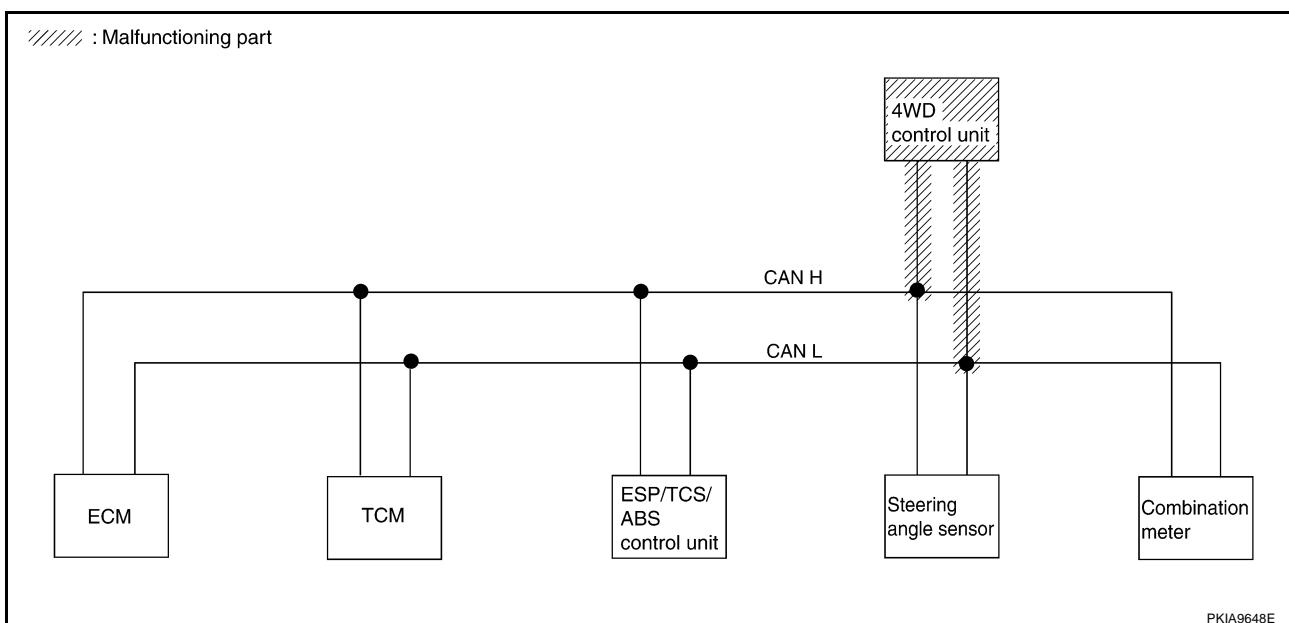
[CAN]

Case 7

Check 4WD control unit circuit. Refer to [LAN-105, "4WD Control Unit Circuit Inspection"](#).

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9628E



PKIA9648E

CAN SYSTEM (TYPE 5)

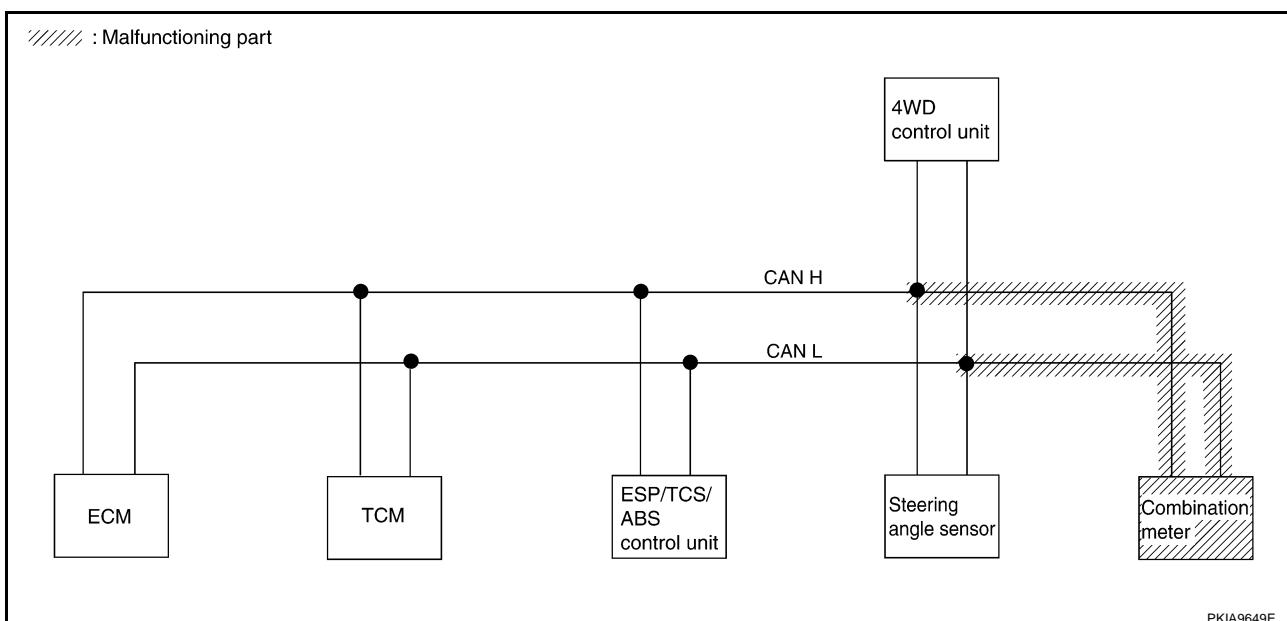
[CAN]

Case 8

Check combination meter circuit. Refer to [LAN-106, "Combination Meter Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9630E



PKIA9649E

Case 9

Check CAN communication circuit. Refer to [LAN-107, "CAN Communication Circuit Inspection"](#) .

SELECT SYSTEM screen	CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis					
			ECM	TCM	VDC/TCS /ABS	STRG	AWD/4WD	METER/M&A
ENGINE	NG	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN
A/T	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN
ABS	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA9631E

Between TCM and ESP/TCS/ABS Control Unit Circuit Inspection

EKS00FWK

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - LHD models
 - Harness connector F41
 - Harness connector M61
 - Harness connector M75
 - Harness connector E116
 - RHD models
 - Harness connector F36
 - Harness connector E60

OK or NG

OK >> GO TO 2.

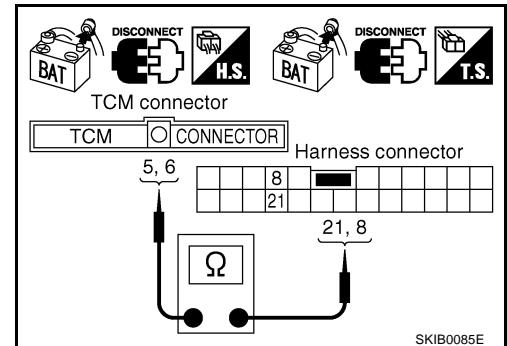
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

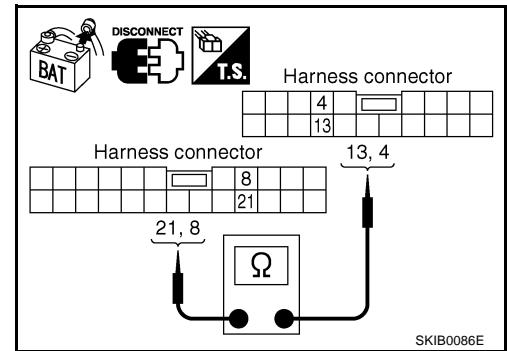
1. Disconnect TCM connector and harness connector F41.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F41 terminals 21 (G/R), 8 (GY/R).

5 (G/R) – 21 (G/R) : Continuity should exist.
6 (GY/R) – 8 (GY/R) : Continuity should exist.



3. Disconnect harness connector M75.
4. Check continuity between harness connector M61 terminals 21 (L/R), 8 (B/W) and harness connector M75 terminals 13 (L/R), 4 (B/W).

21 (L/R) – 13 (L/R) : Continuity should exist.
8 (B/W) – 4 (B/W) : Continuity should exist.



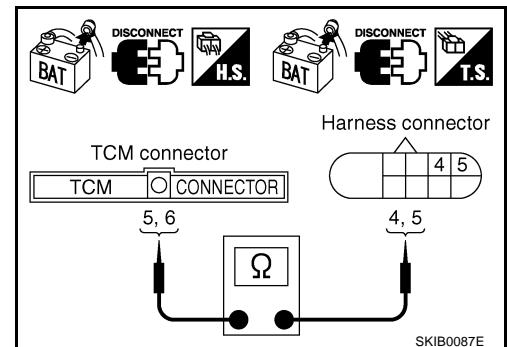
RHD models

1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F36 terminals 4 (G/R), 5 (GY/R).

5 (G/R) – 4 (G/R) : Continuity should exist.
6 (GY/R) – 5 (GY/R) : Continuity should exist.

OK or NG

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



3. CHECK HARNESS FOR OPEN CIRCUIT

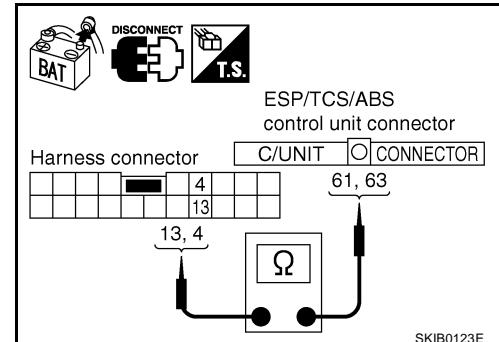
1. Disconnect ESP/TCS/ABS control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector E116 terminals 13 (W), 4 (R) and ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R).

13 (W) – 61 (W)

: Continuity should exist.

4 (R) – 63 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector E60 terminals 4 (W), 5 (R) and ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R).

4 (W) – 61 (W)

: Continuity should exist.

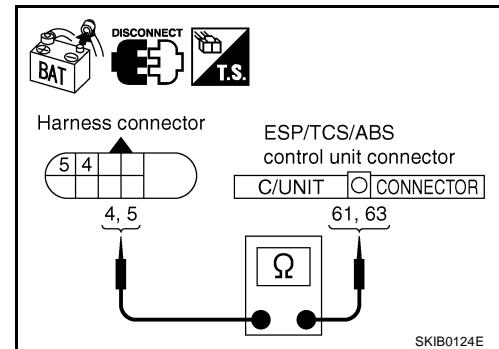
5 (R) – 63 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-89, "Work Flow"](#).

NG >> Repair harness.



Between ESP/TCS/ABS Control Unit and 4WD Control Unit Circuit Inspection

EKS00FWL

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E116
 - Harness connector M75

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector and harness connector E116.

2. Check the following.

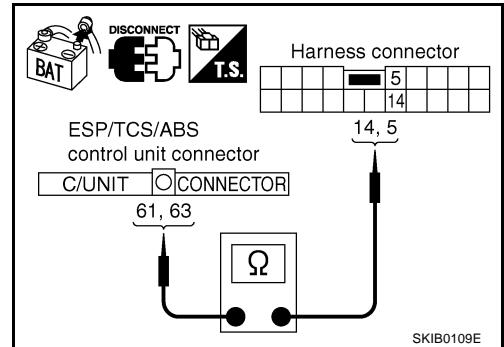
- LHD models
- Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 14 (W), 5 (R).

61 (W) – 14 (W)

: Continuity should exist.

63 (R) – 5 (R)

: Continuity should exist.



- RHD models

- Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and harness connector E116 terminals 9 (W), 2 (R).

61 (W) – 9 (W)

: Continuity should exist.

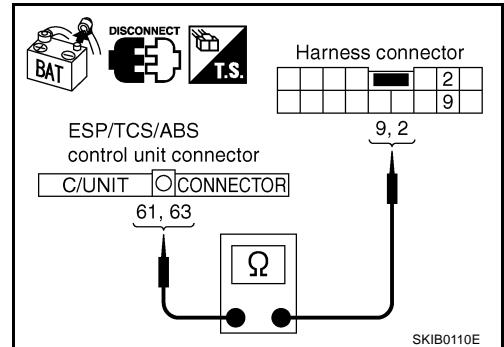
63 (R) – 2 (R)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

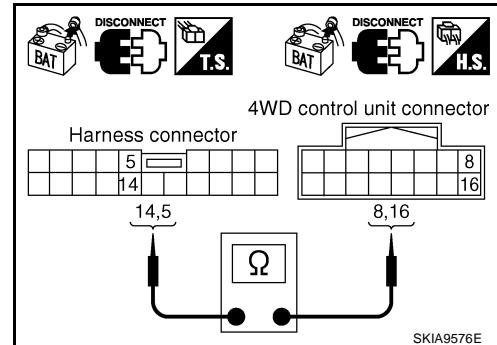
1. Disconnect 4WD control unit connector.
2. Check the following.
 - LHD models
 - Check continuity between harness connector M75 terminals 14 (W), 5 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

14 (W) – 8 (W)

: Continuity should exist.

5 (R) – 16 (R)

: Continuity should exist.



- RHD models
- Check continuity between harness connector M75 terminals 9 (W), 2 (R) and 4WD control unit harness connector M107 terminals 8 (W), 16 (R).

9 (W) – 8 (W)

: Continuity should exist.

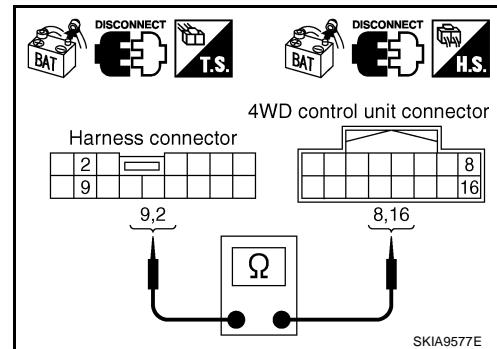
2 (R) – 16 (R)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-89, "Work Flow"](#).

NG >> Repair harness.



ECM Circuit Inspection

EKS00FWM

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
 - ECM connector
 - Harness connector M61
 - Harness connector F41

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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2. CHECK HARNESS FOR OPEN CIRCUIT

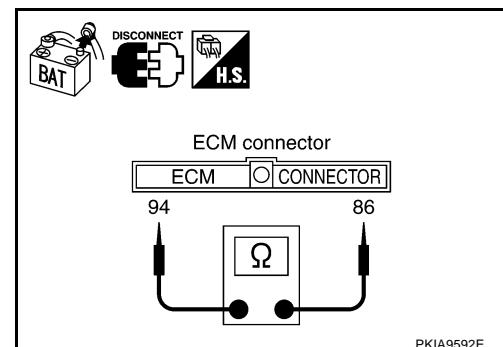
1. Disconnect ECM connector.
2. Check resistance between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace ECM.

NG >> Repair harness between ECM and TCM.



TCM Circuit Inspection

EKS00FWN

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect TCM connector.
2. Check resistance between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

5 (G/R) – 6 (GY/R) : Approx. 54 – 66Ω

OK or NG

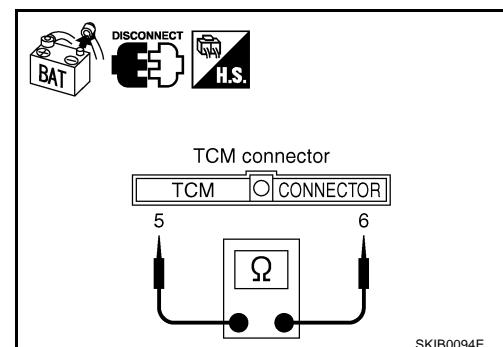
OK >> Replace TCM.

NG >> ● LHD models

– Repair harness between TCM and harness connector F41.

● RHD models

– Repair harness between TCM and harness connector F36.



ESP/TCS/ABS Control Unit Circuit Inspection

EKS00FWO

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check terminals and connector of ESP/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.

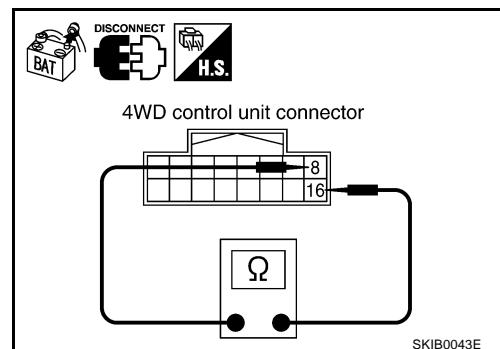
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector M107 terminals 8 (W) and 16 (R).

8 (W) – 16 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace 4WD control unit.
 NG >> Repair harness between 4WD control unit and steering angle sensor.



EKS00FWQ

Combination Meter Circuit Inspection

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative 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.

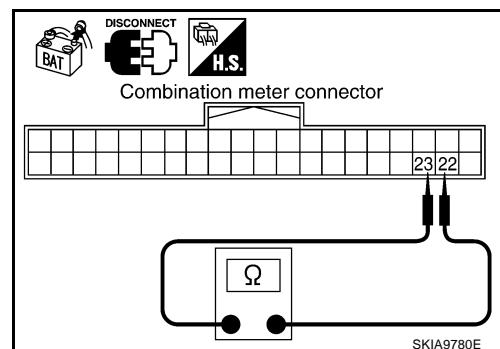
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect combination meter connector.
2. Check resistance between combination meter harness connector M44 terminals 22 (W) and 23 (R).

22 (W) – 23 (R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace combination meter.
 NG >> Repair harness between combination meter and 4WD control unit.



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CAN Communication Circuit Inspection

EKS00FWR

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect battery cable at negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (control module side, control unit side, sensor side, meter side, connector side and harness side).
 - ECM
 - TCM
 - ESP/TCS/ABS control unit
 - Steering angle sensor
 - 4WD control unit
 - Combination meter
 - Between ECM and combination meter

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

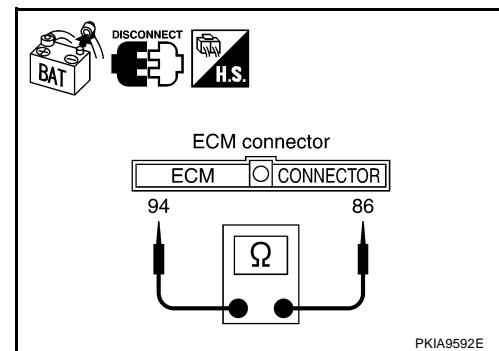
1. Disconnect ECM connector and harness connector M61.
2. Check continuity between ECM harness connector M118 terminals 94 (G/R) and 86 (GY/R).

94 (G/R) – 86 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector M61.



3. CHECK HARNESS FOR SHORT CIRCUIT

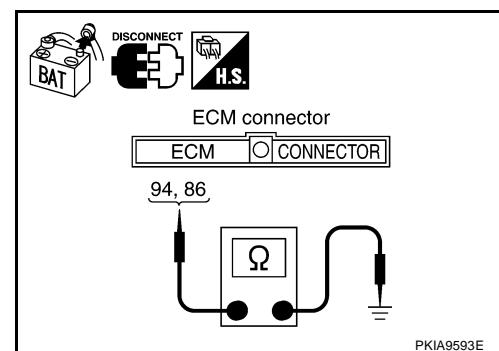
Check continuity between ECM harness connector M118 terminals 94 (G/R), 86 (GY/R) and ground.

94 (G/R) – Ground : Continuity should not exist.**86 (GY/R) – Ground : Continuity should not exist.**

OK or NG

OK >> GO TO 4.

NG >> Repair harness between ECM and harness connector M61.

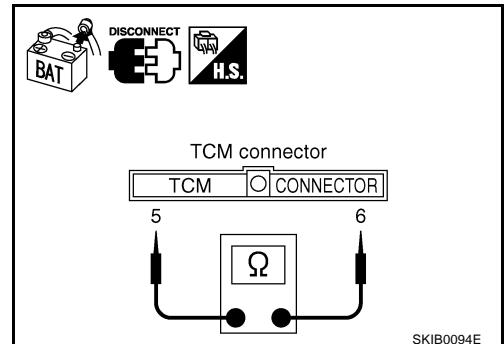


4. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

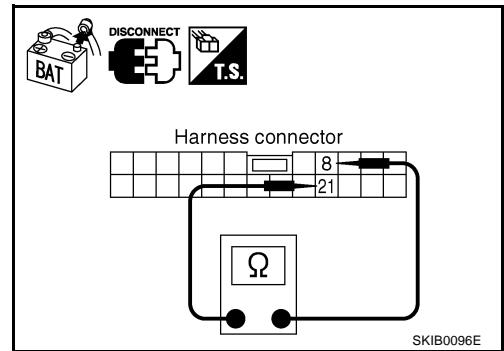
1. Disconnect TCM connector.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

5 (G/R) – 6 (GY/R) : Continuity should not exist.



3. Disconnect harness connector M75.
4. Check continuity between harness connector M61 terminals 21 (L/R) and 8 (B/W).

21 (L/R) – 8 (B/W) : Continuity should not exist.



RHD models

1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

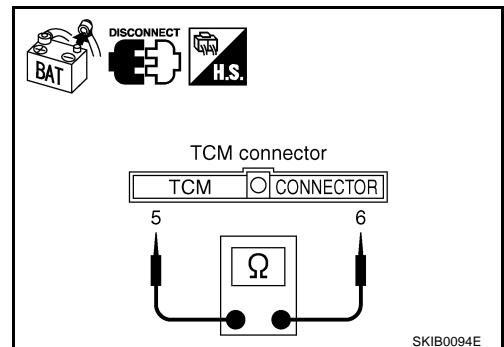
5 (G/R) – 6 (GY/R) : Continuity should not exist.

OK or NG

OK >> GO TO 5.
NG >> ● LHD models

Check the following harness. If any harness is damaged, repair the harness.

- Harness between TCM and harness connector F41
- Harness between harness connector M61 and harness connector M75
- RHD models
- Repair harness between TCM and harness connector F36.



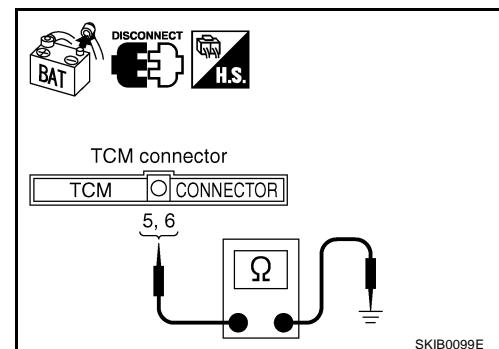
5. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

1. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and ground.

5 (G/R) – Ground : Continuity should not exist.

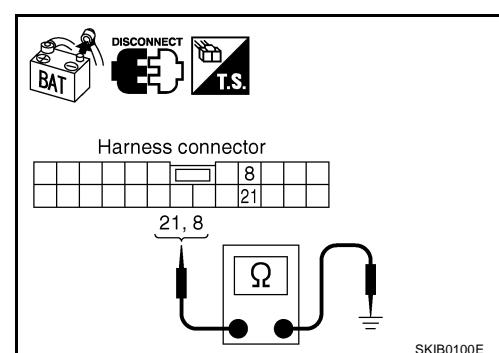
6 (GY/R) – Ground : Continuity should not exist.



2. Check continuity between harness connector M61 terminals 21 (L/R), 8 (B/W) and ground.

21 (L/R) – Ground : Continuity should not exist.

8 (B/W) – Ground : Continuity should not exist.



RHD models

- Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and ground.

5 (G/R) – Ground : Continuity should not exist.

6 (GY/R) – Ground : Continuity should not exist.

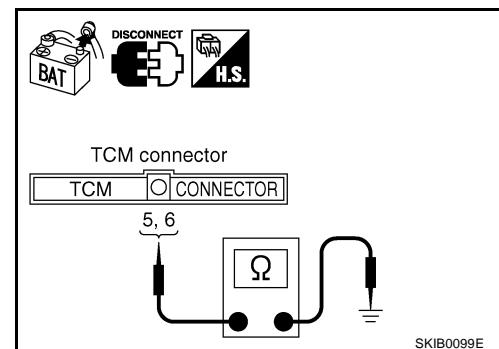
OK or NG

OK >> GO TO 6.

NG >> ● LHD models

Check the following harness. If any harness is damaged, repair the harness.

- Harness between TCM and harness connector F41
- Harness between harness connector M61 and harness connector M75
- RHD models
- Repair harness between TCM and harness connector F36.

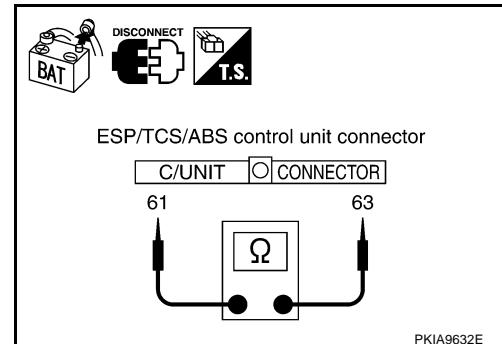


6. CHECK HARNESS FOR SHORT CIRCUIT

LHD models

1. Disconnect ESP/TCS/ABS control unit connector.
2. Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Continuity should not exist.



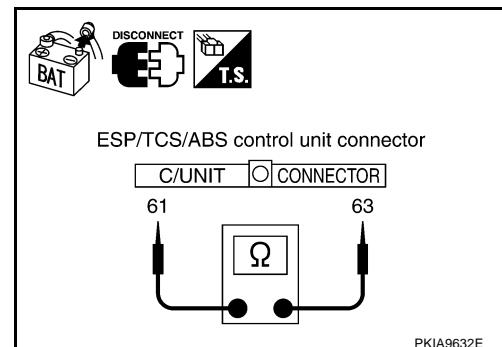
RHD models

1. Disconnect ESP/TCS/ABS control unit connector and harness connector E116.
2. Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 7.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



7. CHECK HARNESS FOR SHORT CIRCUIT

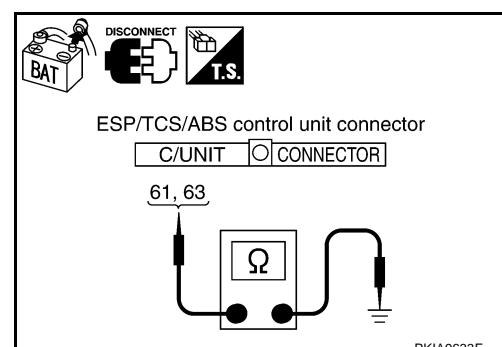
Check continuity between ESP/TCS/ABS control unit harness connector E122 terminals 61 (W), 63 (R) and ground.

61 (W) – Ground : Continuity should not exist.

63 (R) – Ground : Continuity should not exist.

OK or NG

OK >> GO TO 8.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



8. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect steering angle sensor, 4WD control unit connector and combination meter connector.
2. Check continuity between combination meter harness connector M44 terminals 22 (W) and 23 (R).

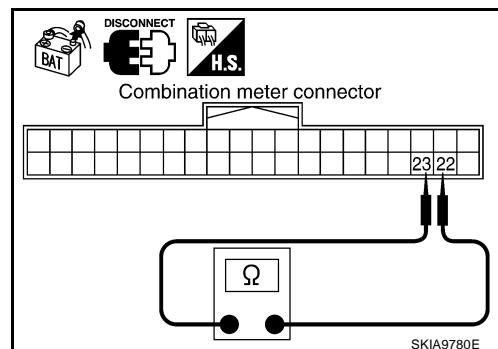
22 (W) – 23 (R) : Continuity should not exist.

OK or NG

OK >> GO TO 9.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



9. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between combination meter harness connector M44 terminals 22 (W), 23 (R) and ground.

22 (W) – Ground : Continuity should not exist.

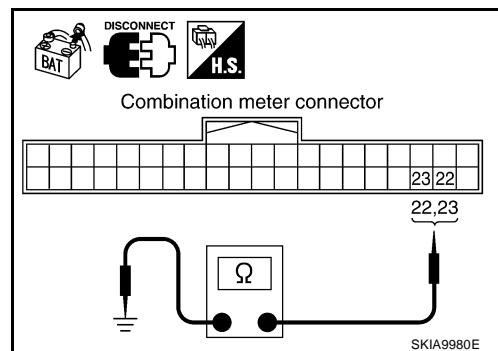
23 (R) – Ground : Continuity should not exist.

OK or NO

OK >> GO TO 10.

NG >> Check the following harness. If any harness is damaged, repair the harness.

- Harness between combination meter and 4WD control unit
- Harness between combination meter and steering angle sensor
- Harness between combination meter and harness connector M75



10. CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

Check components inspection. Refer to [LAN-111, "CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT"](#).

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to [LAN-89, "Work Flow"](#).

NG >> Replace ECM and/or combination meter.

Component Inspection

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

EKS00FWS

- Remove ECM and combination meter from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between combination meter terminals 22 and 23.

Unit	Terminal	Resistance (Ω) (Approx.)
ECM	94 – 86	108 – 132
Combination meter	22 – 23	

