SECTION LAN

LAN SYSTEM

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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

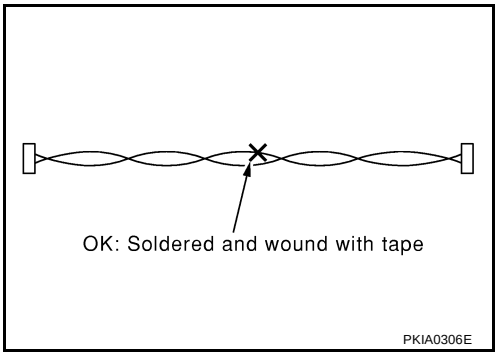
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch off and disconnect negative battery terminal before checking the circuit.

Precautions For Harness Repair

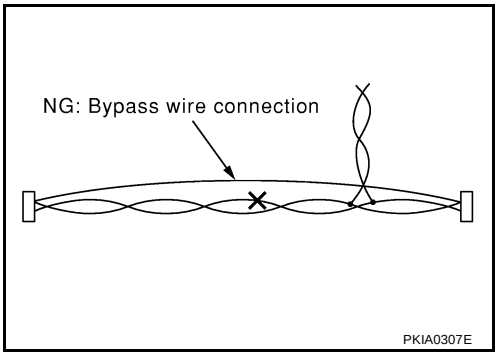
EKS001U2

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

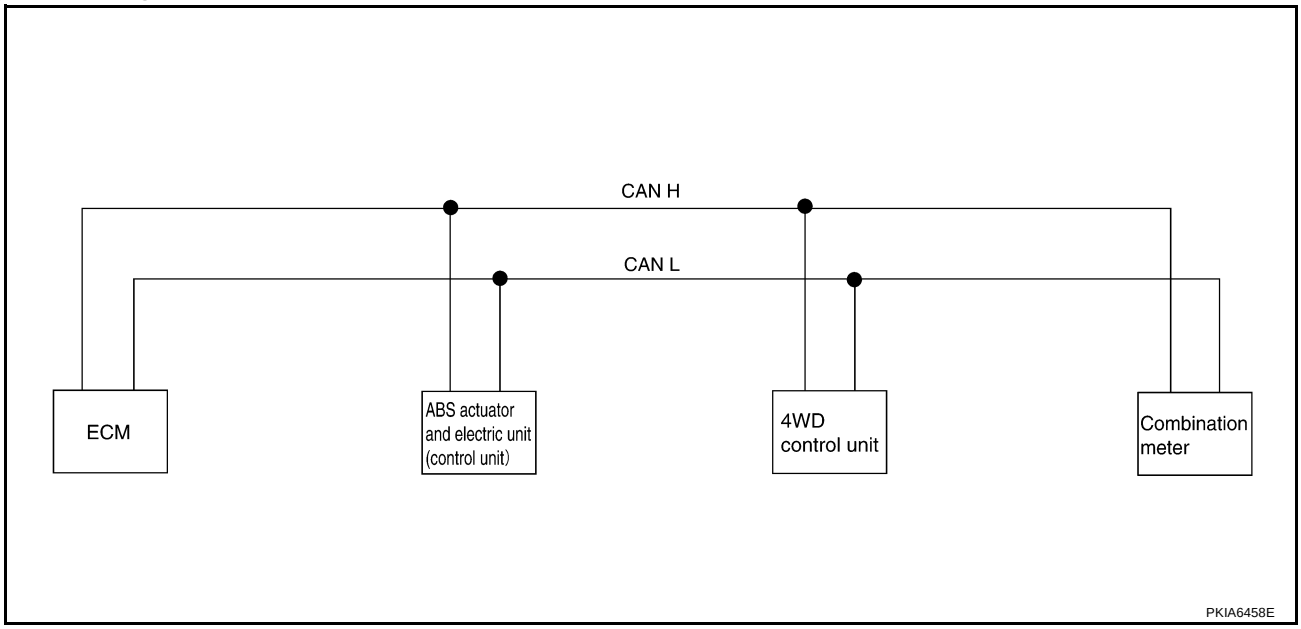
EKS00EGL

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	5
CAN system trouble diagnosis	LAN-9	LAN-25	LAN-50	LAN-68	LAN-86

TYPE 1

System diagram



Input/output signal chart

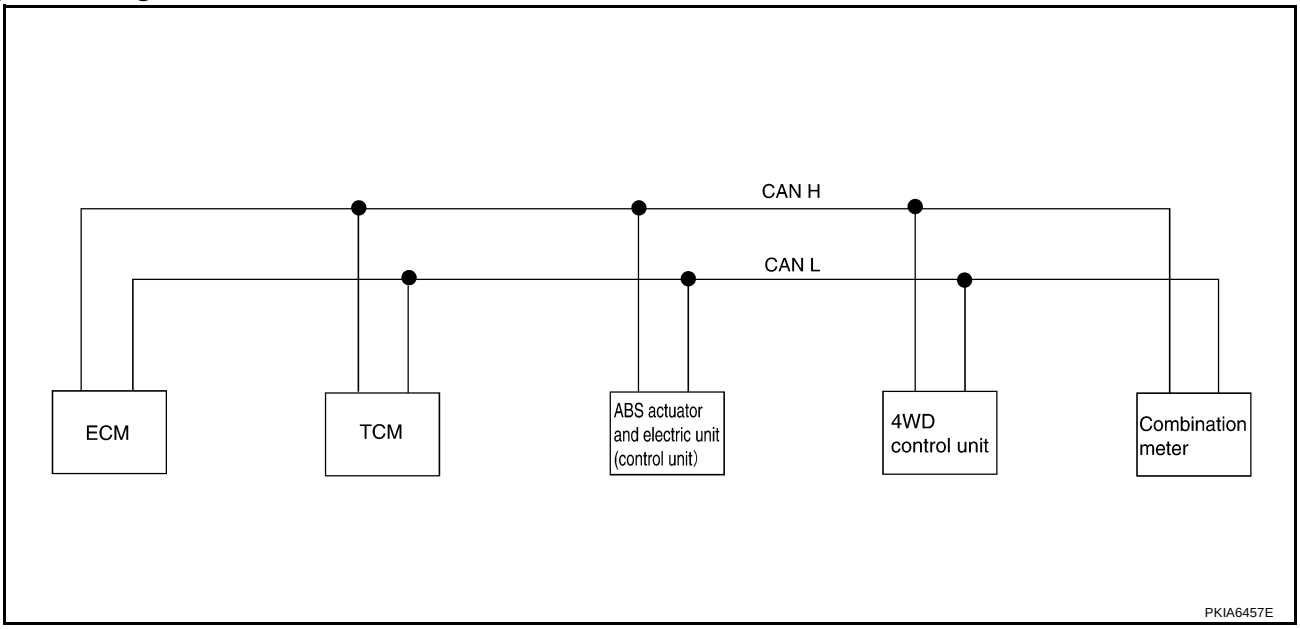
T: Transmit R: Receive

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

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

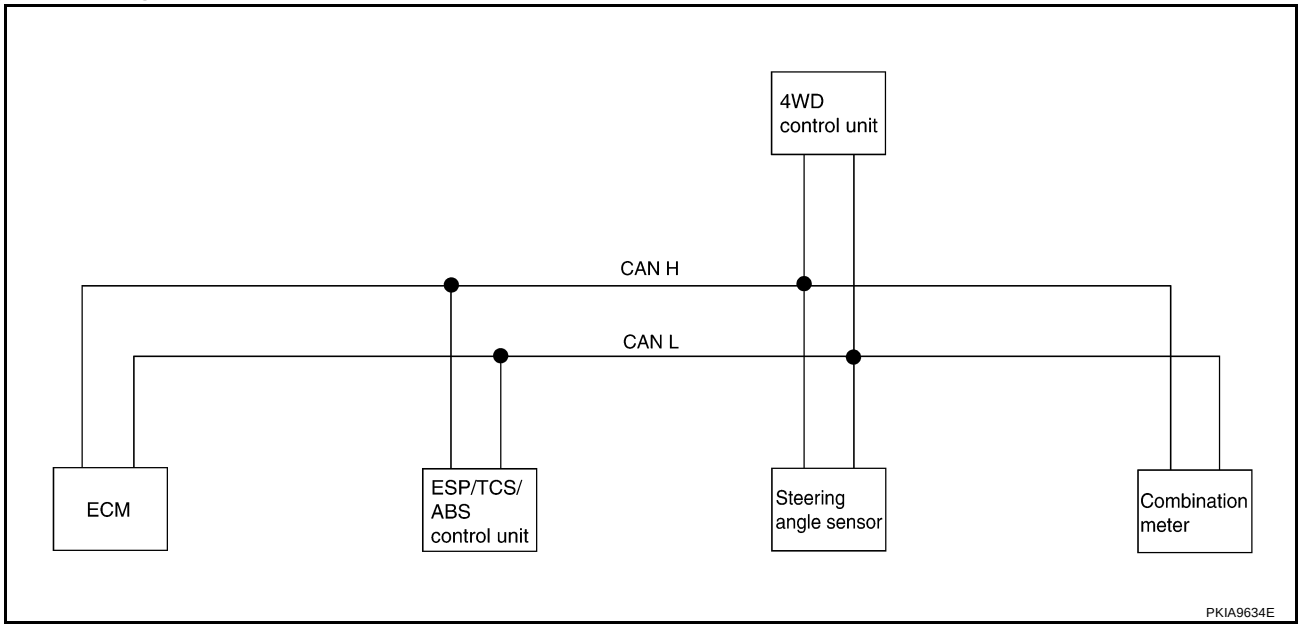
T: Transmit R: Receive

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

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



Input/output signal chart

T: Transmit R: Receive

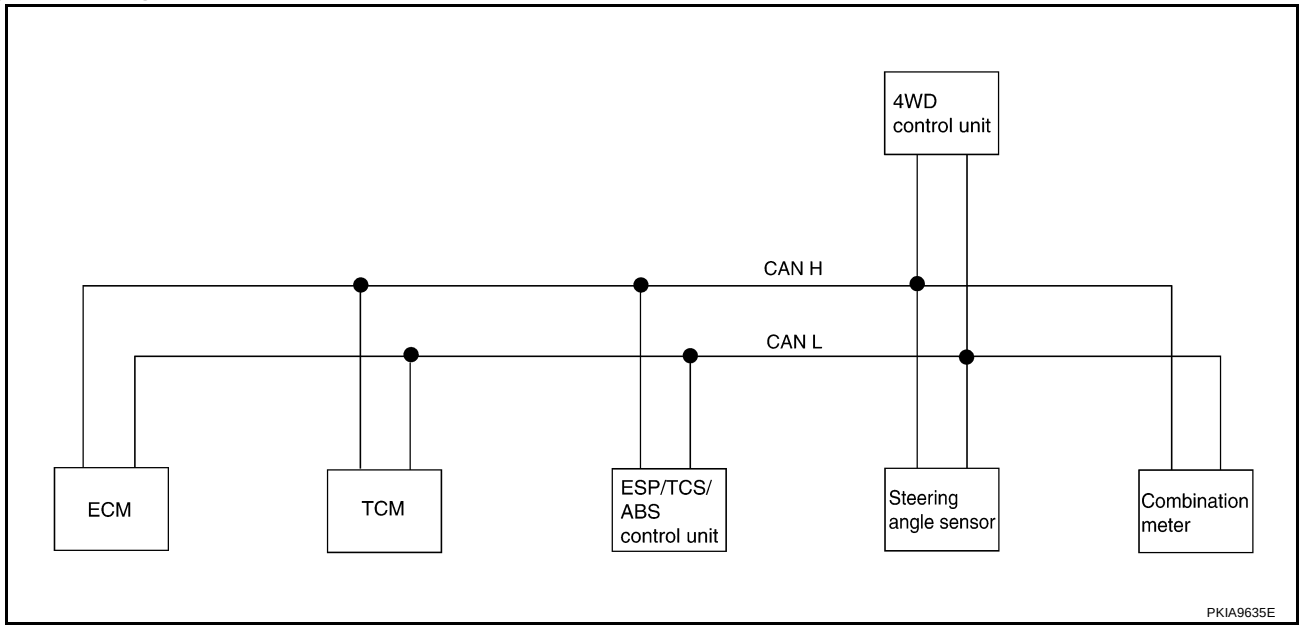
Signals	ECM	ESP/TCS/ABS control unit	Steering angle sensor	4WD control unit	Combination meter
Stop lamp switch signal		T		R	
Engine speed signal	T	R		R	R
Engine coolant temperature signal	T				R
Accelerator pedal position signal	T	R		R	
A/C switch signal*1	R				T
A/C compressor feedback signal*2	T				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

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



Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	ESP/TCS/ ABS control unit	Steering angle sensor	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			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

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

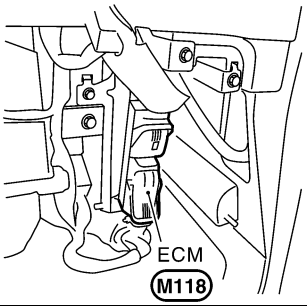
EKS00F07

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.

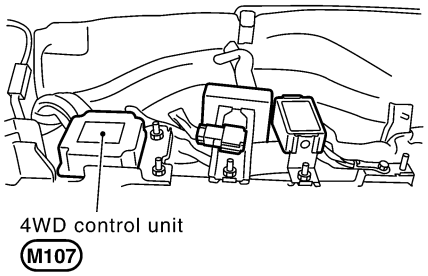
Component Parts and Harness Connector Location

EKS00F08

Behind lower instrument panel on passenger side



Driver side view with upper instrument panel removed

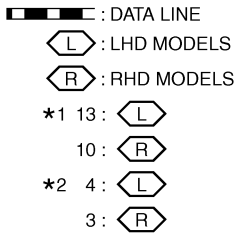


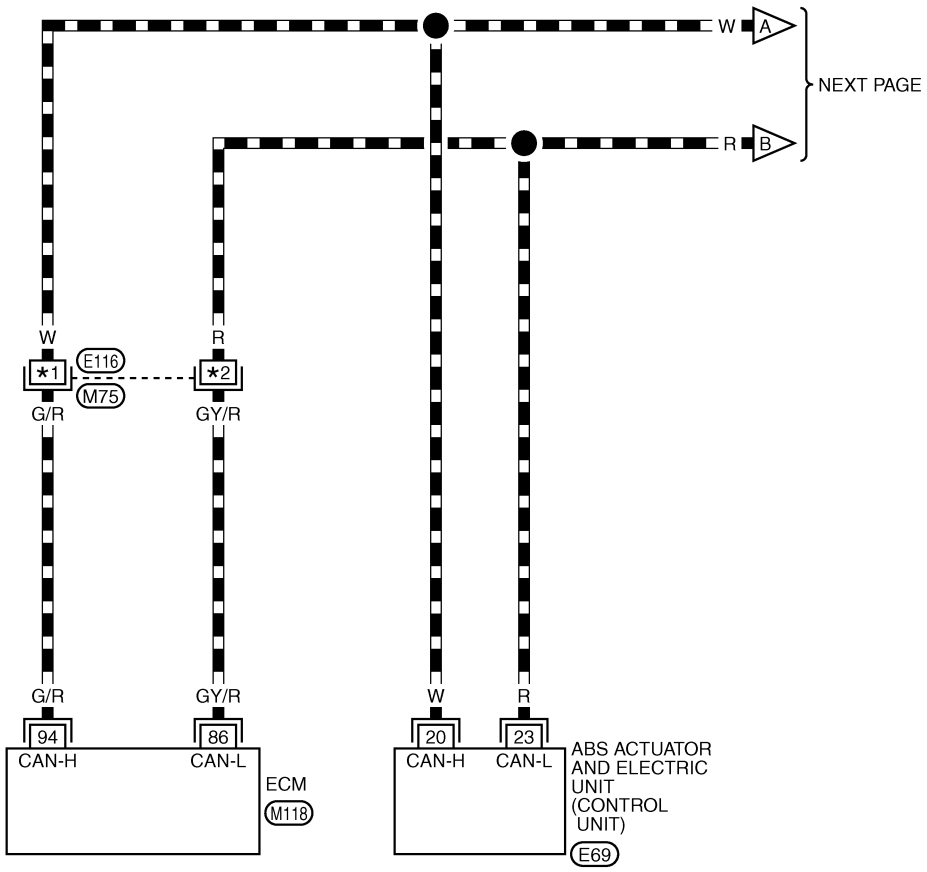
SKIA9768E

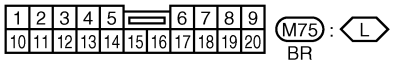
Wiring Diagram — CAN —

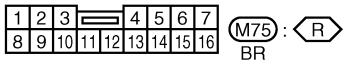
EKS00F09

LAN-CAN-01





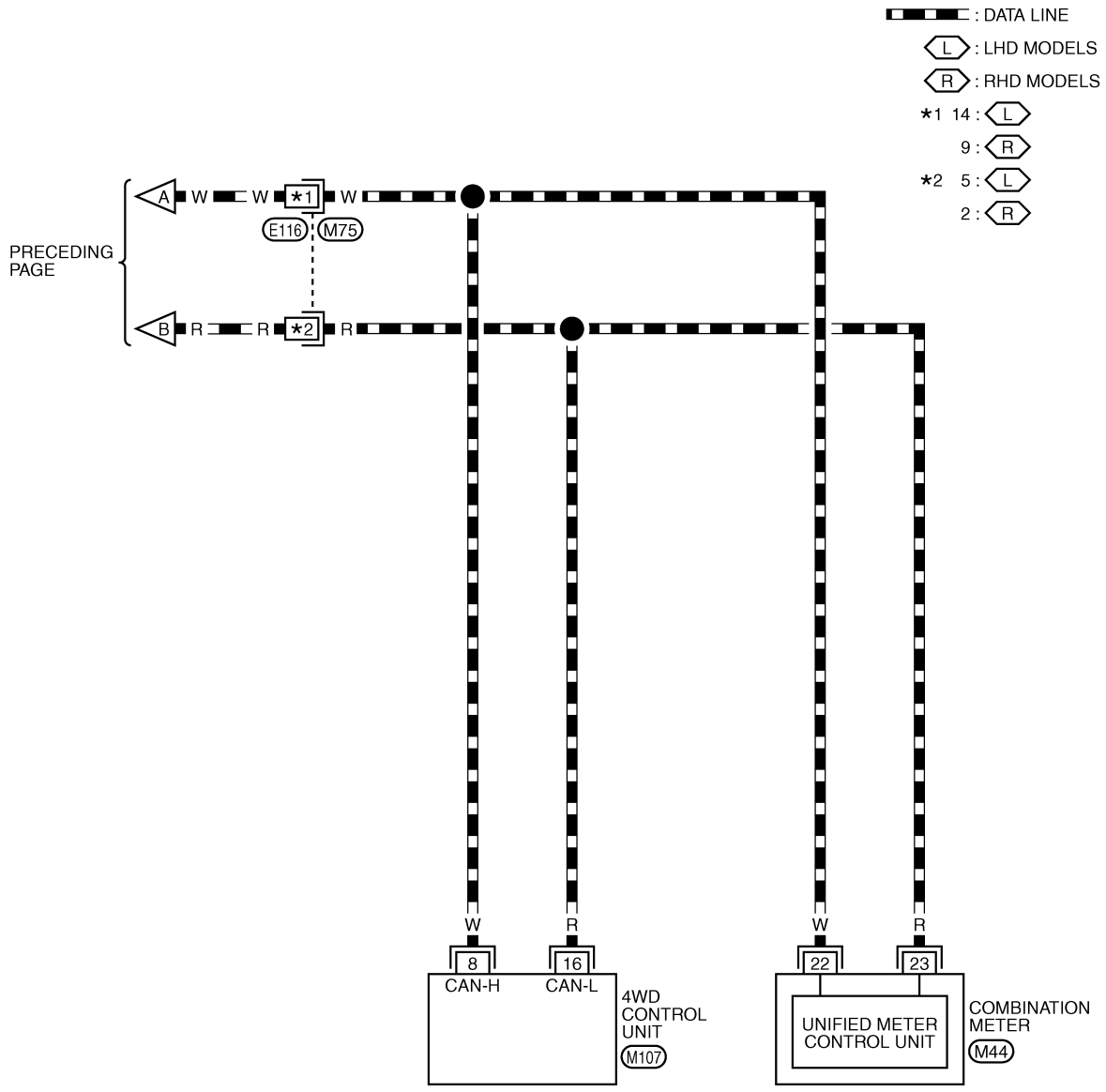


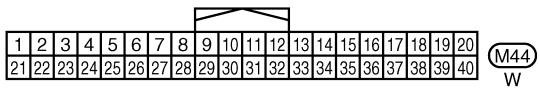


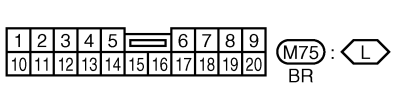
REFER TO THE FOLLOWING.
M118 , E69 -ELECTRICAL UNITS

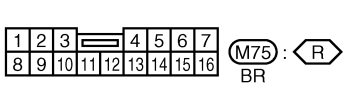
TKWB0106E

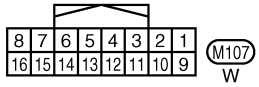
LAN-CAN-02









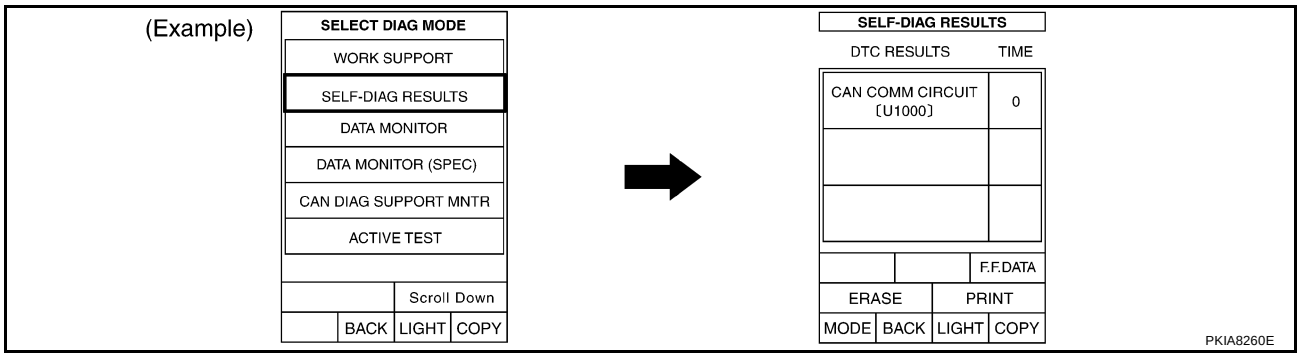


TKWB0107E

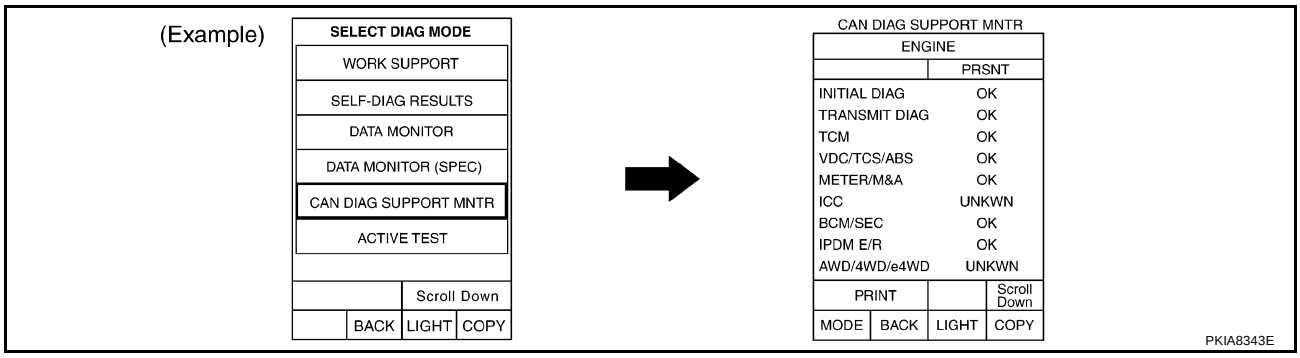
Work Flow

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)" .

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

PKIA9598E

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 ✓	–	–

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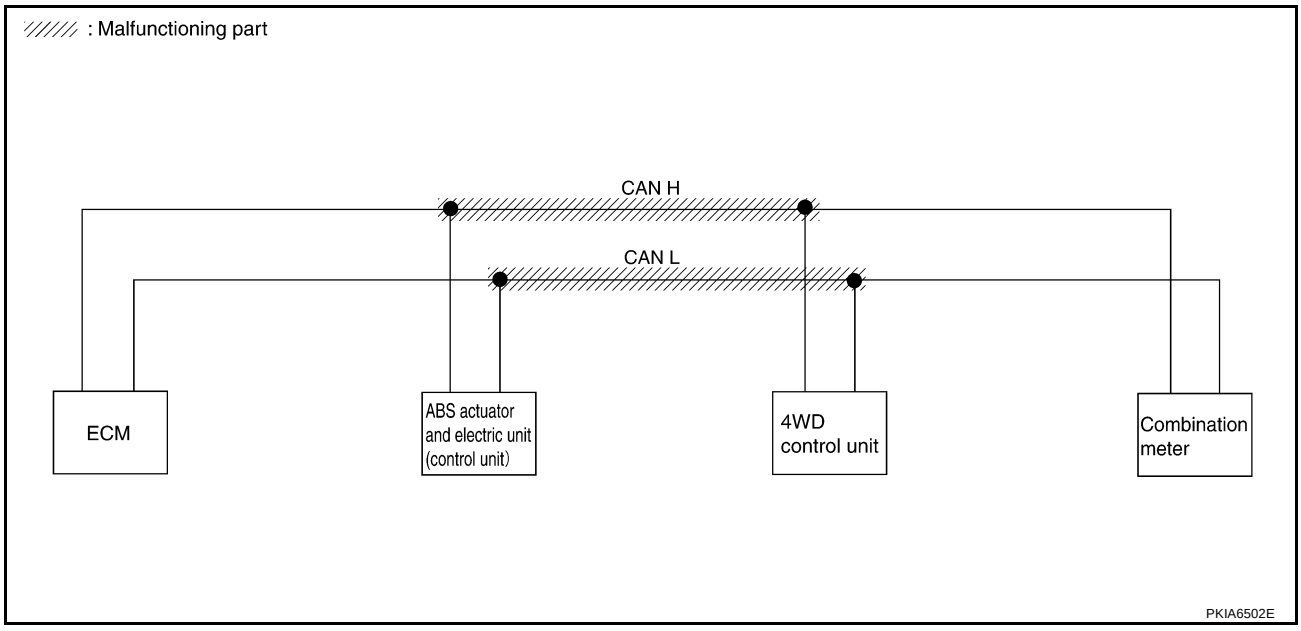


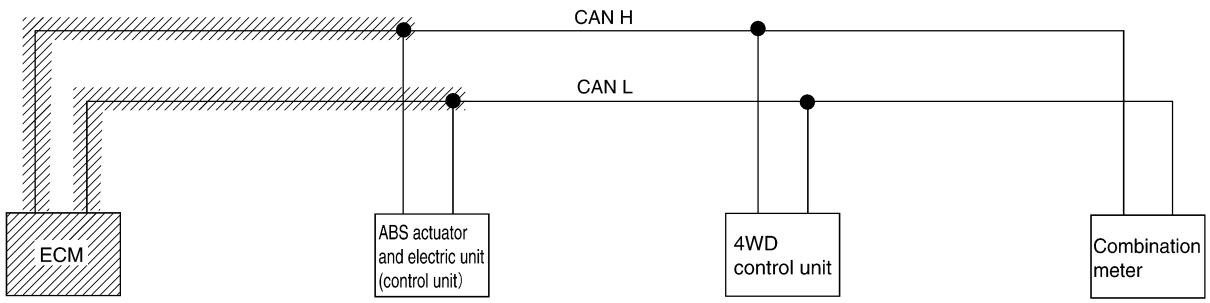
Case 2

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



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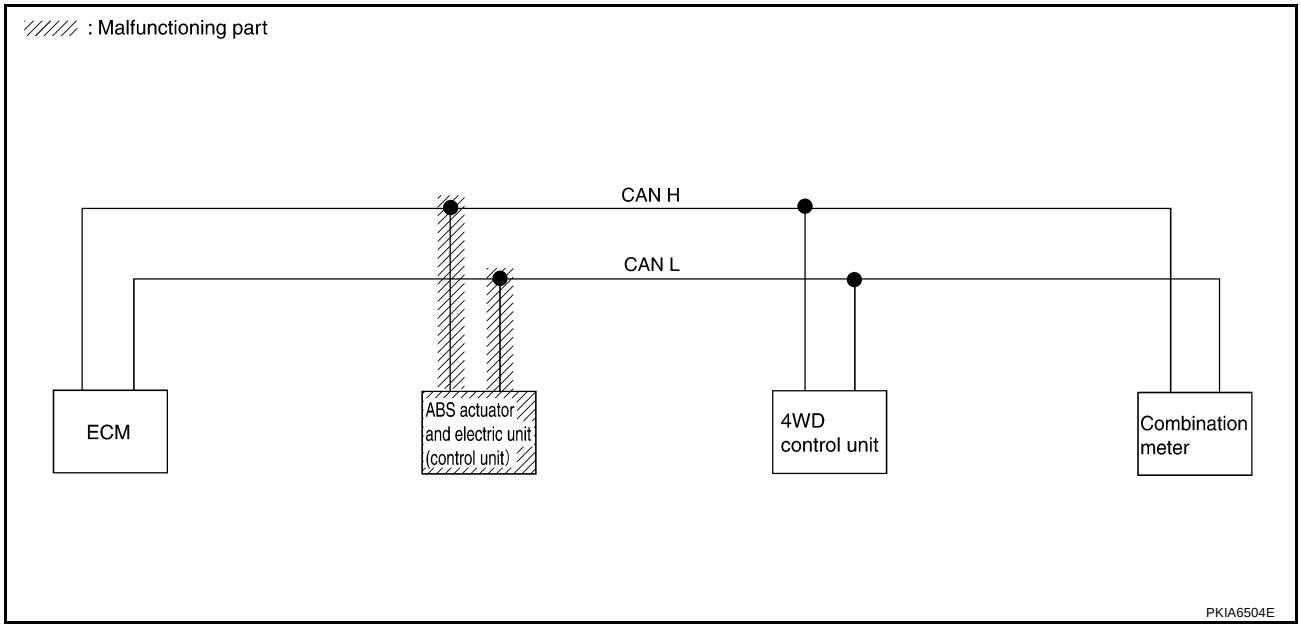
Case 3

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

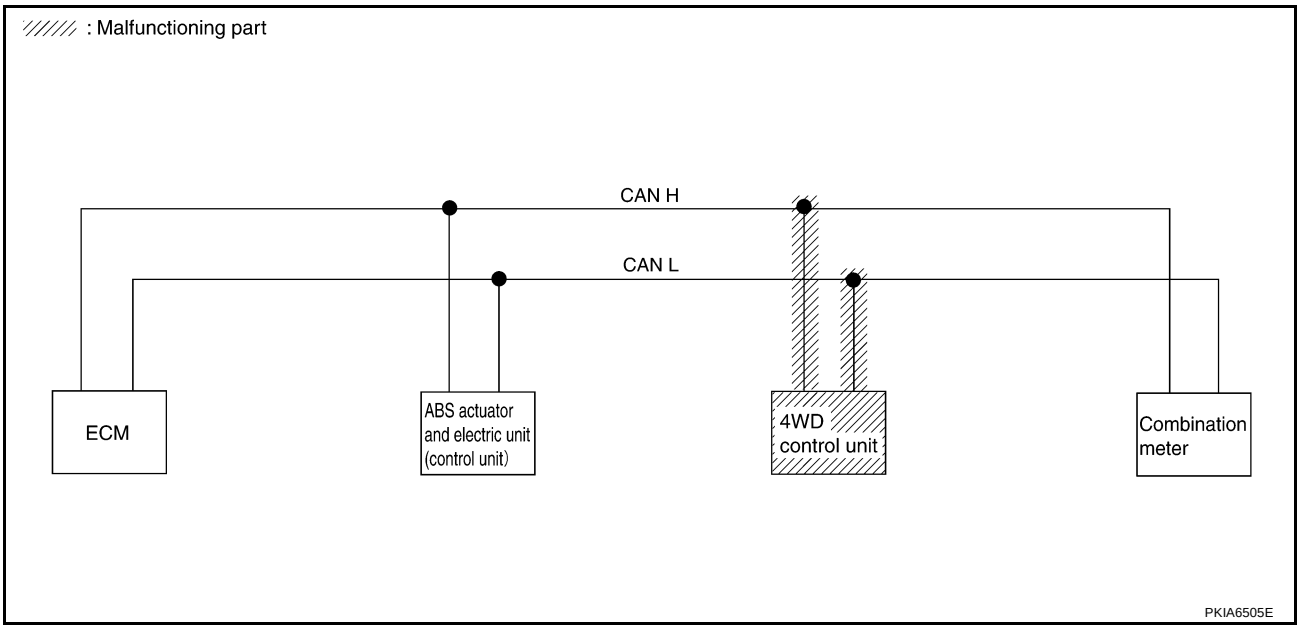


Case 4

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

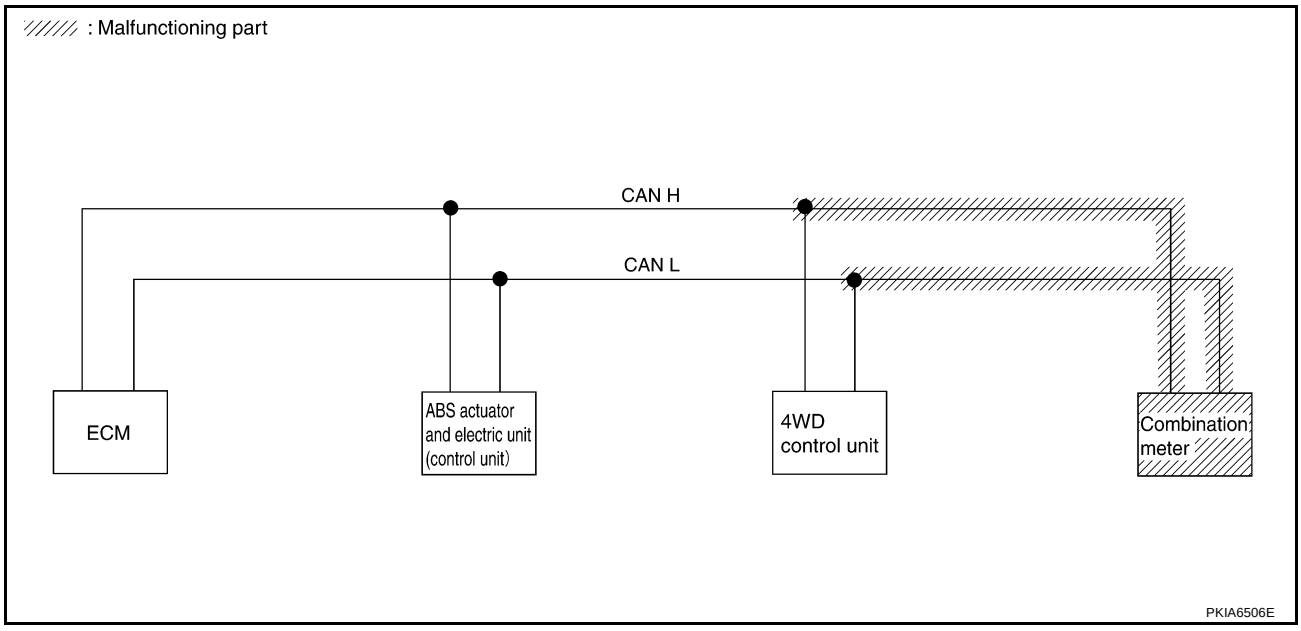


Case 5

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



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	UNKWN	–	–	–	UNKWN
ABS	NG	UNKWN	UNKWN	–	UNKWN	–
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	–	–

PKIA9604E

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

EKS00F0E

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.

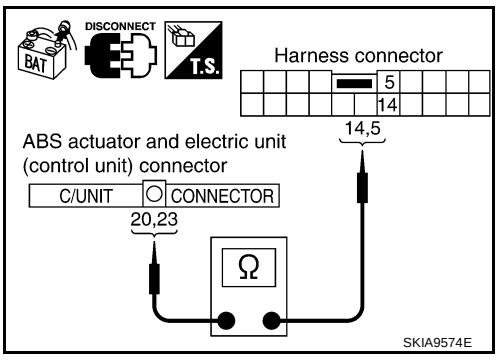
2. CHECK HARNESS FOR OPEN CIRCUIT

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).

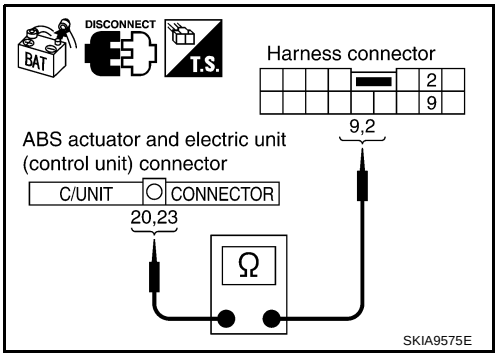
20 (W) – 14 (W) : Continuity should exist.
23 (R) – 5 (R) : Continuity should exist.



– 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.

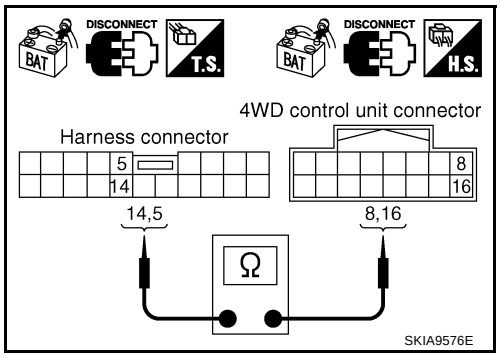
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

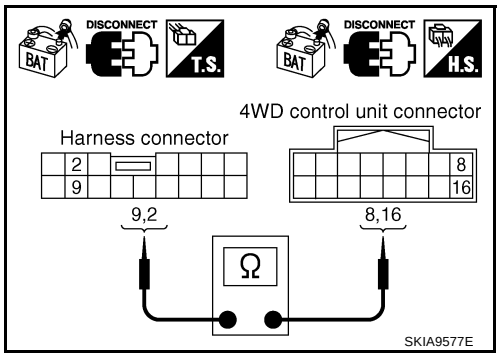
14 (W) – 8 (W) : Continuity should exist.
5 (R) – 16 (R) : Continuity should exist.



– 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-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

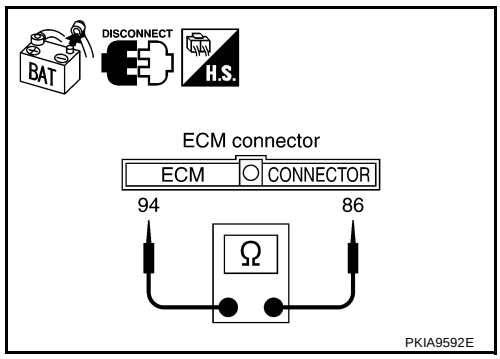
OK or NG

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).

ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

EKS00F8C

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).

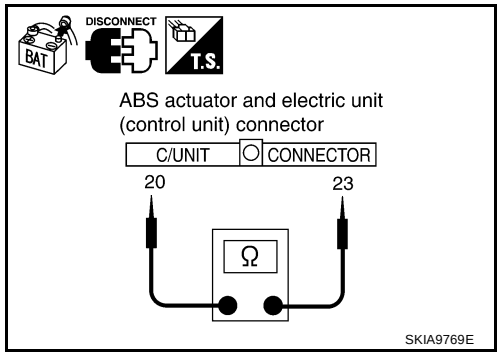
OK or NG

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

EKS00FAZ

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).

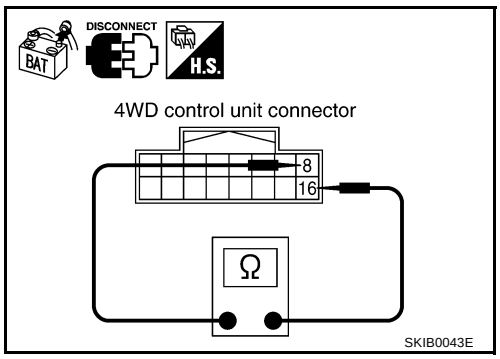
OK or NG

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

EKS00FB0

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).

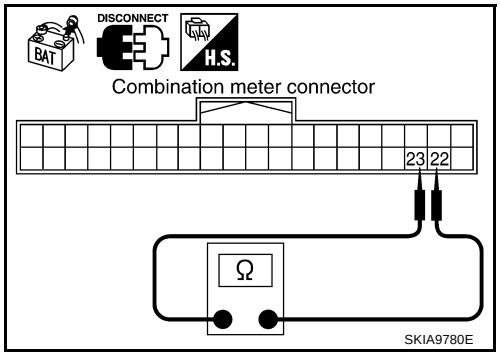
OK or NG

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.

CAN Communication Circuit Inspection

EKS00F0M

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.

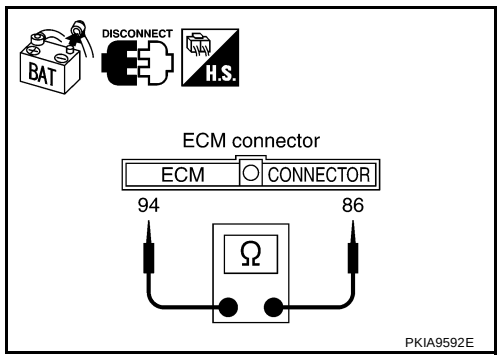
2. CHECK HARNESS FOR SHORT CIRCUIT

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.



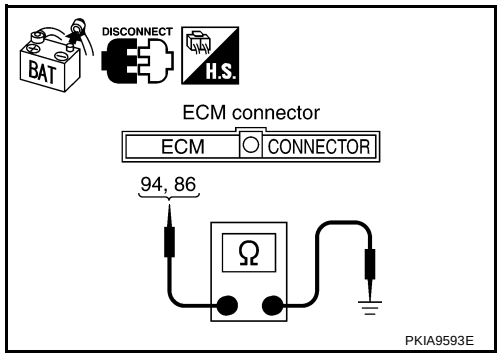
3. CHECK HARNESS FOR SHORT CIRCUIT

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.



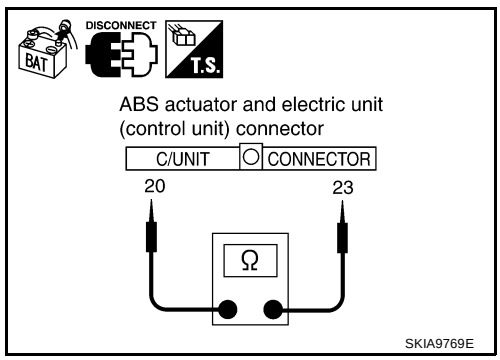
4. CHECK HARNESS FOR SHORT CIRCUIT

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.



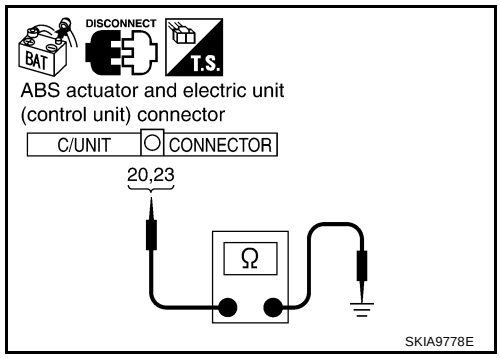
5. CHECK HARNESS FOR SHORT CIRCUIT

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

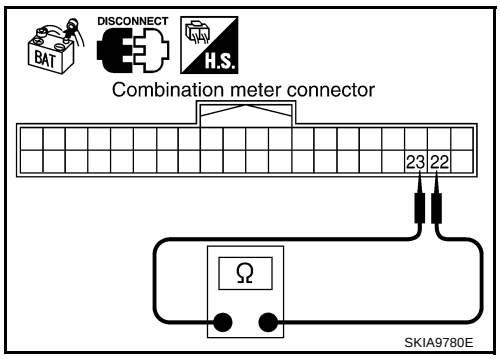
OK >> GO TO 6.
NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.



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.

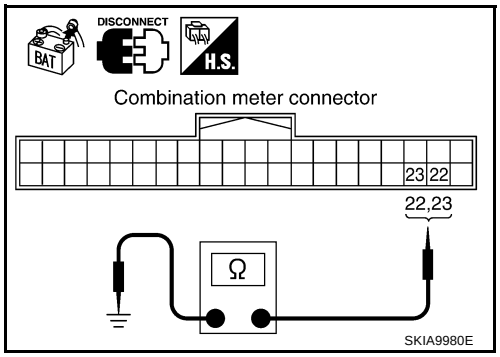
- Harness between combination meter and 4WD control unit
- Harness between combination meter and harness connector M75

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" .

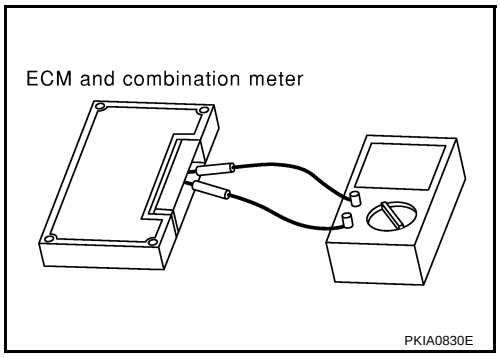
NG >> Replace ECM and/or combination meter.

Component Inspection

EKS00F0O

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

- 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

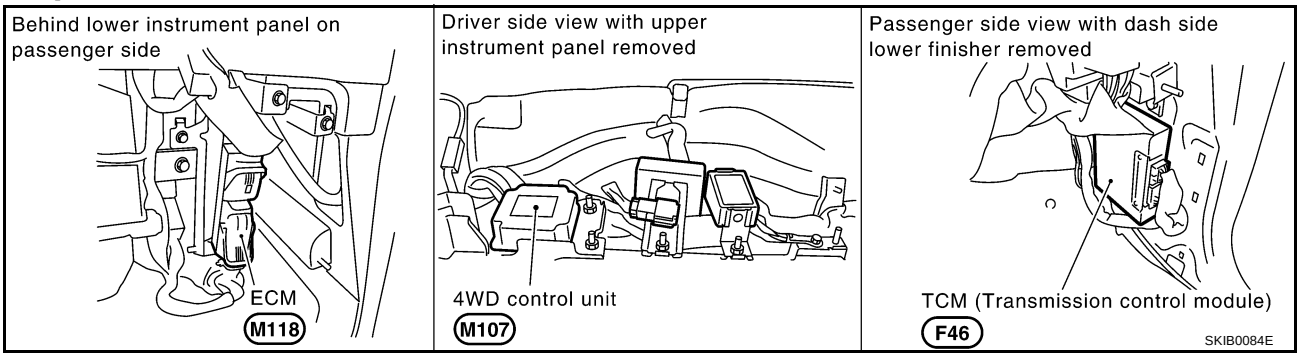
System Description

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

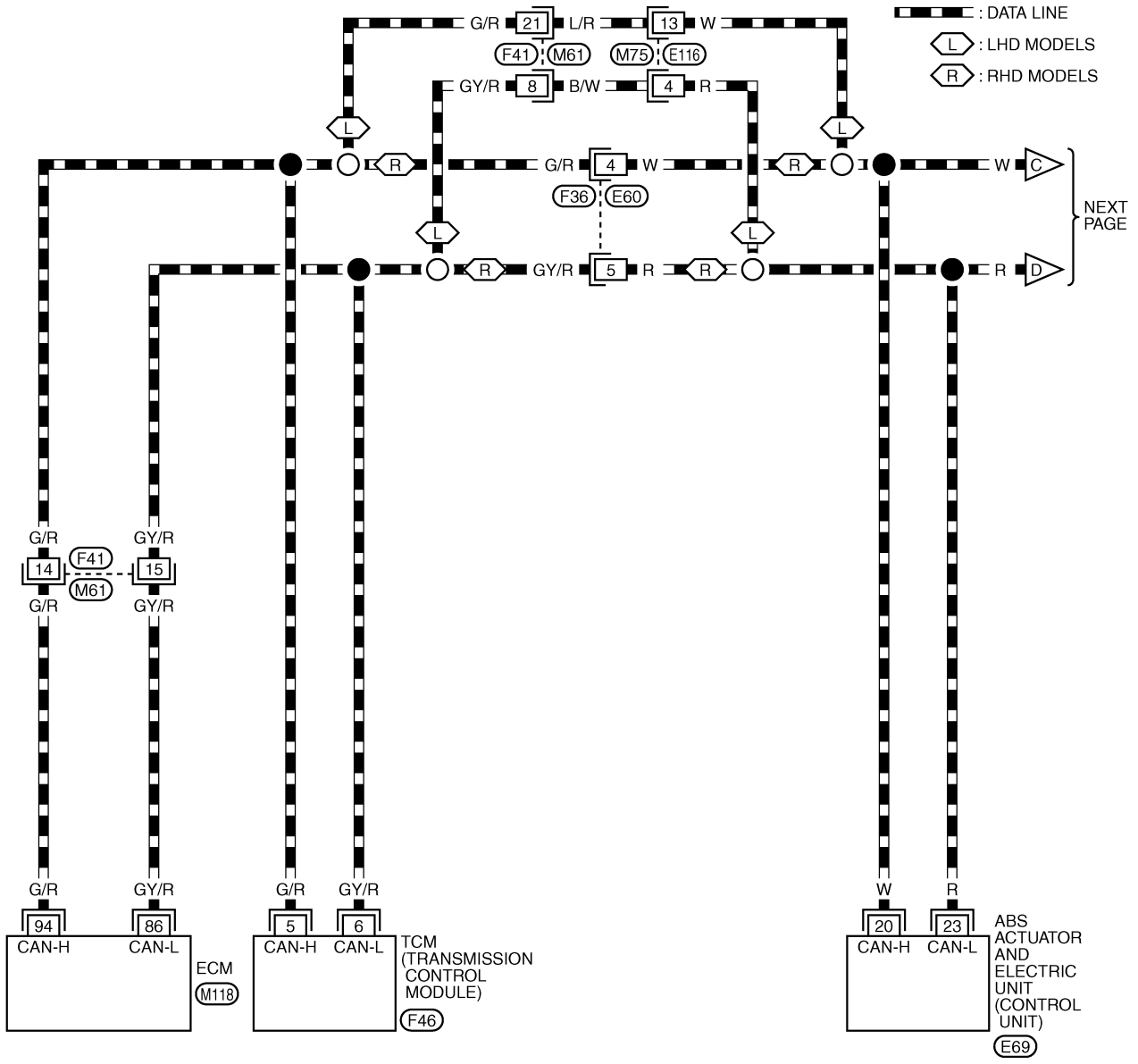
EKS00FI0

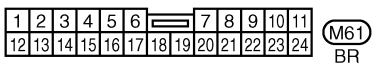


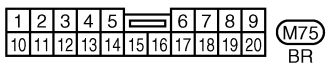
Wiring Diagram — CAN —

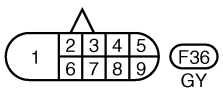
EKS00FI1

LAN-CAN-03



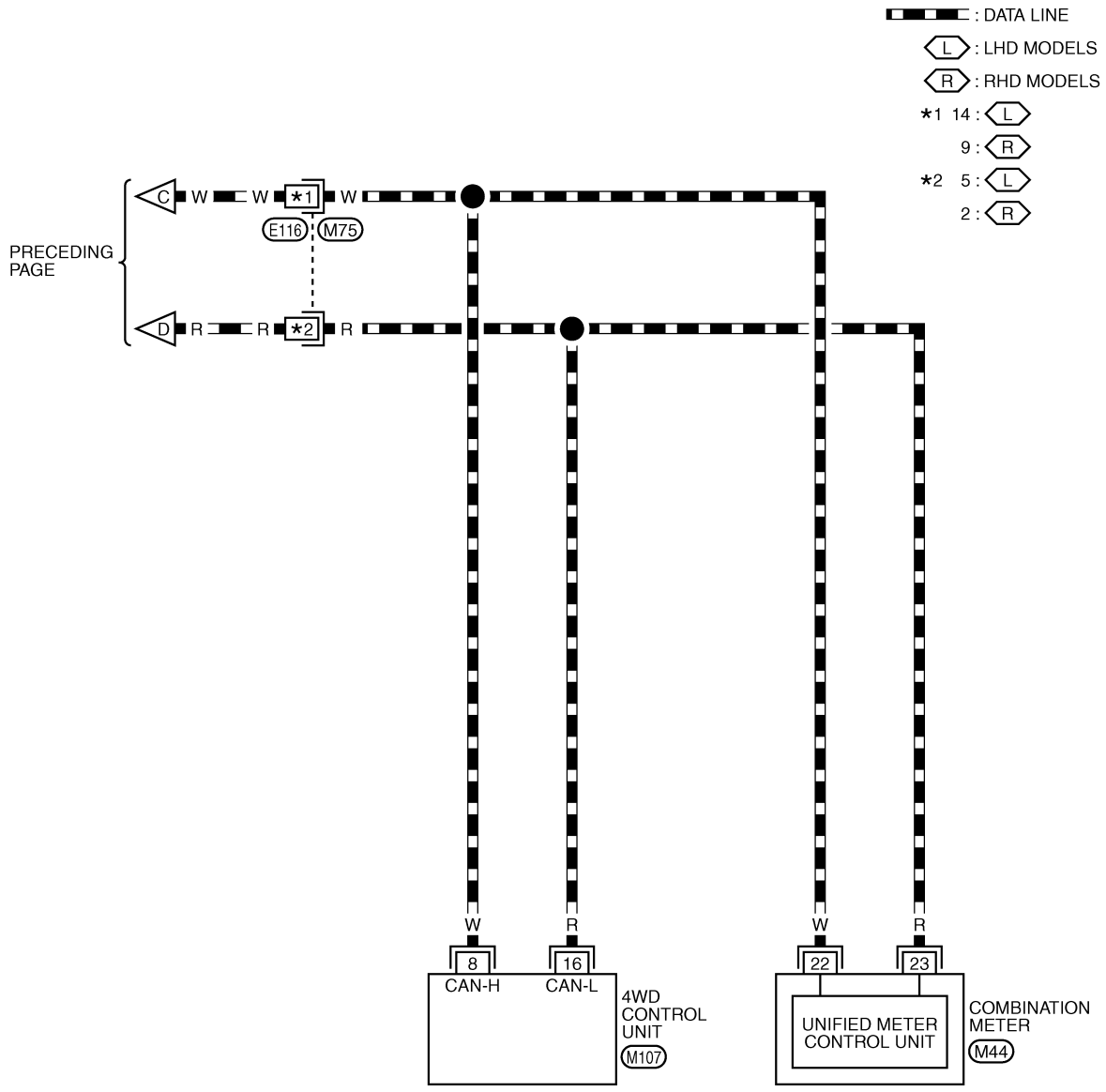


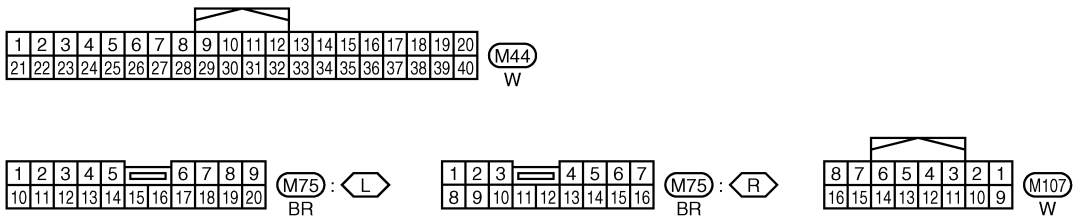




REFER TO THE FOLLOWING.
M118 , E69 , F46
-ELECTRICAL UNITS

TKWB0108E


: DATA LINE
L : LHD MODELS
R : RHD MODELS
*1 14 : L
9 : R
*2 5 : L
2 : R
PRECEDING PAGE
C
W
W
*1
W
E116
M75
D
R
R
*2
R
W
R
8
16
CAN-H
CAN-L
4WD CONTROL UNIT
M107
W
R
22
23
UNIFIED METER CONTROL UNIT
COMBINATION METER
M44

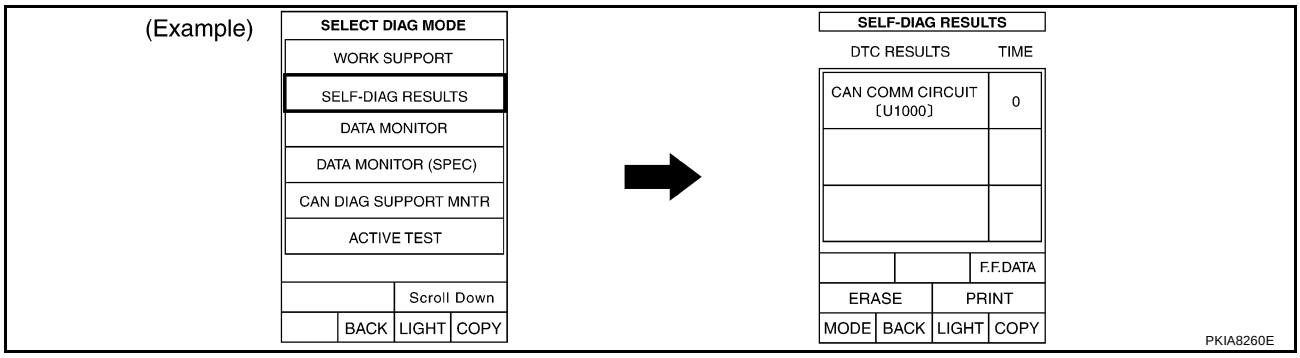

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
M44
W
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20
M75 : L
BR
1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16
M75 : R
BR
8 7 6 5 4 3 2 1
16 15 14 13 12 11 10 9
M107
W

TKWB0109E

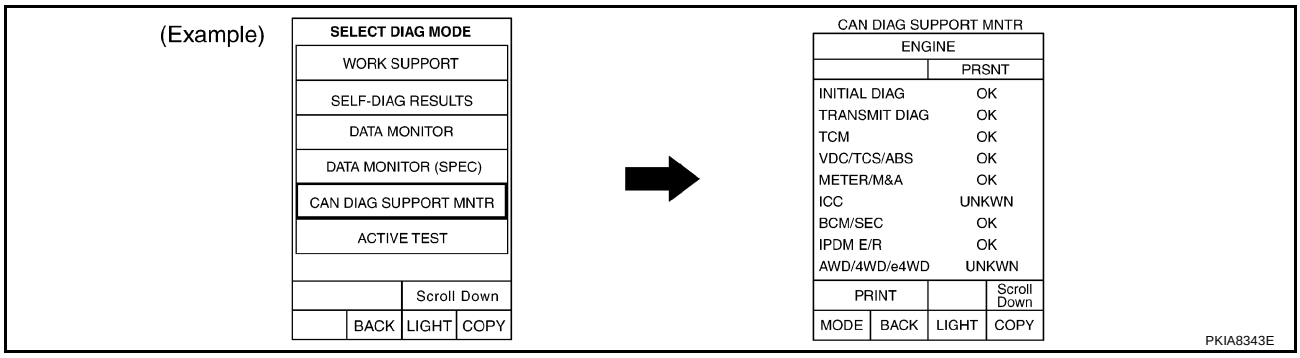
Work Flow

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)" .

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

PKIA9605E

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

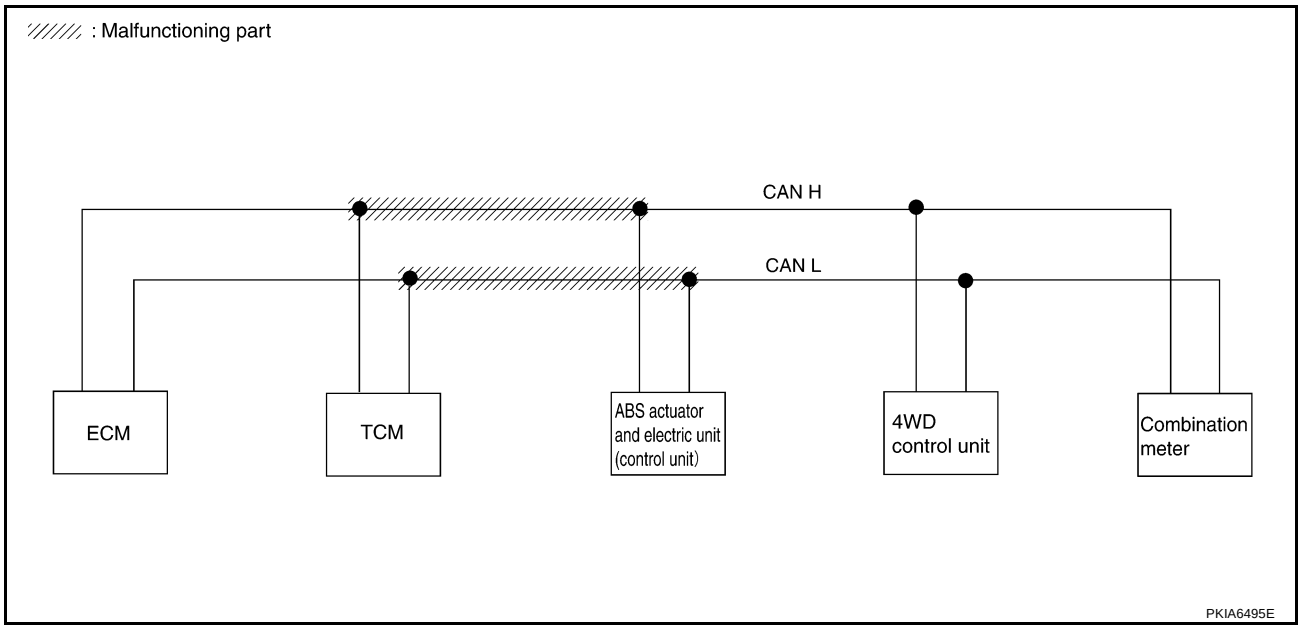
If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, replace the control unit.

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	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	–	–

PKIA9606E



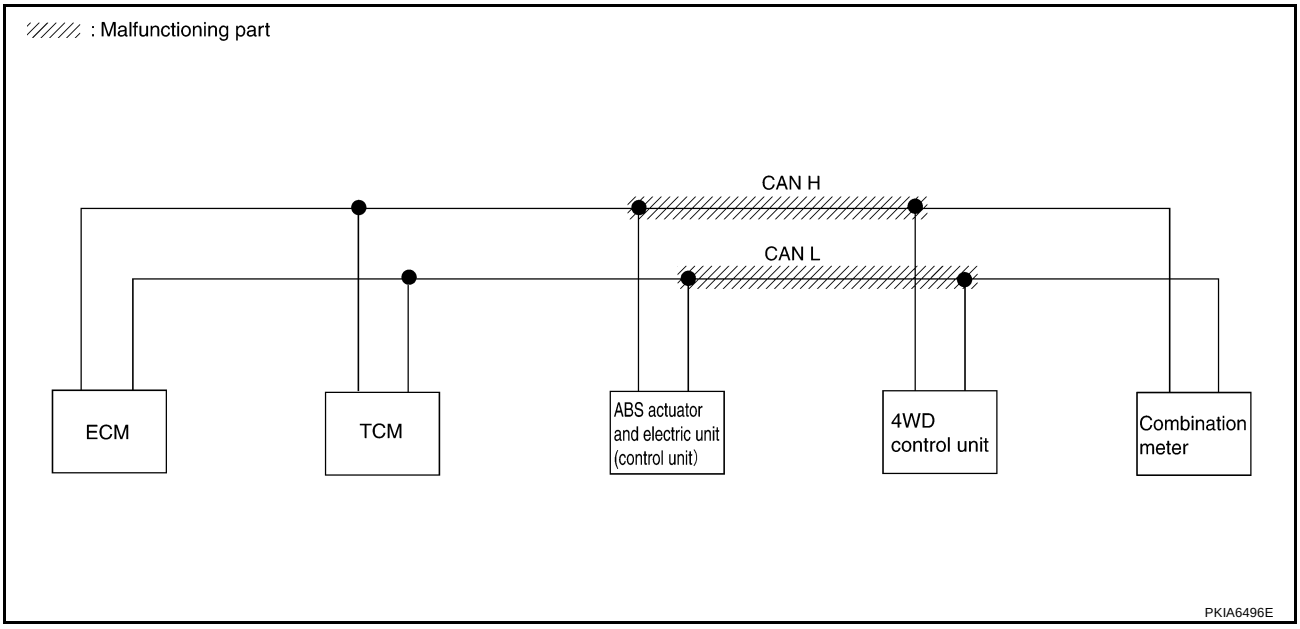
PKIA6495E

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	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 ✓	–	–

PKIA9607E

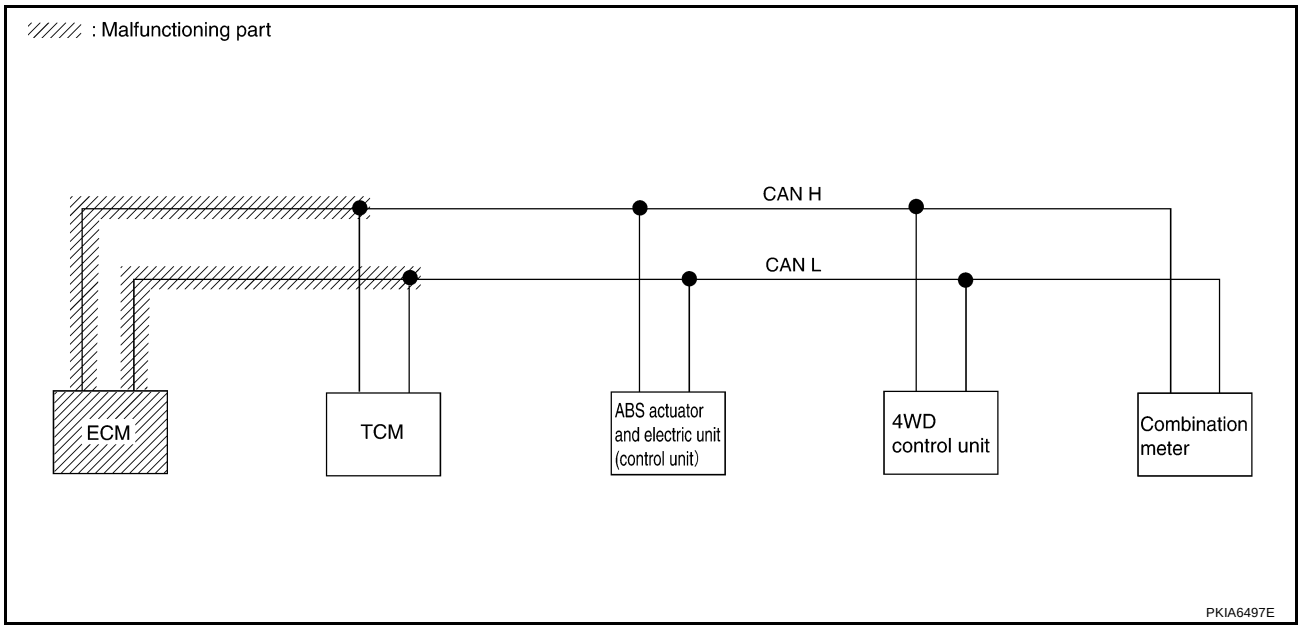


Case 3

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

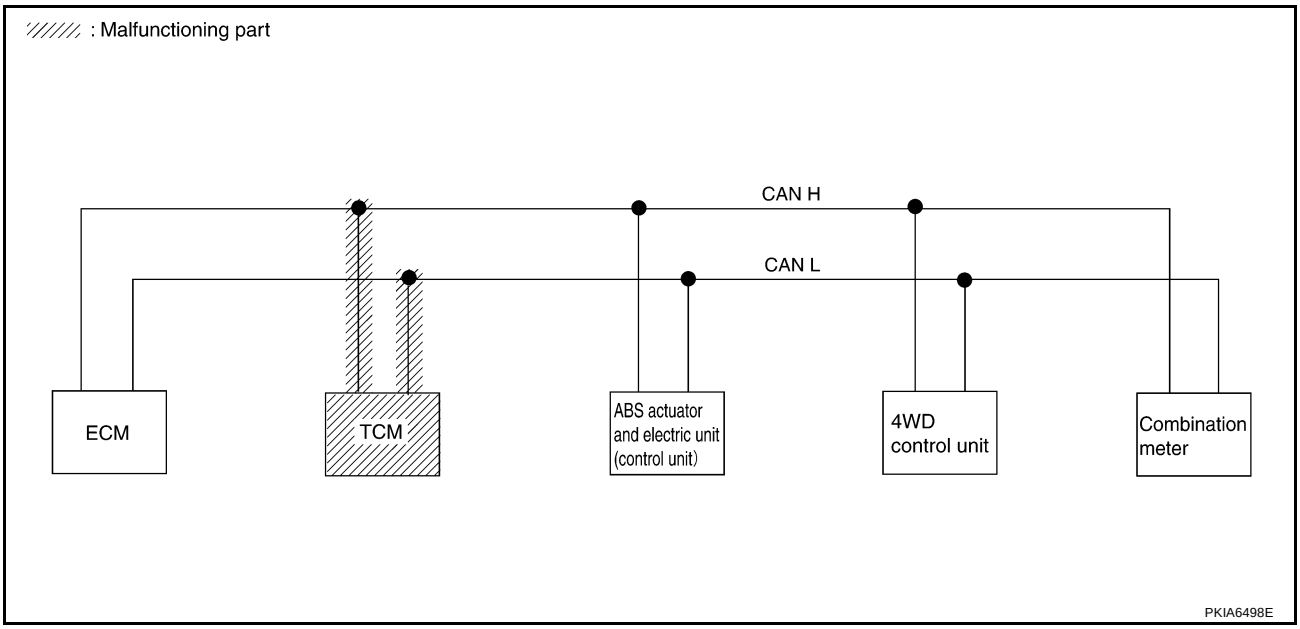


Case 4

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



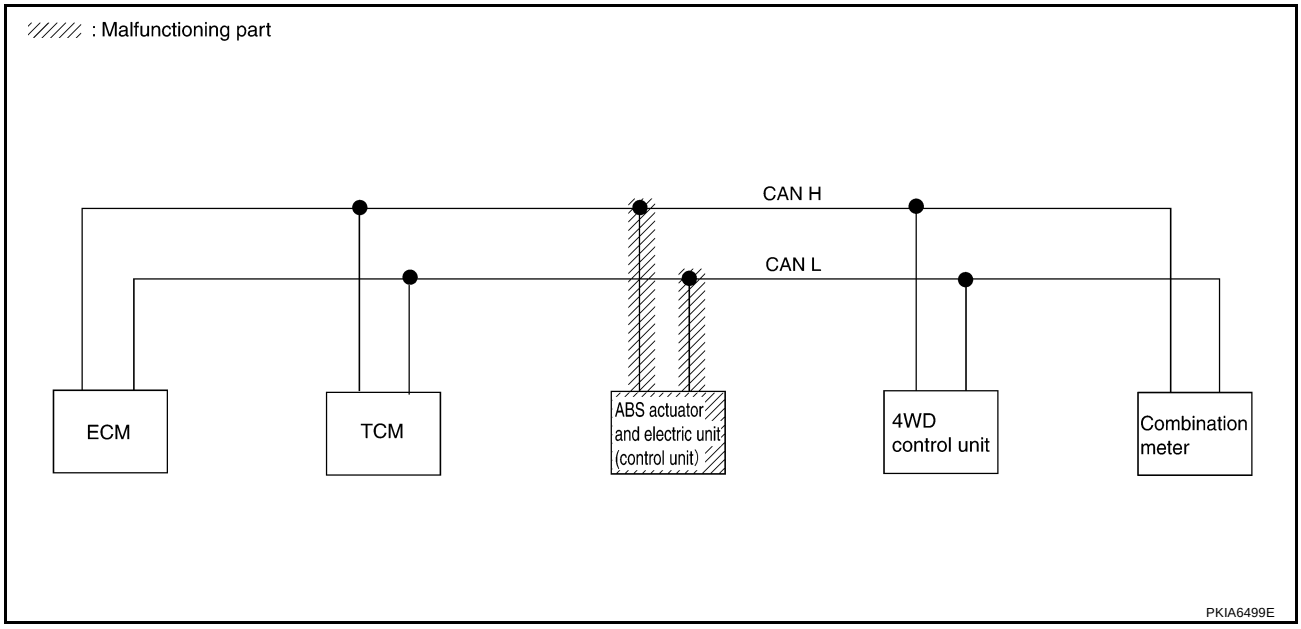
PKIA6498E

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

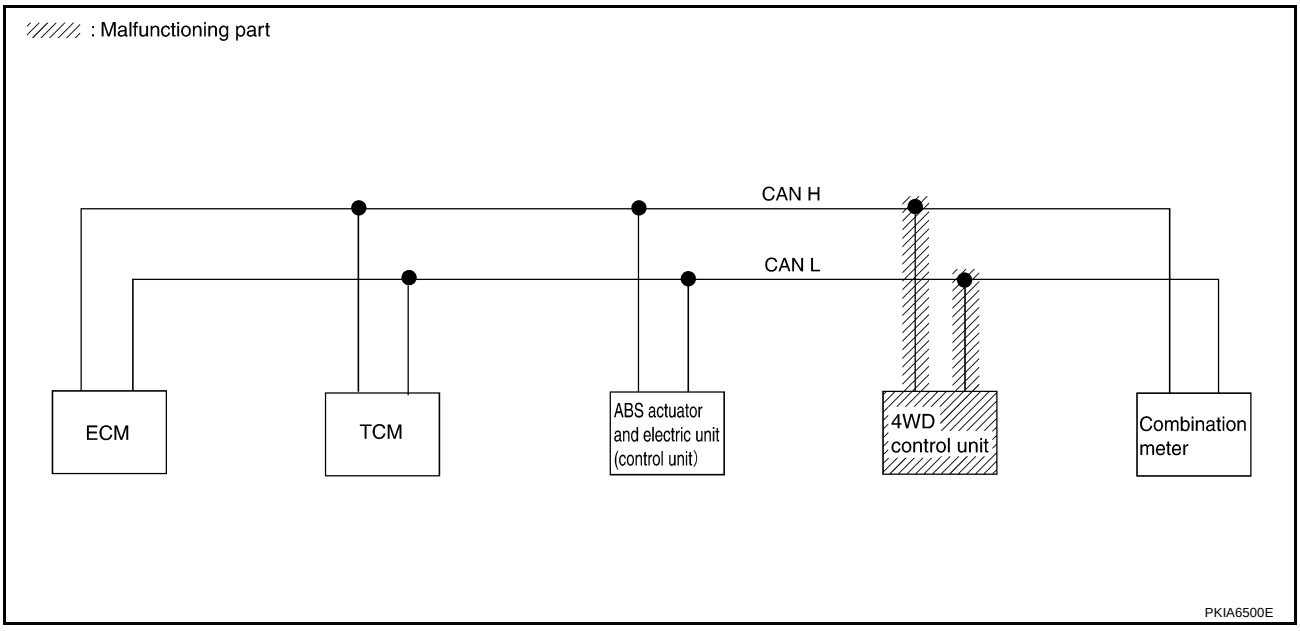


Case 6

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



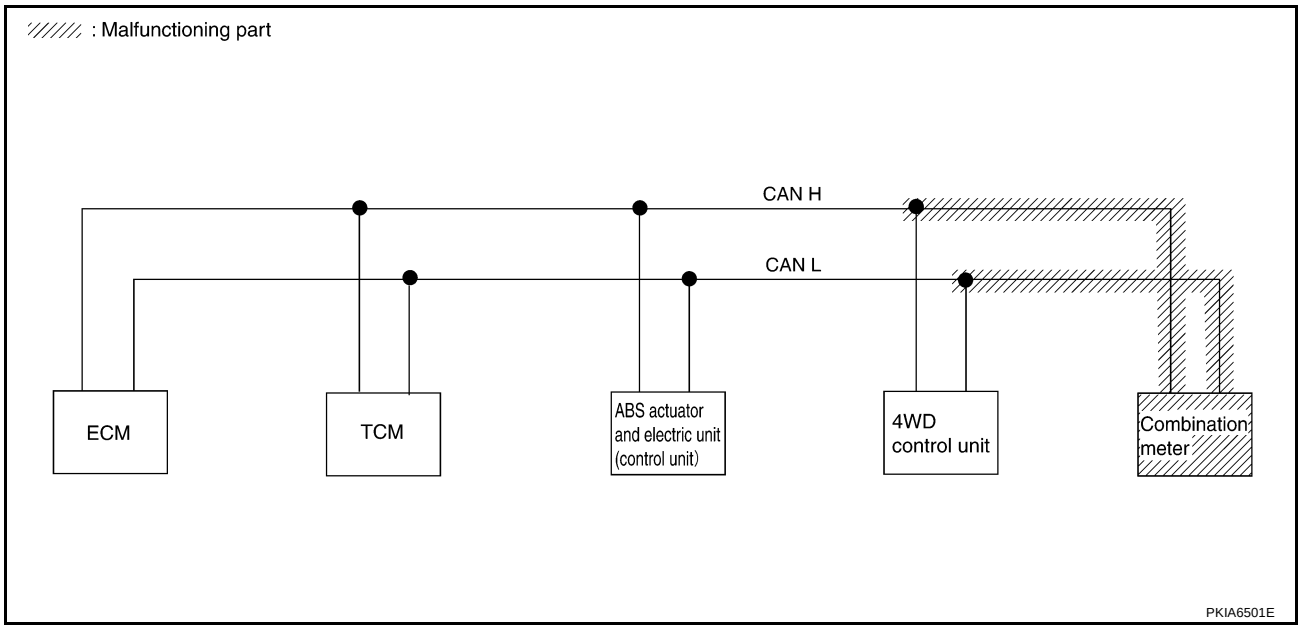
PKIA6500E

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



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	UNKWN	–	UNKWN	–	–	UNKWN
A/T	NG	UNKWN	UNKWN	–	–	–	UNKWN
ABS	NG	UNKWN	UNKWN	–	–	UNKWN	–
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	–	UNKWN	–	–

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.

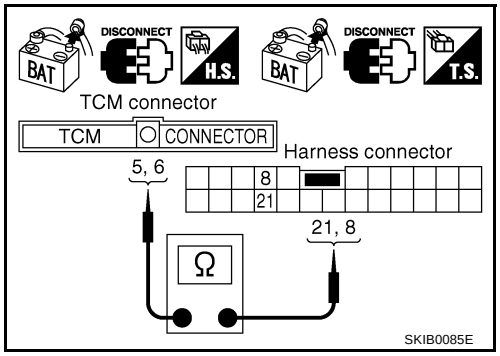
2. CHECK HARNESS FOR OPEN CIRCUIT

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.

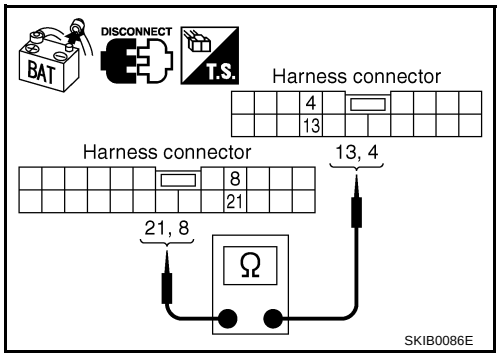
6 (GY/R) – 8 (GY/R) : Continuity should exist.



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

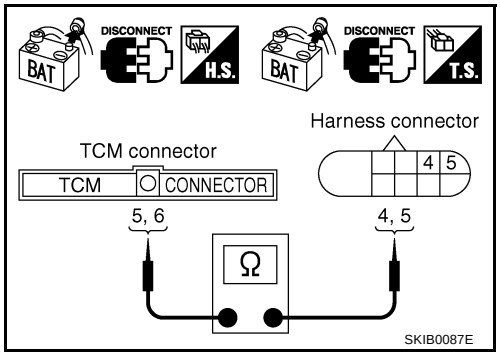
1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F36 terminals 4 (G/R), 5 (GY/R).

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.



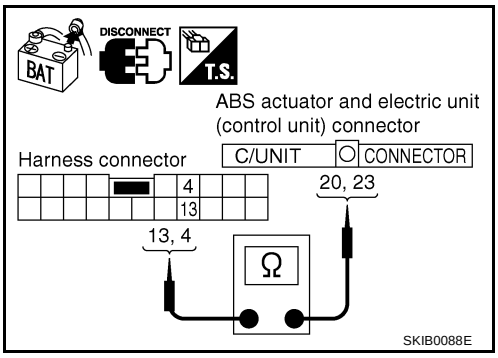
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

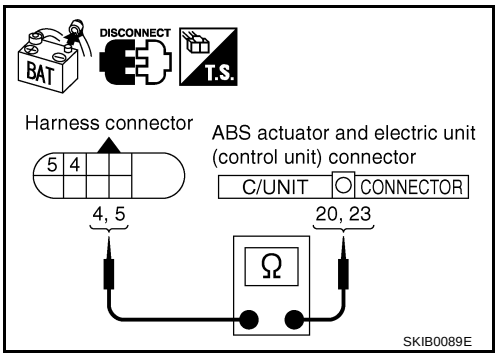
13 (W) – 20 (W) : Continuity should exist.
4 (R) – 23 (R) : Continuity should exist.



– 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

EKS00FI4

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.

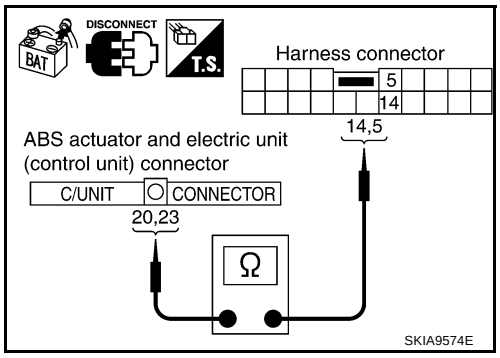
2. CHECK HARNESS FOR OPEN CIRCUIT

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).

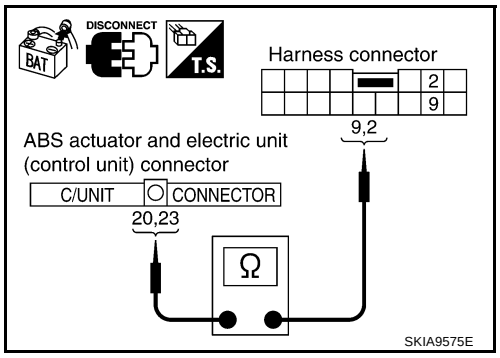
20 (W) – 14 (W) : Continuity should exist.
23 (R) – 5 (R) : Continuity should exist.



– 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.

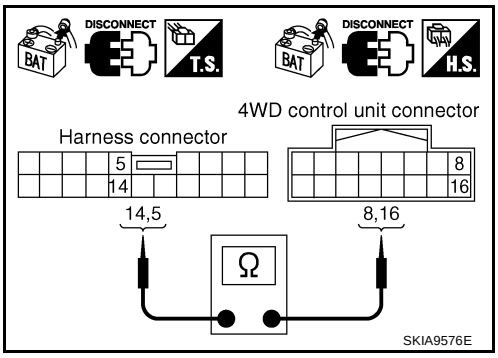
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

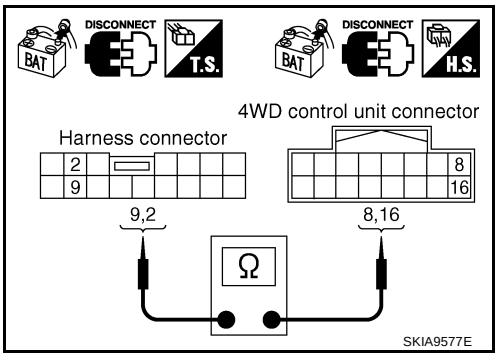
14 (W) – 8 (W) : Continuity should exist.
5 (R) – 16 (R) : Continuity should exist.



– 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

EKS00FI5

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

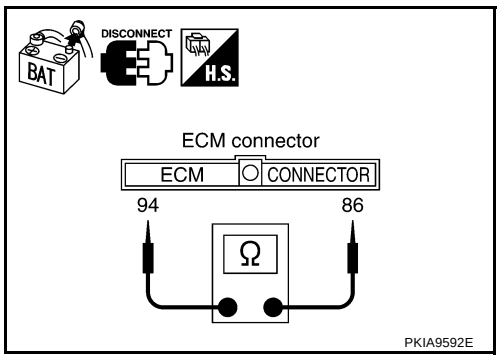
OK or NG

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

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

EKS00FI6

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).

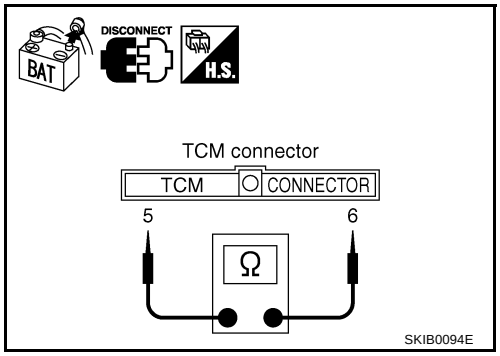
OK or NG

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.

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).

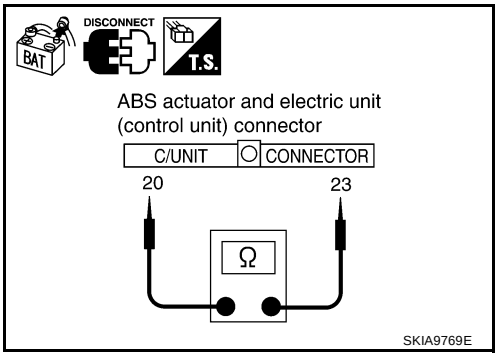
OK or NG

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

EKS00FI8

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).

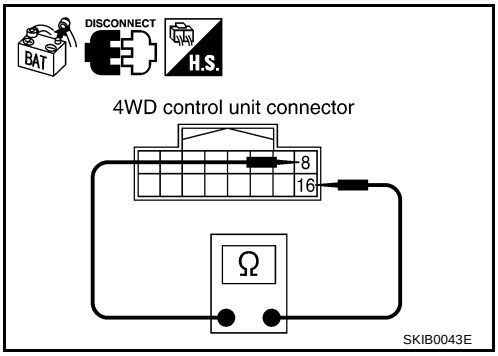
OK or NG

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

EKS00FI9

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).

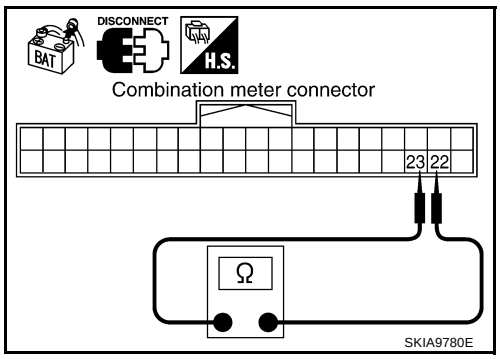
OK or NG

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.

CAN Communication Circuit Inspection

EKS00FIA

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

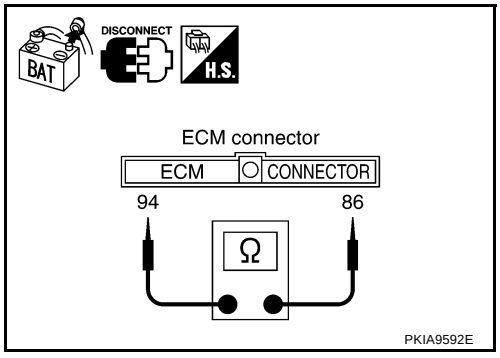
OK or NG

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

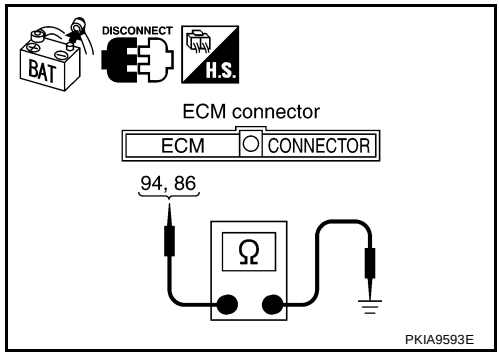
OK >> GO TO 3.
NG >> Repair harness between ECM and harness connector M61.

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.

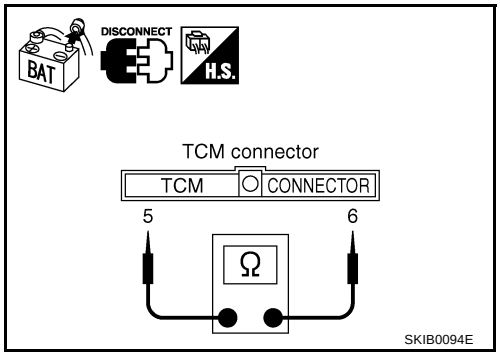
NG >> Repair harness between ECM and harness connector M61.

4. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

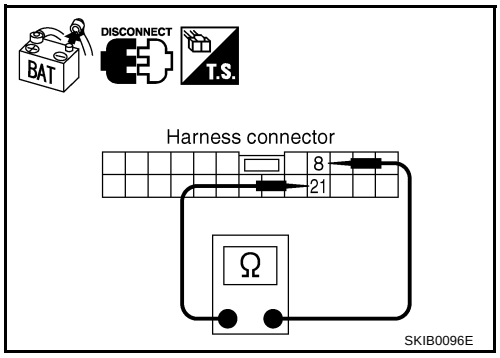
1. Disconnect TCM connector.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

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).

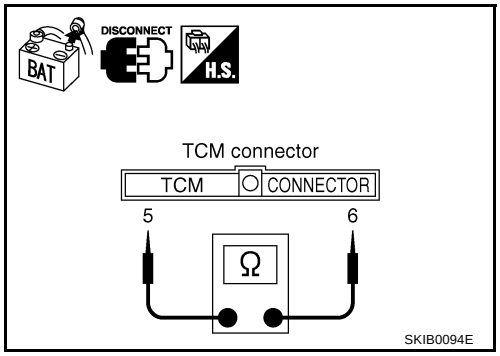
21 (L/R) – 8 (B/W) : Continuity should not exist.



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.

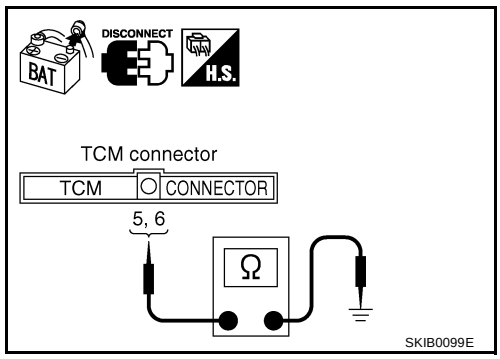
5. CHECK HARNESS FOR OPEN CIRCUIT

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.

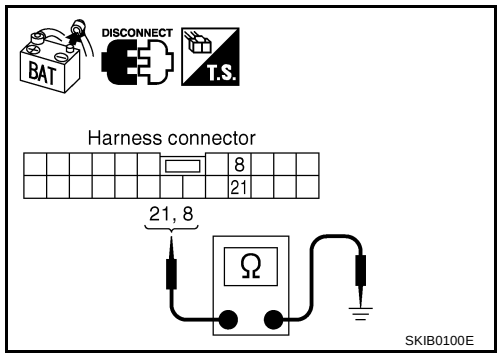
6 (GY/R) – Ground : Continuity should not exist.



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.

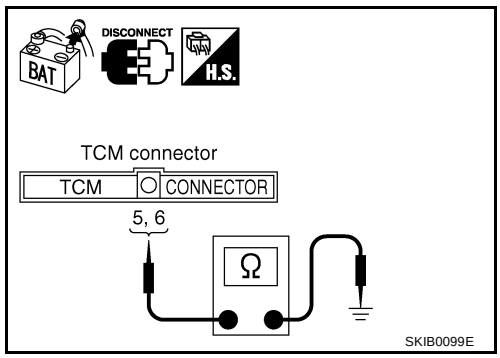


RHD models

- 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

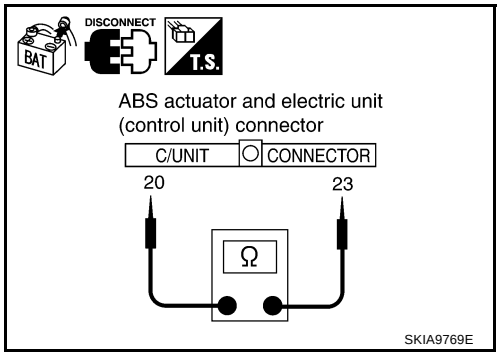
– Repair harness between TCM and harness connector F36.

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).

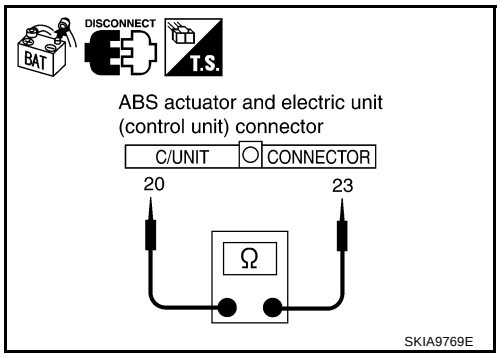
20 (W) – 23 (R) : Continuity should not exist.



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

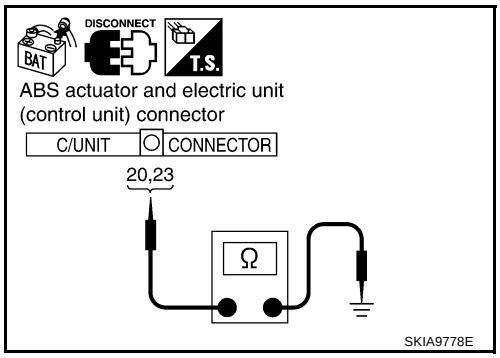
OK >> GO TO 7.
NG >> Repair harness between ABS actuator and electric unit (control unit) and harness connector E116.

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.



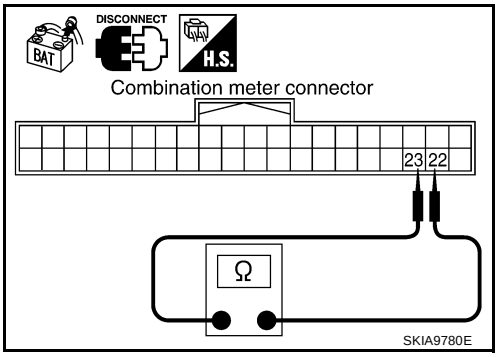
OK or NG

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.



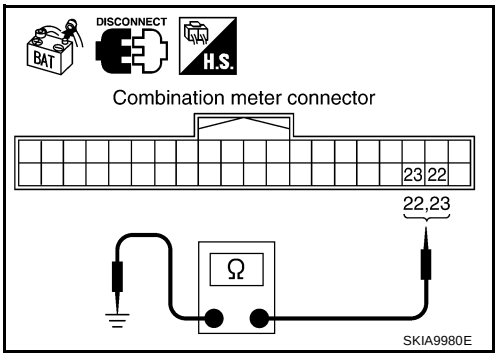
OK or NG

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" .

OK or NG

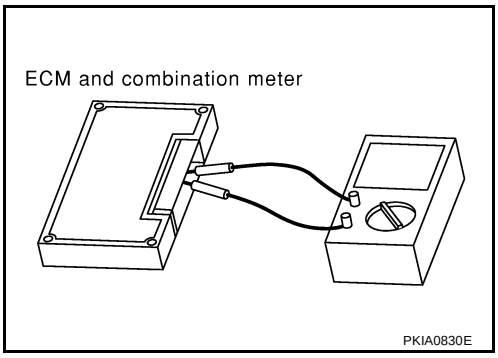
OK >> Connect all the connectors and diagnose again. Refer to LAN-28, "Work Flow" .
NG >> Replace ECM and/or combination meter.

Component Inspection

EKS00FIB

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

- 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

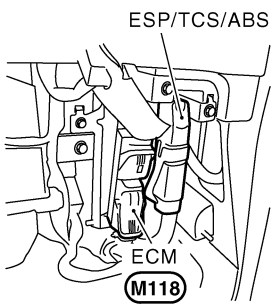
EKS00FV3

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.

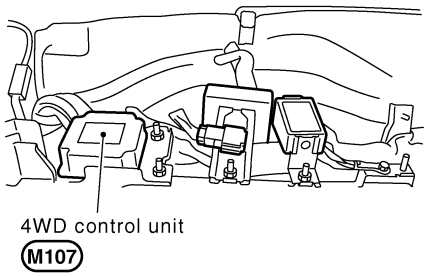
Component Parts and Harness Connector Location

EKS00FV4

Behind lower instrument panel on passenger side



Driver side view with upper instrument panel removed



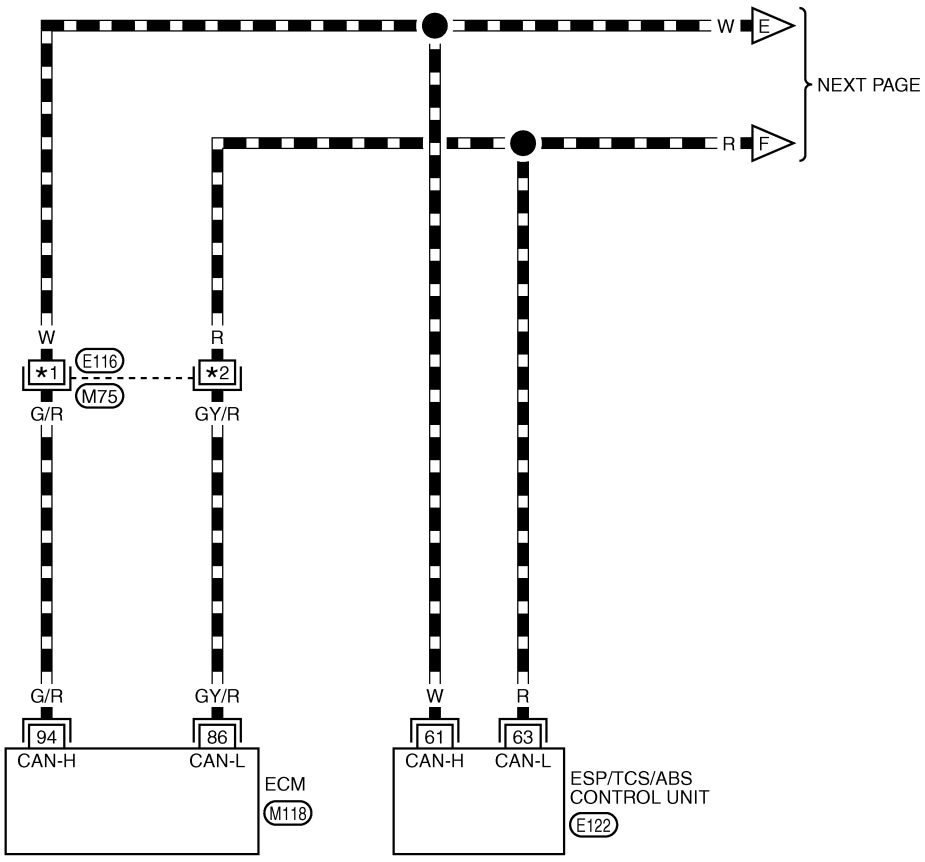
SKIB0125E

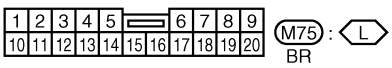
Wiring Diagram — CAN —

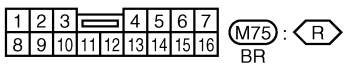
EKS00FV5

LAN-CAN-05

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



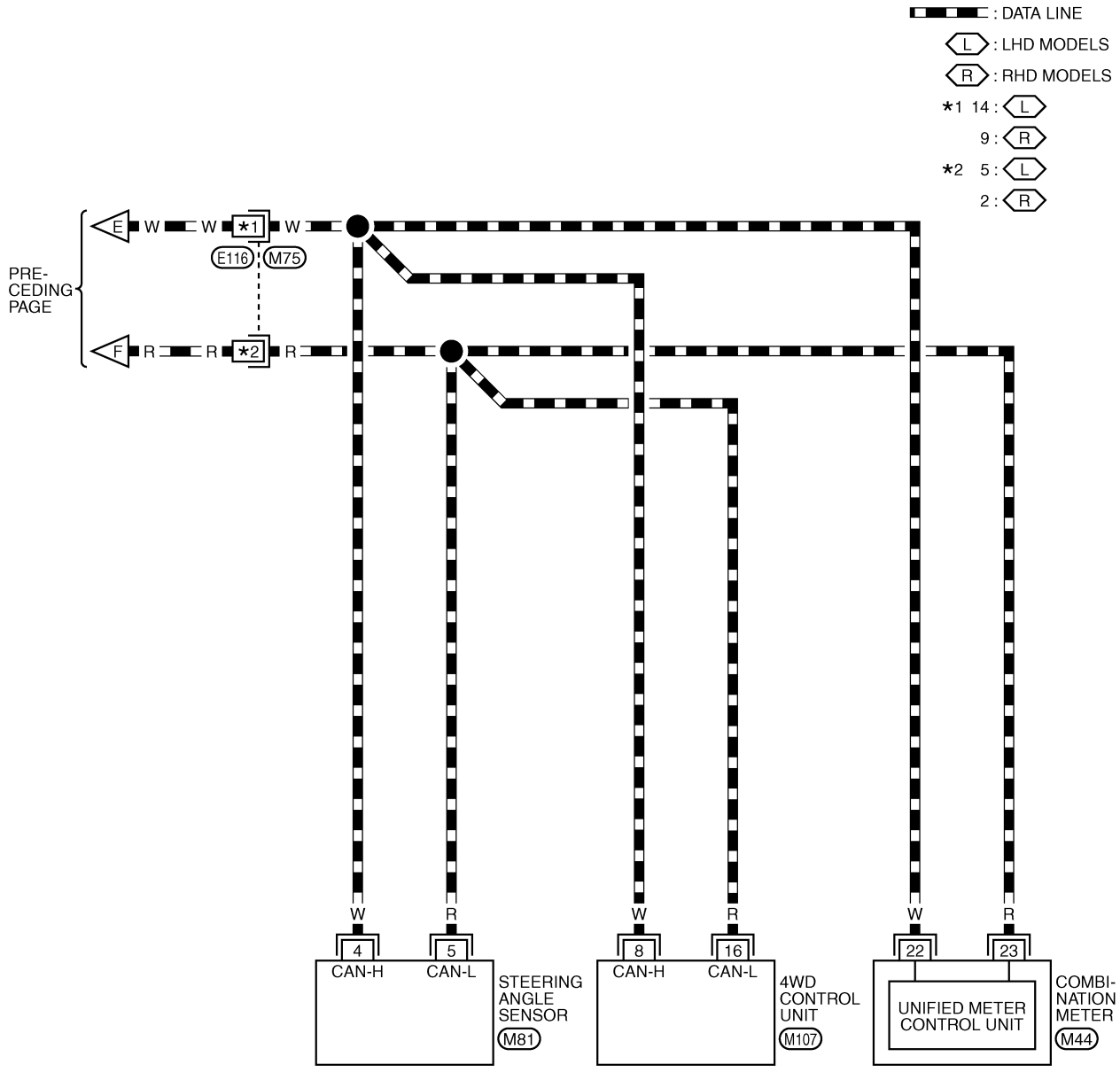


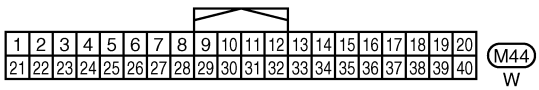


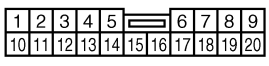
REFER TO THE FOLLOWING.
(M118), (E122) -ELECTRICAL UNITS

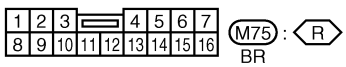
TKWB0110E

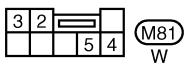
LAN-CAN-06

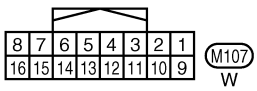










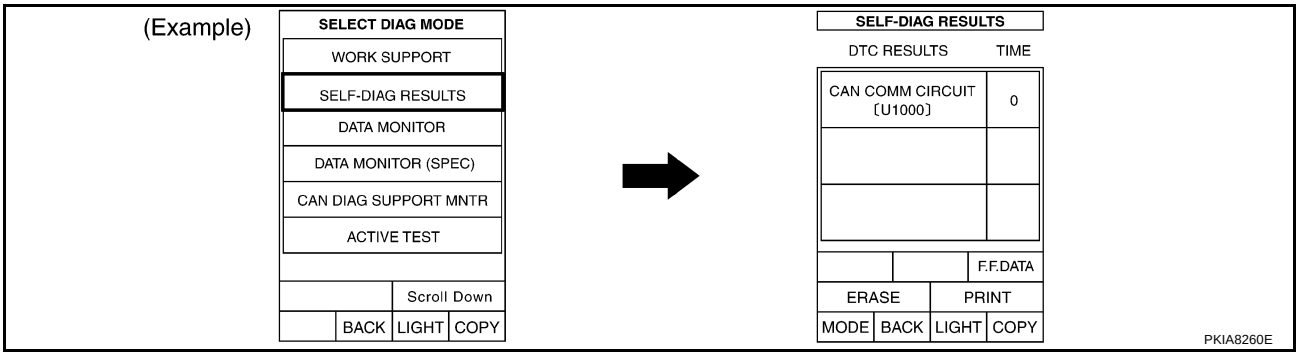


TKWB0111E

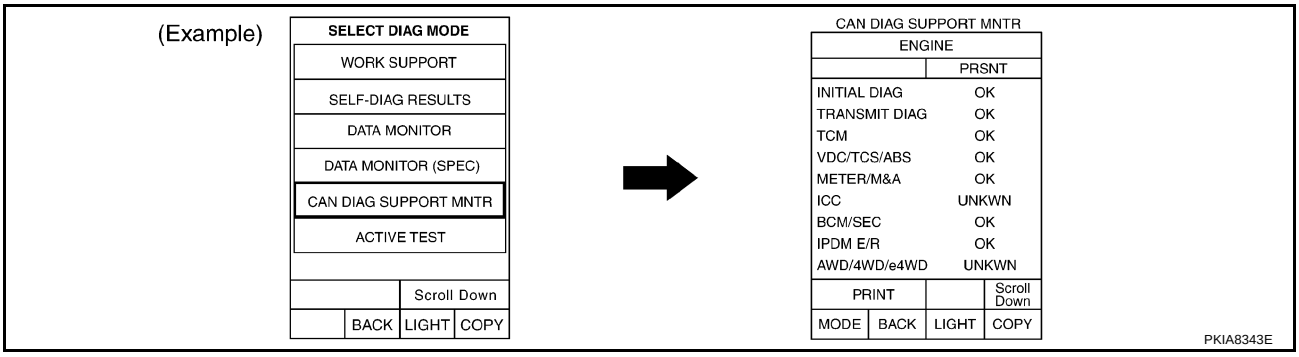
Work Flow

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)" .

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

PKIA9614E

CHECK SHEET RESULTS (EXAMPLE)

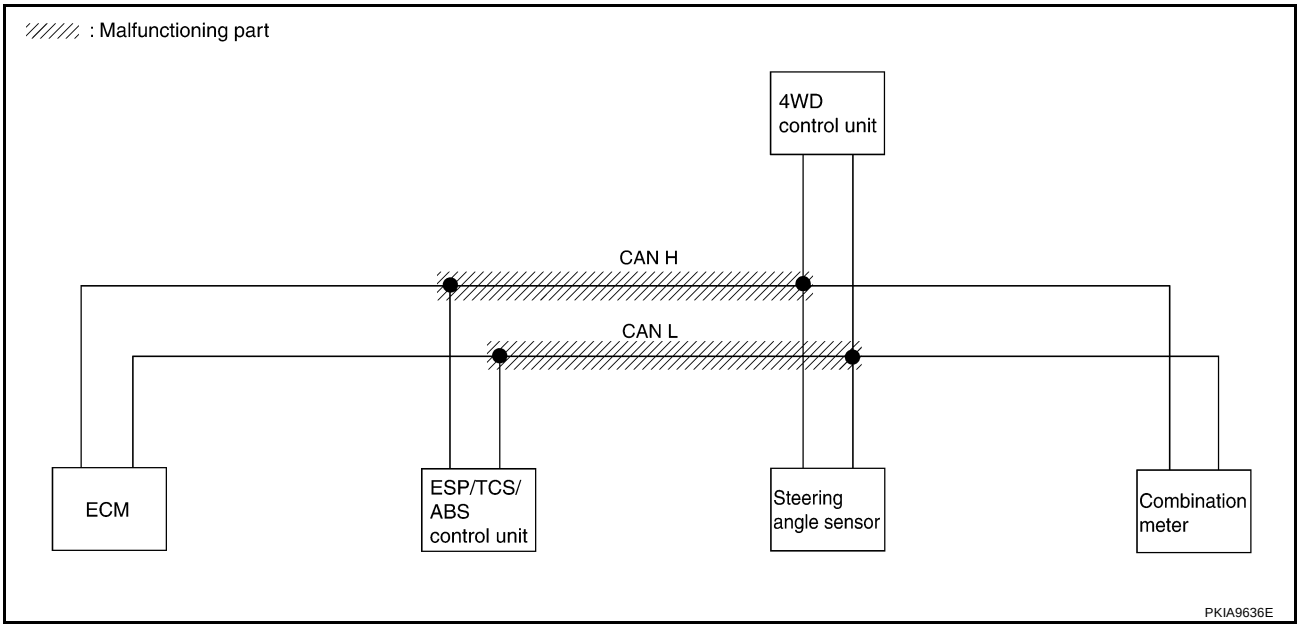
NOTE:
If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, replace the control unit.

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



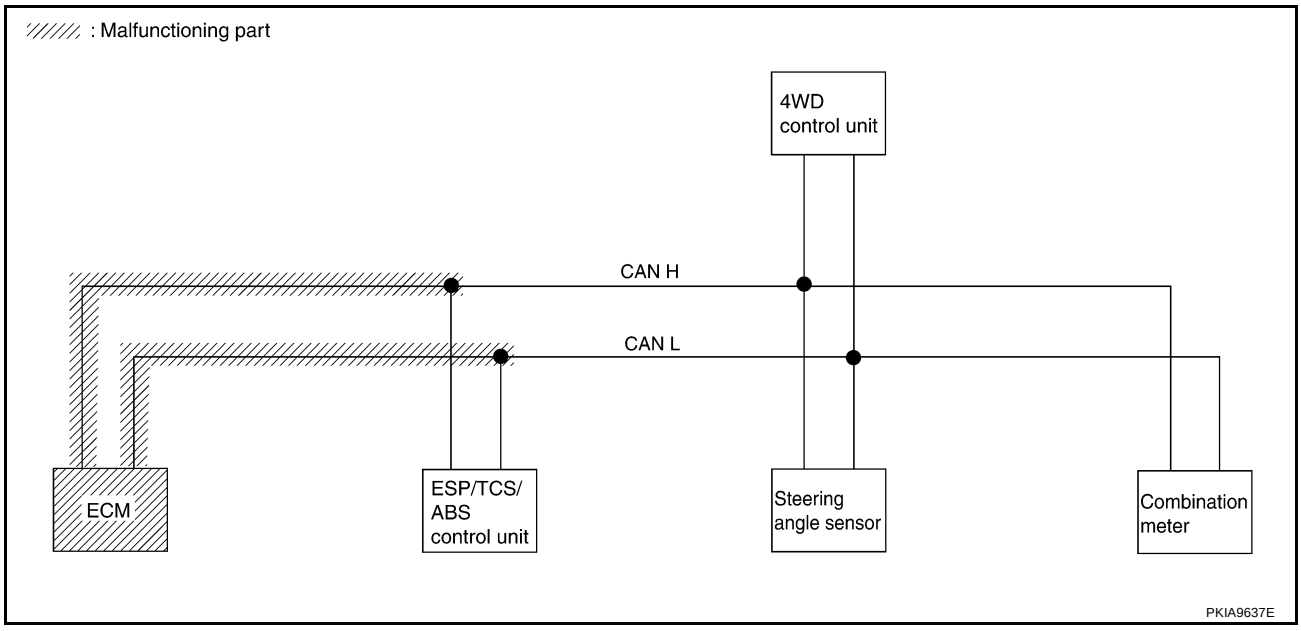
PKIA9636E

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	–	–	–

PKIA9616E

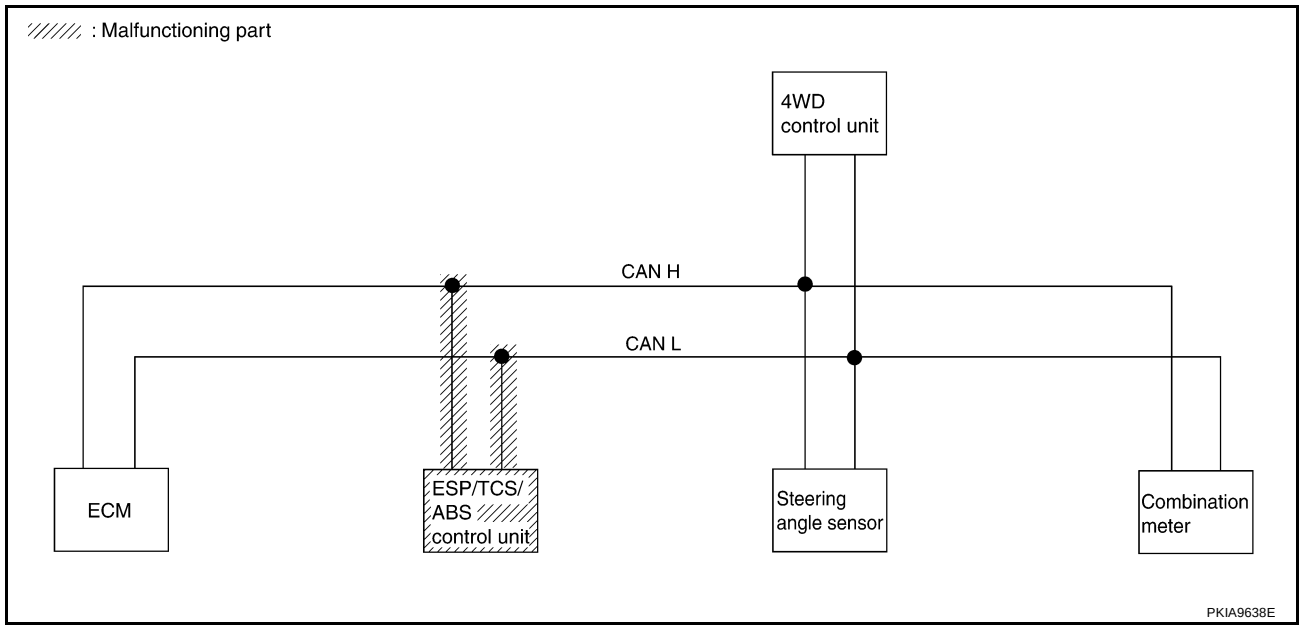


Case 3

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

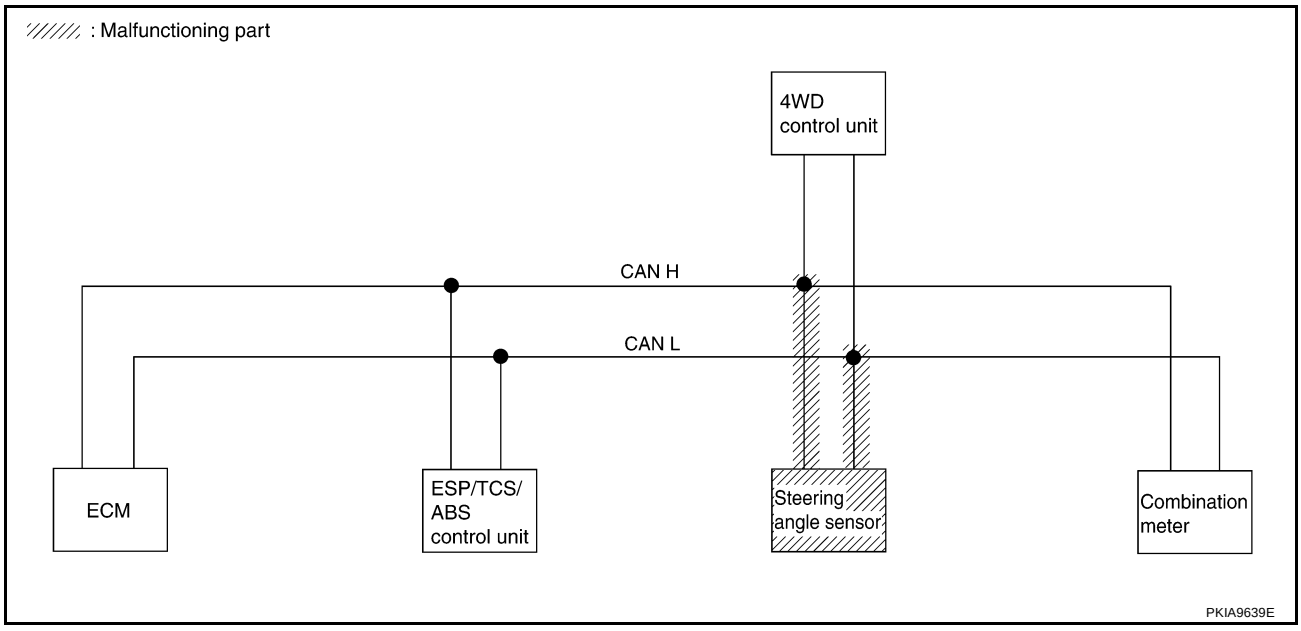


Case 4

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

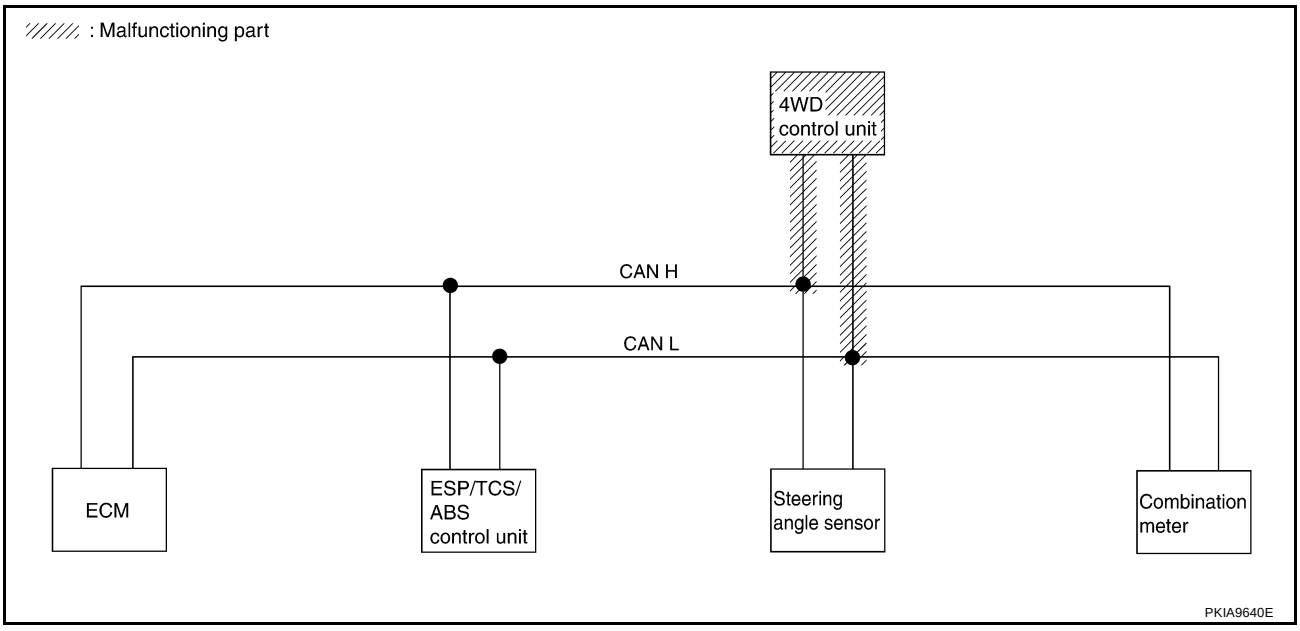


Case 5

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

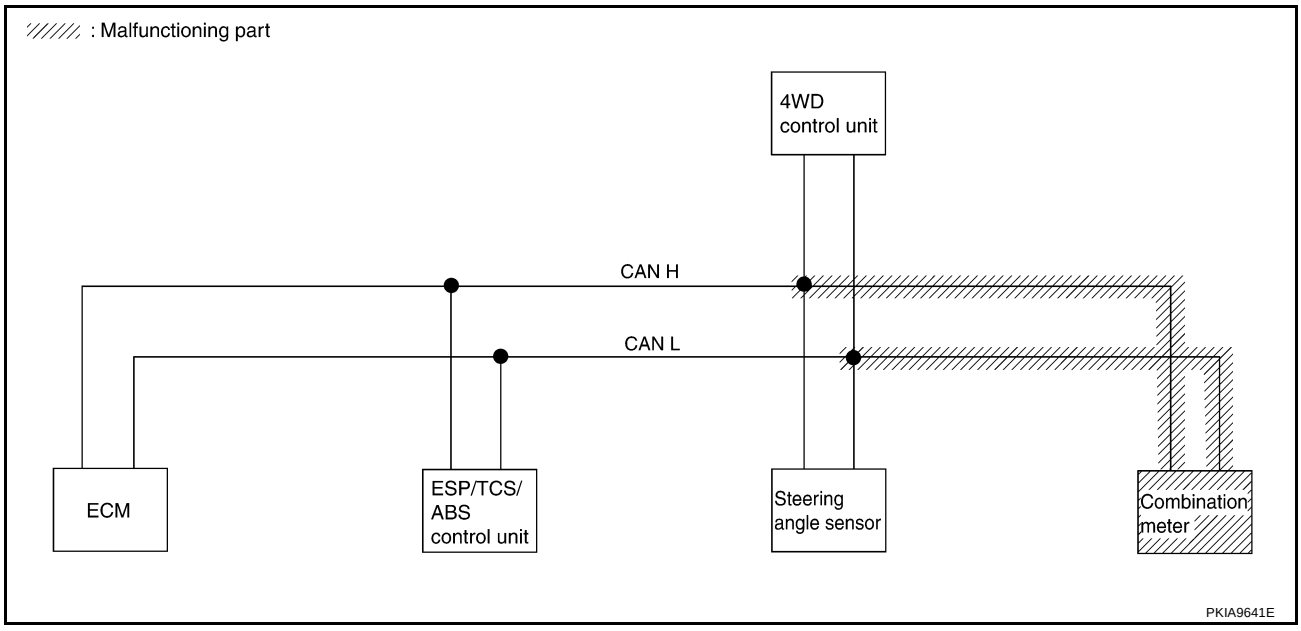


Case 6

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



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	UNKWN	–	UNKWN	–	–	UNKWN
ABS	NG	UNKWN	UNKWN	–	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	–	–	–

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.

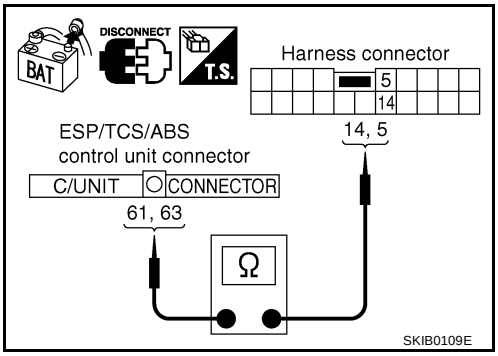
2. CHECK HARNESS FOR OPEN CIRCUIT

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).

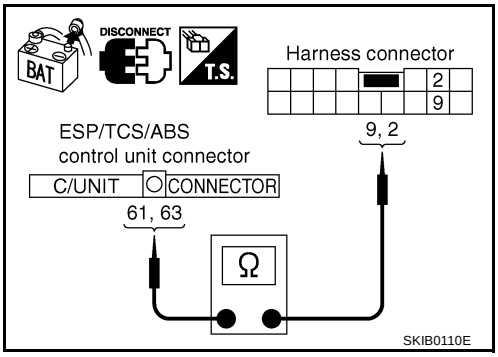
61 (W) – 14 (W) : Continuity should exist.
63 (R) – 5 (R) : Continuity should exist.



– 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.

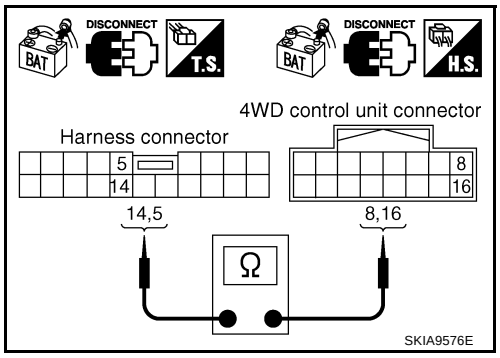
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

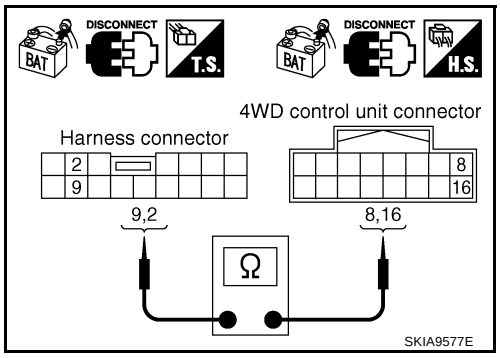
14 (W) – 8 (W) : Continuity should exist.
5 (R) – 16 (R) : Continuity should exist.



– 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-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.

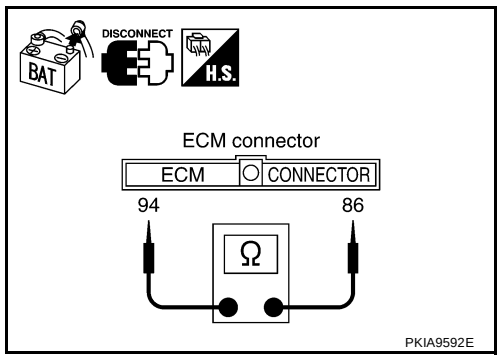
2. CHECK HARNESS FOR OPEN CIRCUIT

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.



ESP/TCS/ABS Control Unit Circuit Inspection

EKS00FV9

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.

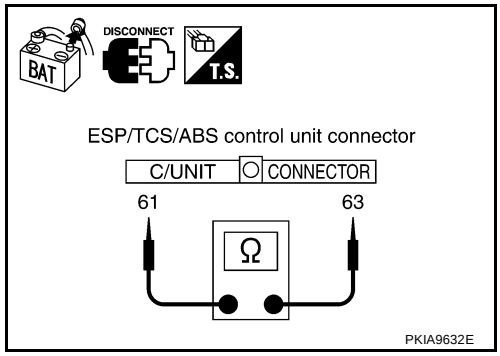
2. CHECK HARNESS FOR OPEN CIRCUIT

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.



Steering Angle Sensor Circuit Inspection

EKS00FVE

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).

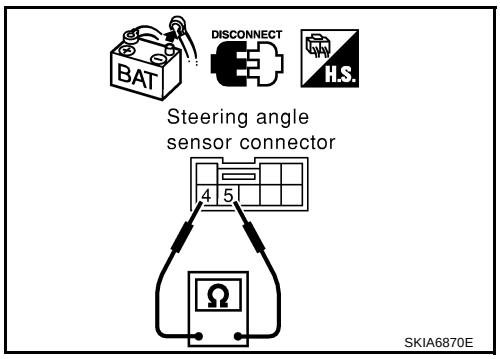
OK or NG

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).

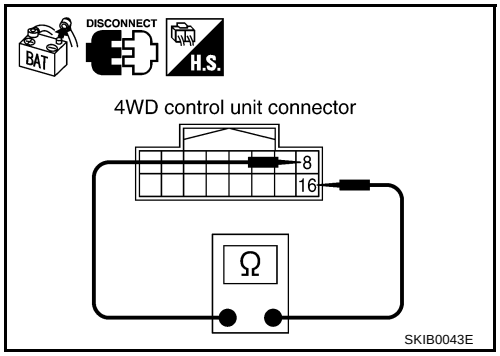
OK or NG

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).

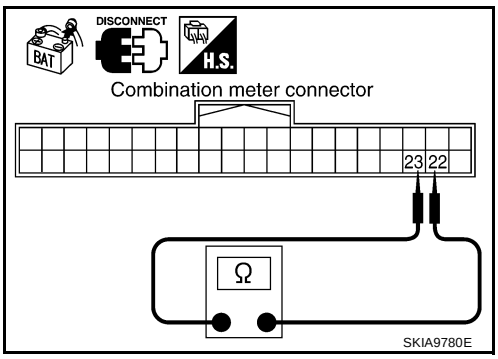
OK or NG

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.

CAN Communication Circuit Inspection

EKS00FVC

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

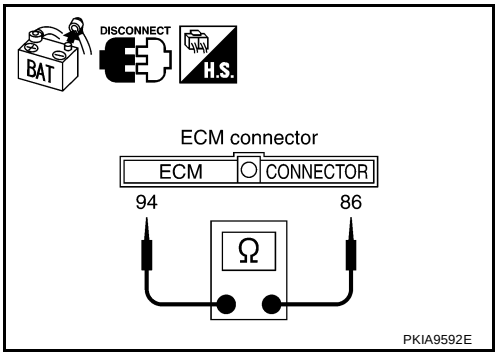
OK or NG

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.

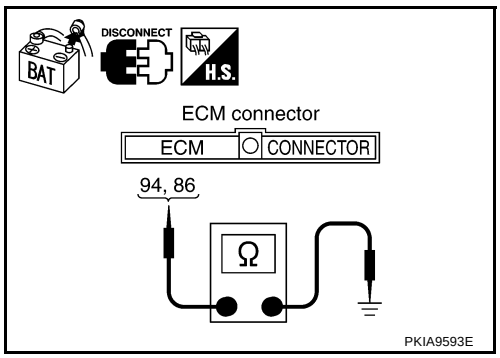
3. CHECK HARNESS FOR SHORT CIRCUIT

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.



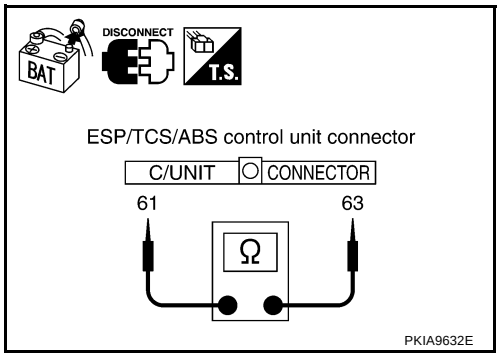
4. CHECK HARNESS FOR SHORT CIRCUIT

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.



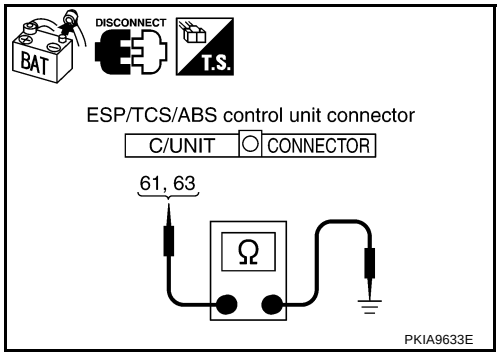
5. CHECK HARNESS FOR SHORT CIRCUIT

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

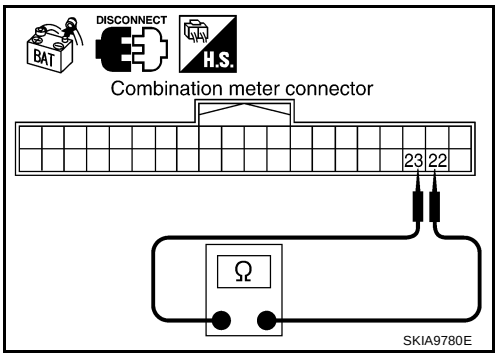
OK >> GO TO 6.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



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

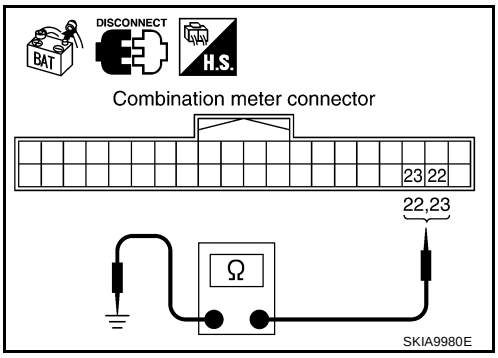
OK >> GO TO 7.
NG >> Check the following harness. If any harness is damaged, repair the harness.

- 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

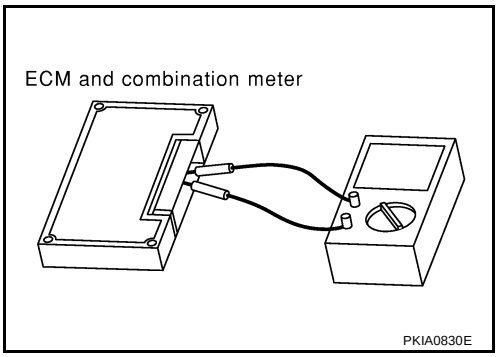
OK >> Connect all the connectors and diagnose again. Refer to LAN-53, "Work Flow" .
NG >> Replace ECM and/or combination meter.

Component Inspection

EKS00FVD

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

- 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

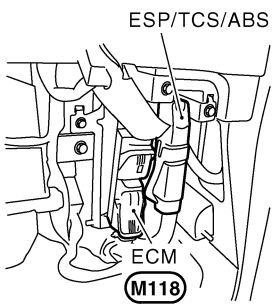
EKS00FVF

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.

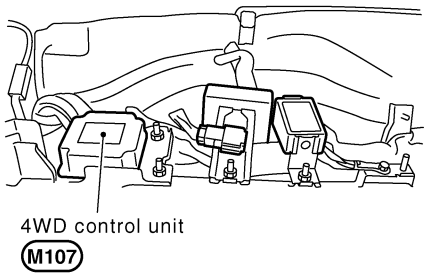
Component Parts and Harness Connector Location

EKS00FVG

Behind lower instrument panel on passenger side



Driver side view with upper instrument panel removed



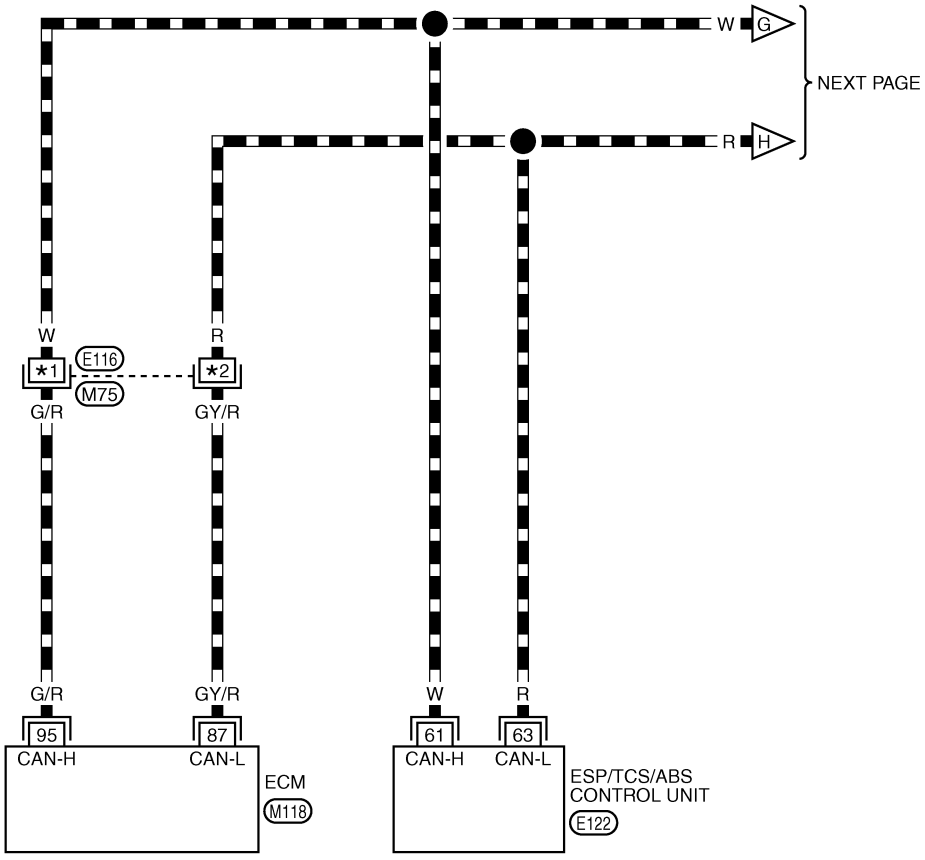
SKIB0125E

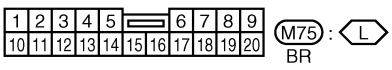
Wiring Diagram — CAN —

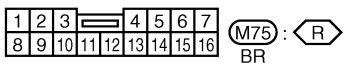
EKS00FVH

LAN-CAN-07

: DATA LINE
L : LHD MODELS
R : RHD MODELS
*1 13 : L
10 : R
*2 4 : L
3 : R



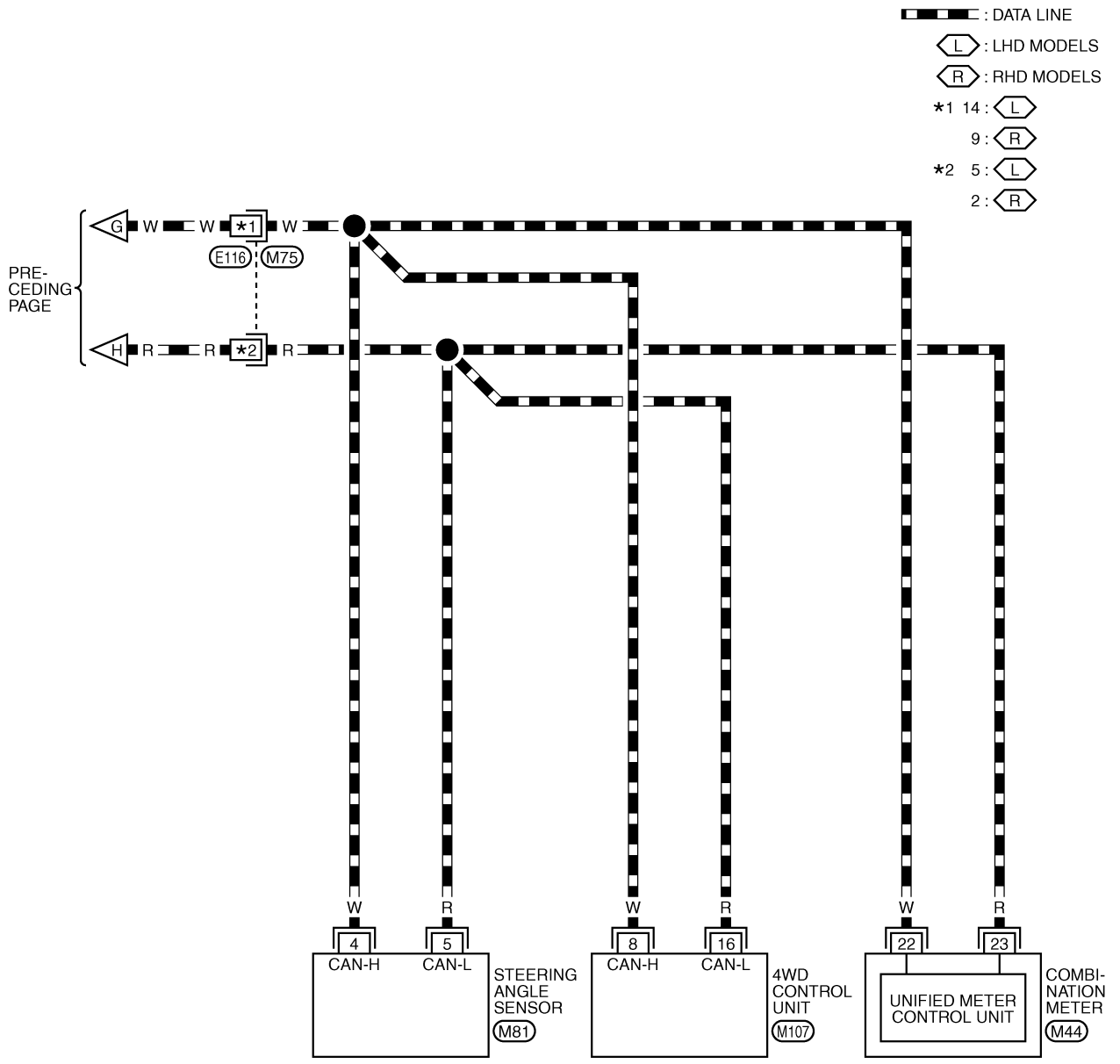


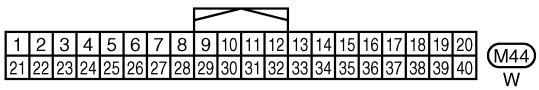


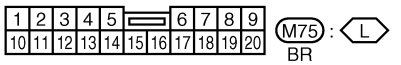
REFER TO THE FOLLOWING.
M118 , E122 -ELECTRICAL UNITS

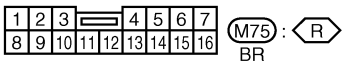
TKWB0112E

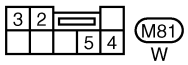
LAN-CAN-08

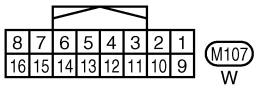










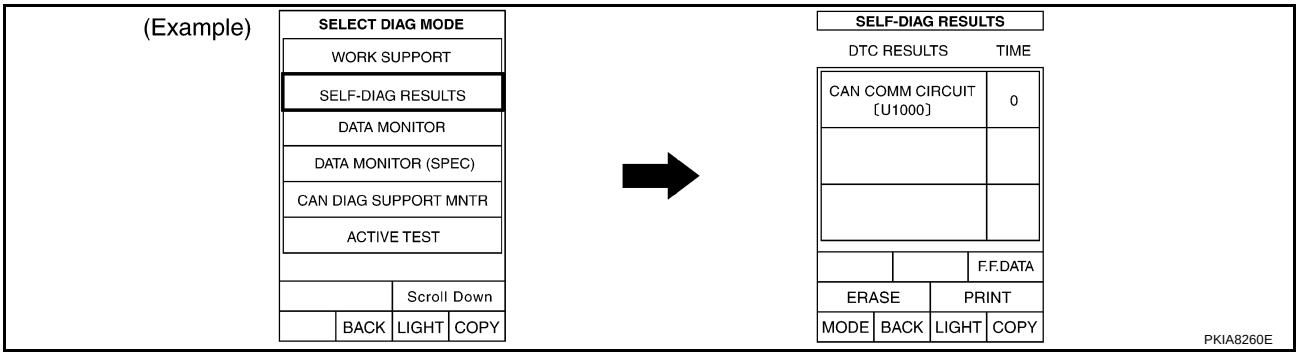


TKWB0113E

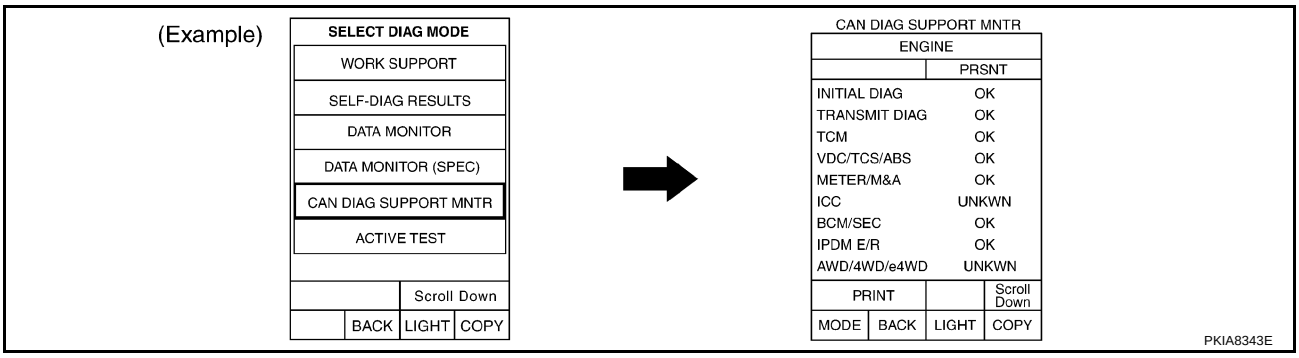
Work Flow

EKS00FVI

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-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)" .

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

PKIA9614E

CHECK SHEET RESULTS (EXAMPLE)

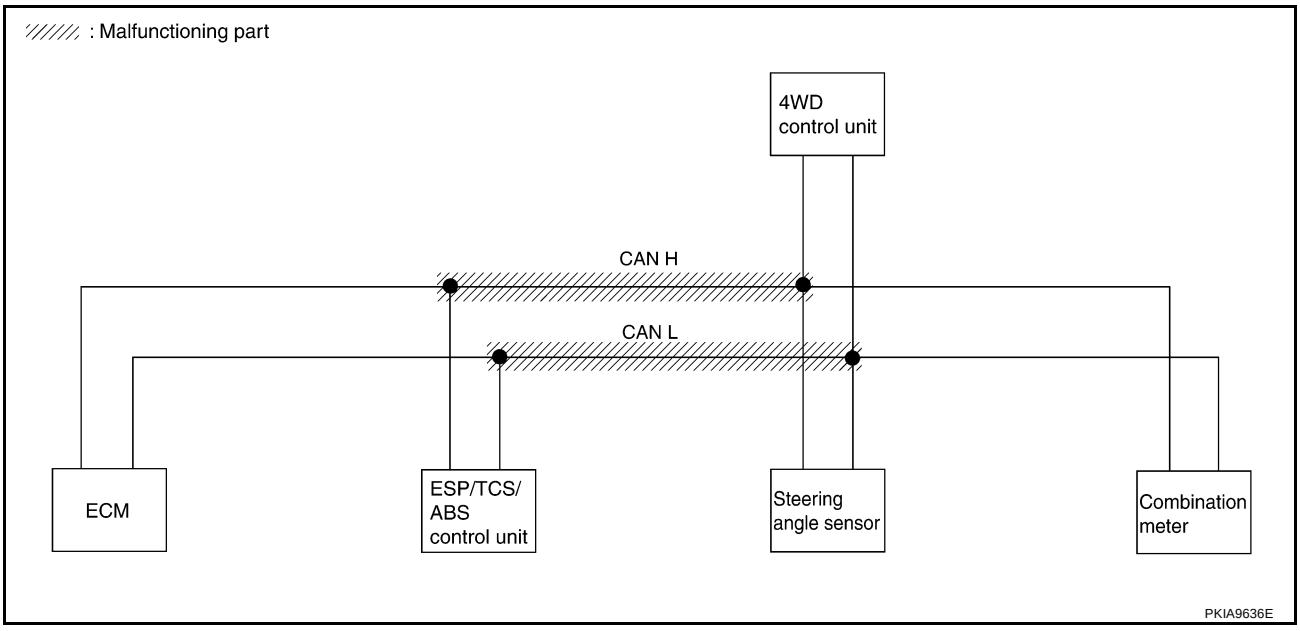
NOTE:
If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, replace the control unit.

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



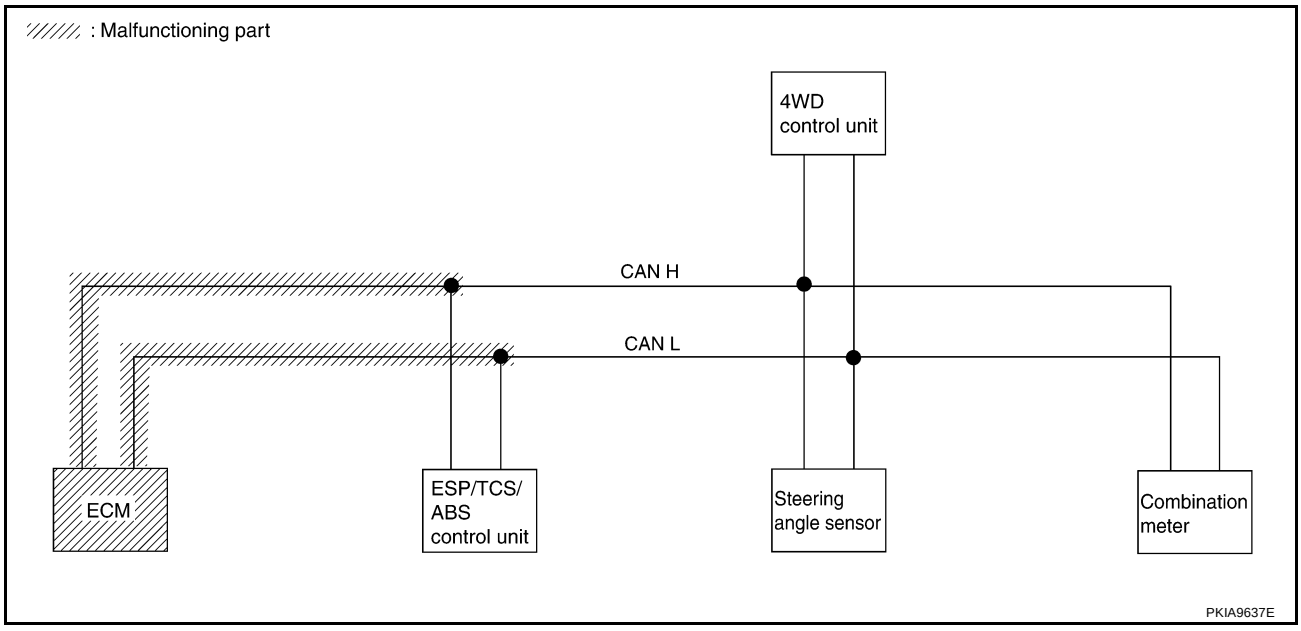
PKIA9636E

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

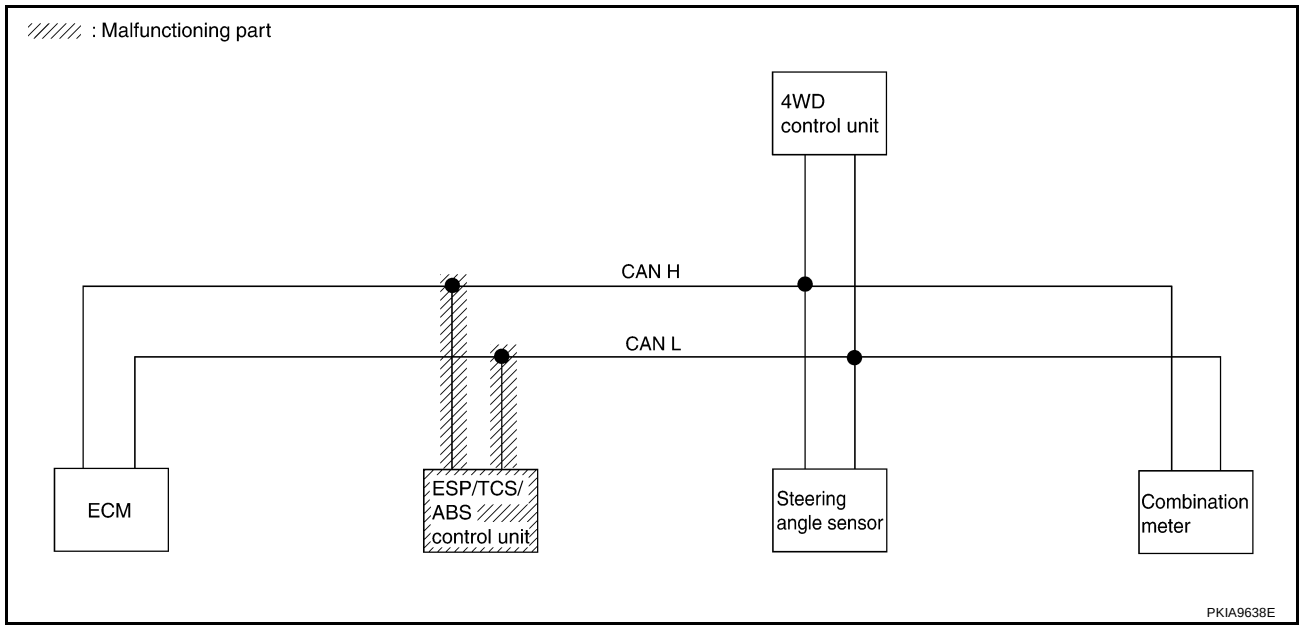


Case 3

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

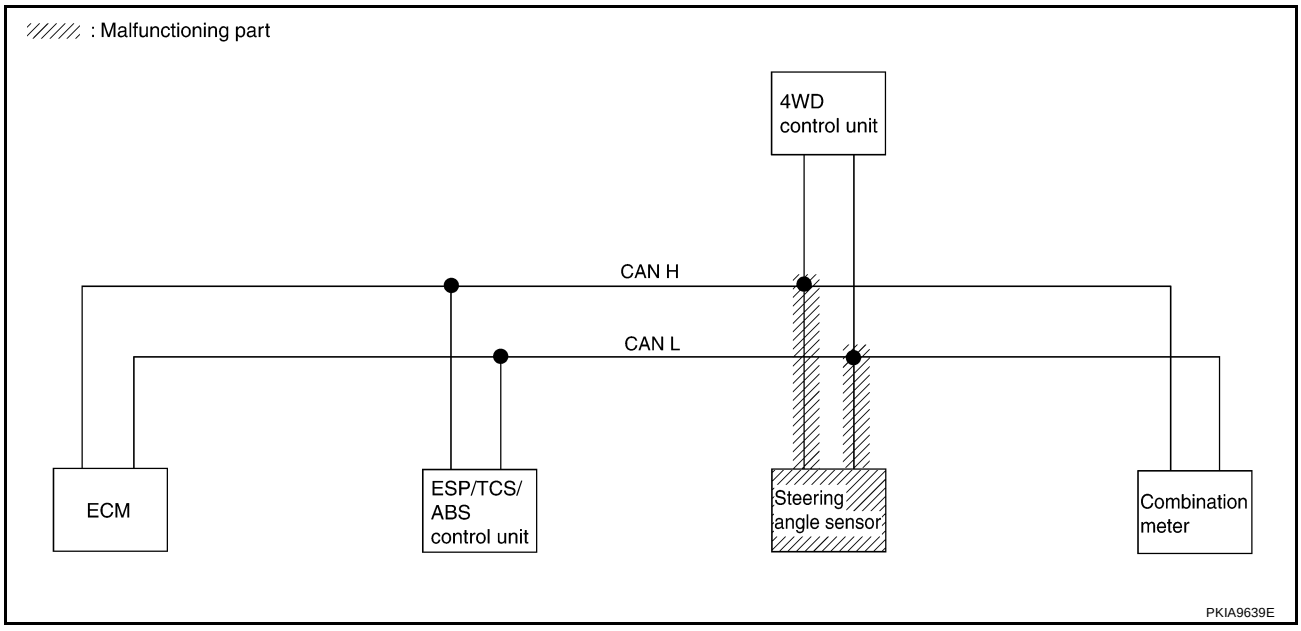


Case 4

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

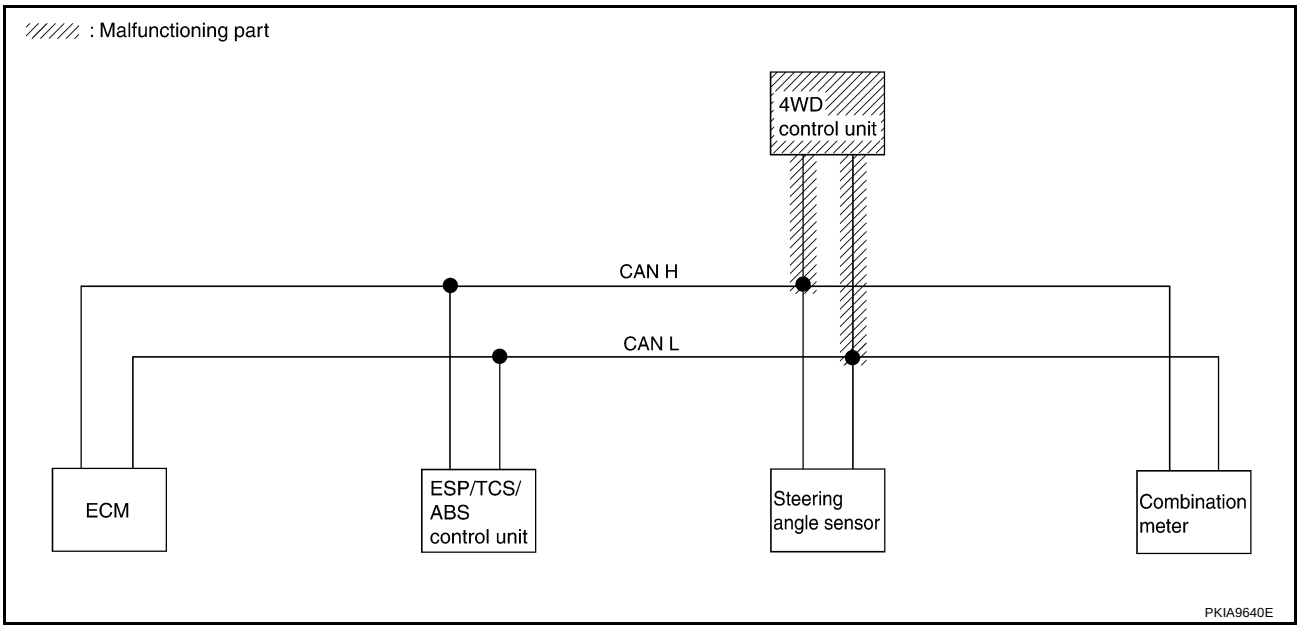


Case 5

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

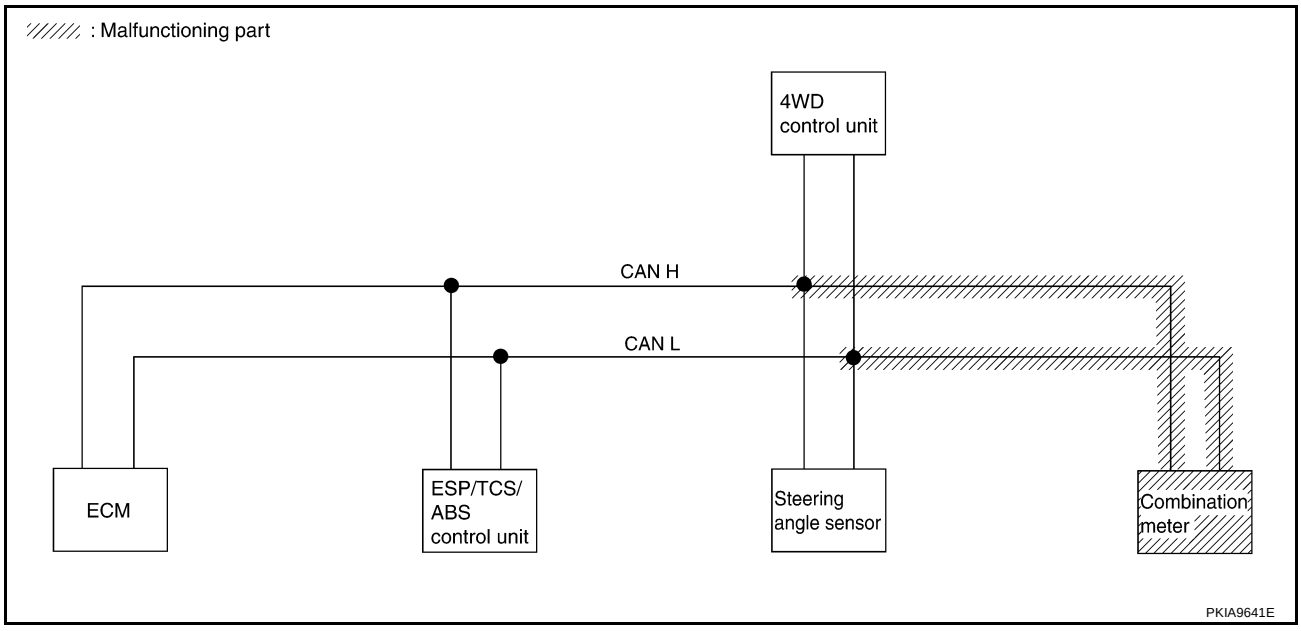


Case 6

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



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	UNKWN	–	UNKWN	–	–	UNKWN
ABS	NG	UNKWN	UNKWN	–	UNKWN	UNKWN	UNKWN
ALL MODE AWD/4WD	NG	UNKWN	UNKWN	UNKWN	–	–	–

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.

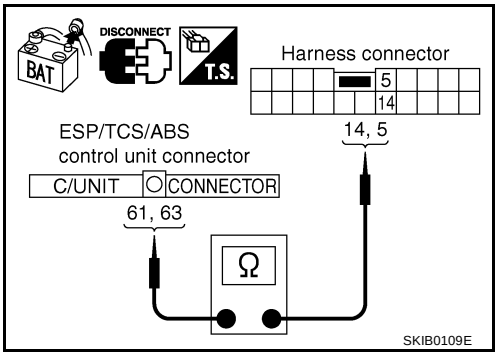
2. CHECK HARNESS FOR OPEN CIRCUIT

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).

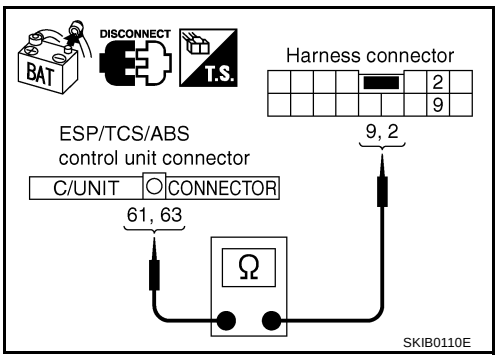
61 (W) – 14 (W) : Continuity should exist.
63 (R) – 5 (R) : Continuity should exist.



– 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.

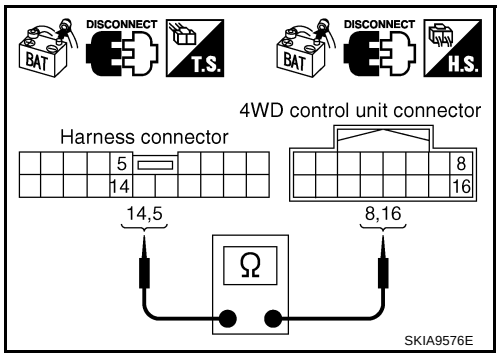
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

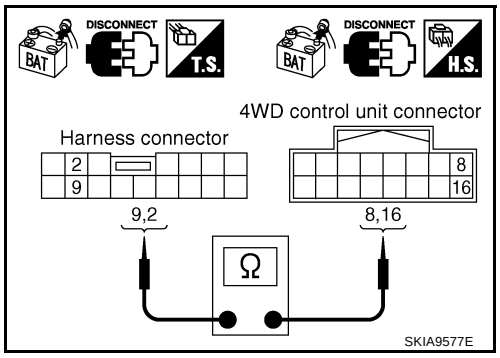
14 (W) – 8 (W) : Continuity should exist.
5 (R) – 16 (R) : Continuity should exist.



– 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.

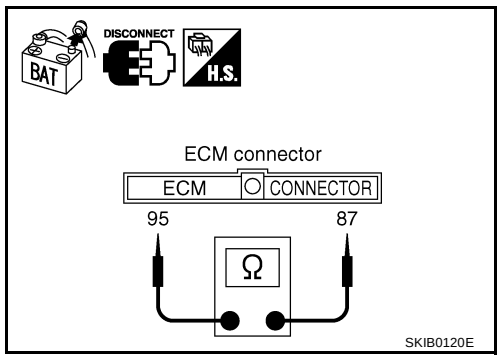
2. CHECK HARNESS FOR OPEN CIRCUIT

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.



ESP/TCS/ABS Control Unit Circuit Inspection

EKS00FVL

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.

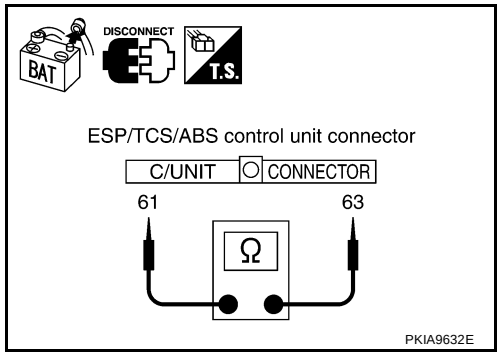
2. CHECK HARNESS FOR OPEN CIRCUIT

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.



Steering Angle Sensor Circuit Inspection

EKS00FVM

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).

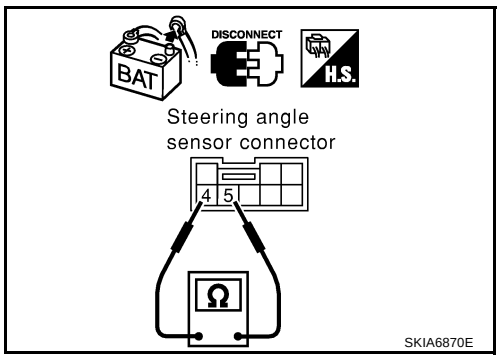
OK or NG

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).

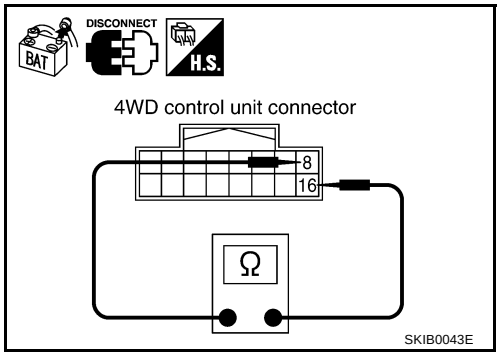
OK or NG

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.

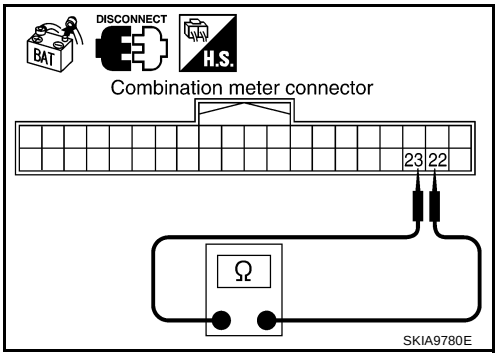
2. CHECK HARNESS FOR OPEN CIRCUIT

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.



CAN Communication Circuit Inspection

EKS00FVP

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.

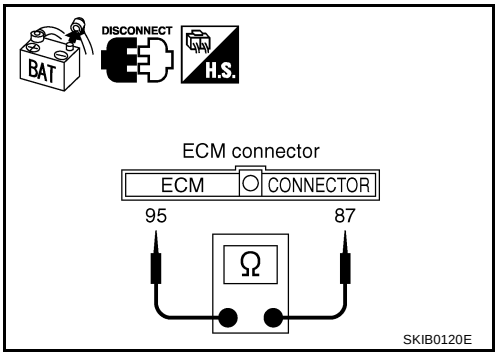
2. CHECK HARNESS FOR SHORT CIRCUIT

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.



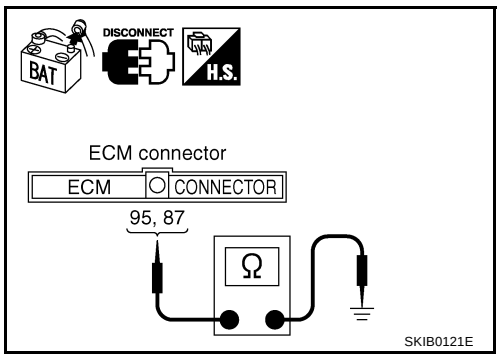
3. CHECK HARNESS FOR SHORT CIRCUIT

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.



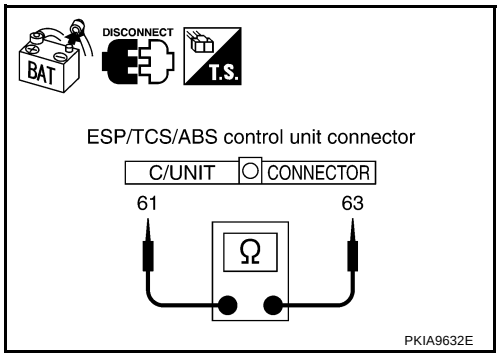
4. CHECK HARNESS FOR SHORT CIRCUIT

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.



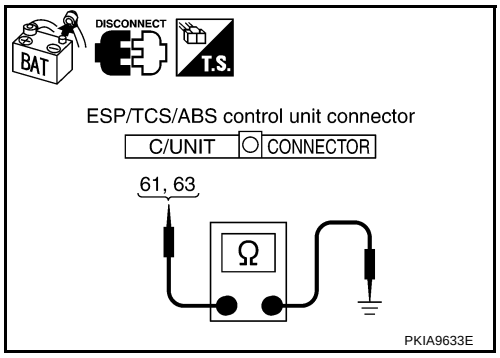
5. CHECK HARNESS FOR SHORT CIRCUIT

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

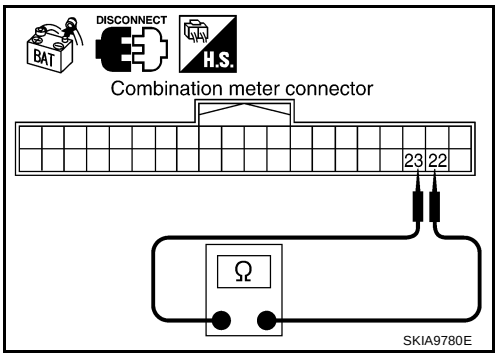
OK >> GO TO 6.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



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

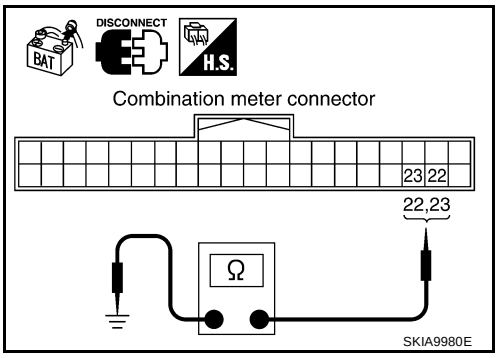
OK >> GO TO 7.
NG >> Check the following harness. If any harness is damaged, repair the harness.

- 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

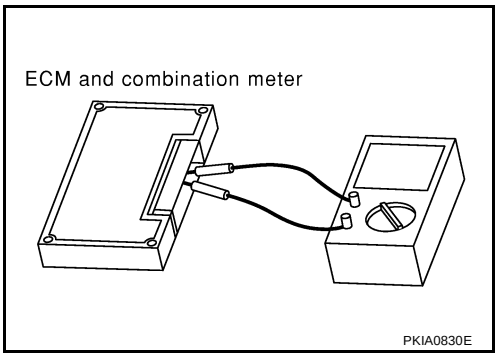
OK >> Connect all the connectors and diagnose again. Refer to LAN-71, "Work Flow" .
NG >> Replace ECM and/or combination meter.

Component Inspection

EKS00FVQ

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

- 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

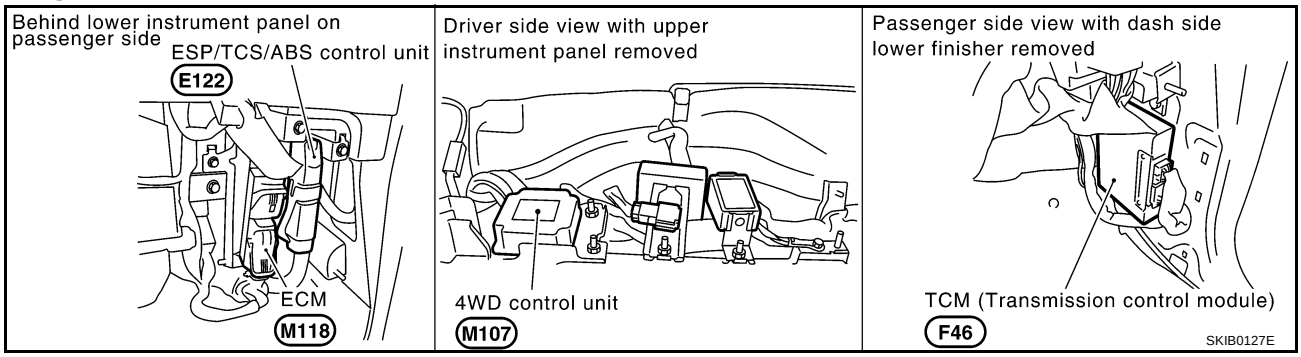
System Description

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

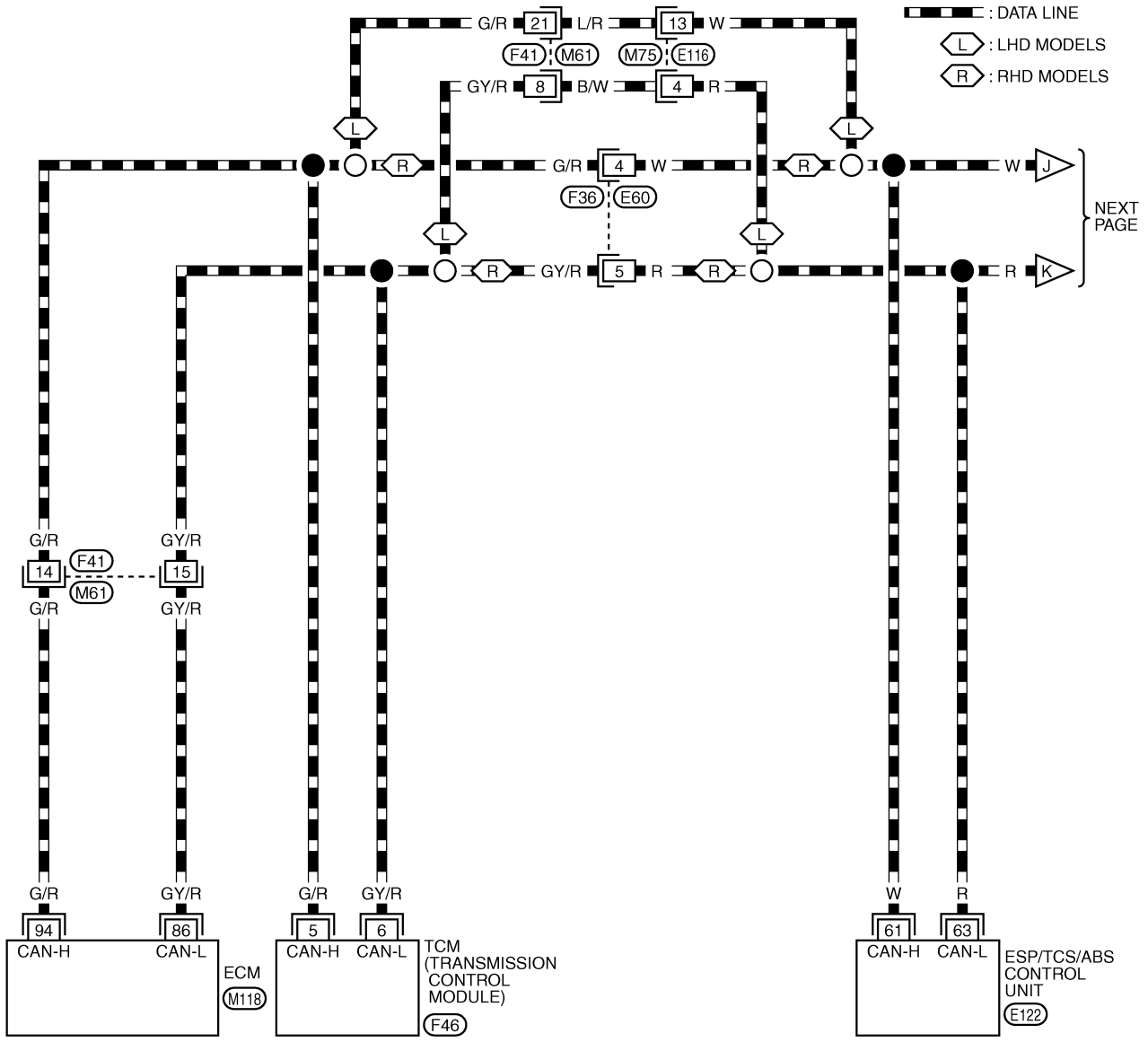
EKS00FWH

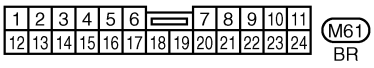


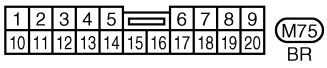
Wiring Diagram — CAN —

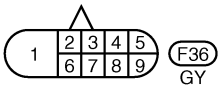
EKS00FWI

LAN-CAN-09





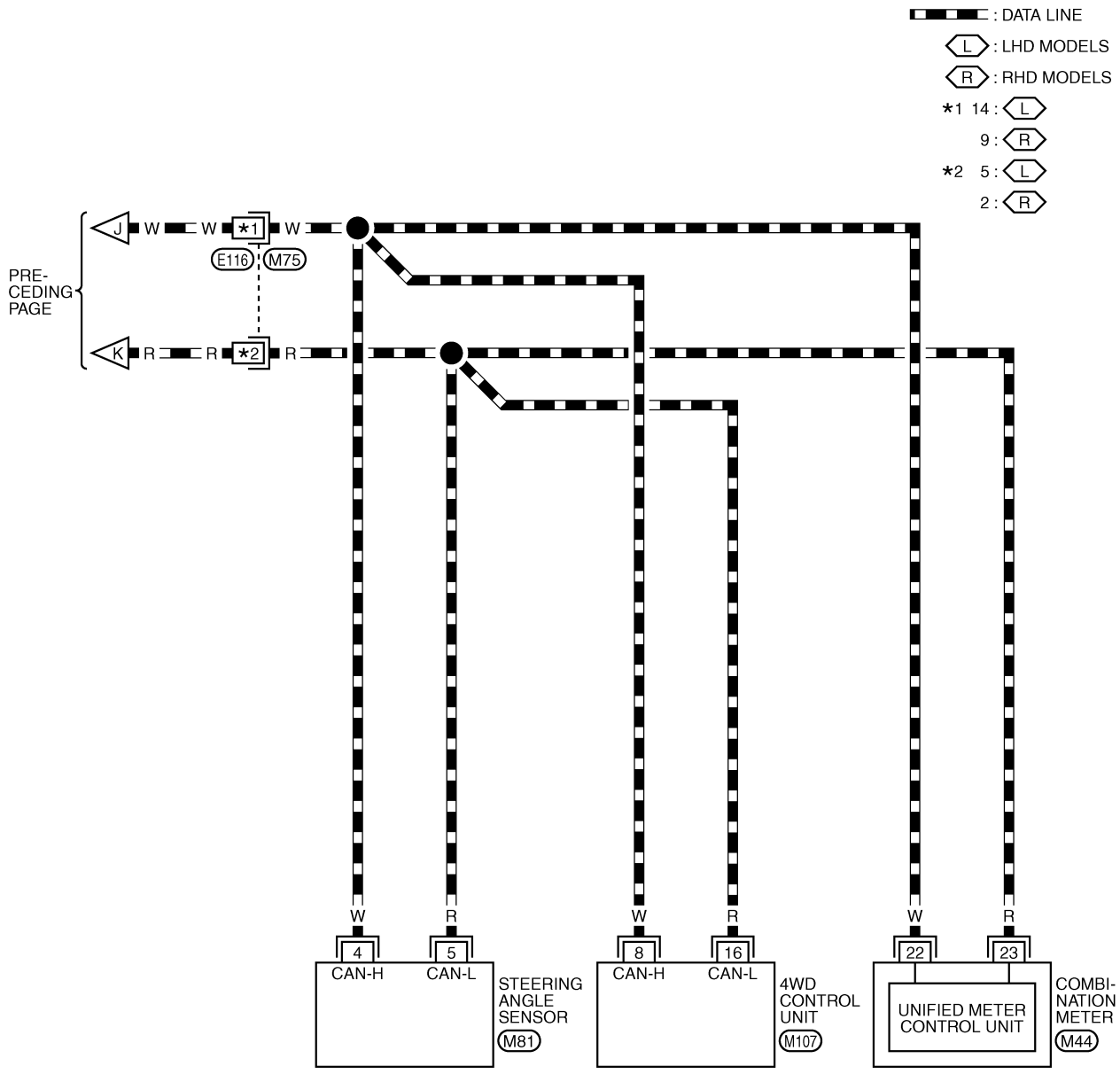


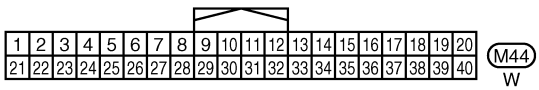


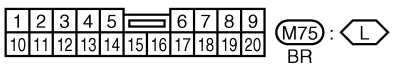
REFER TO THE FOLLOWING.
M118 , E122 , F46
-ELECTRICAL UNITS

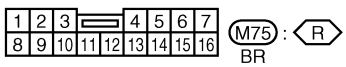
TKWB0114E

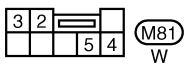
LAN-CAN-10

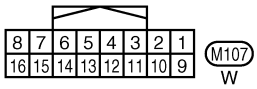










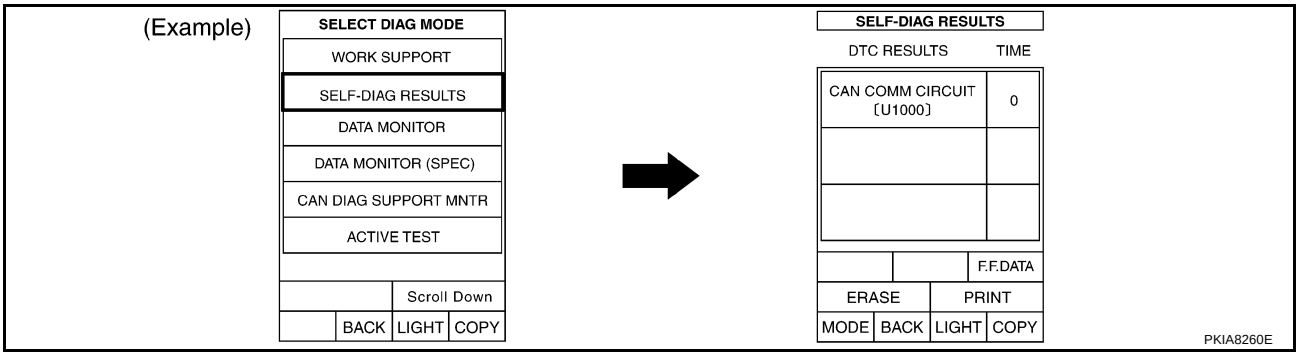


TKWB0115E

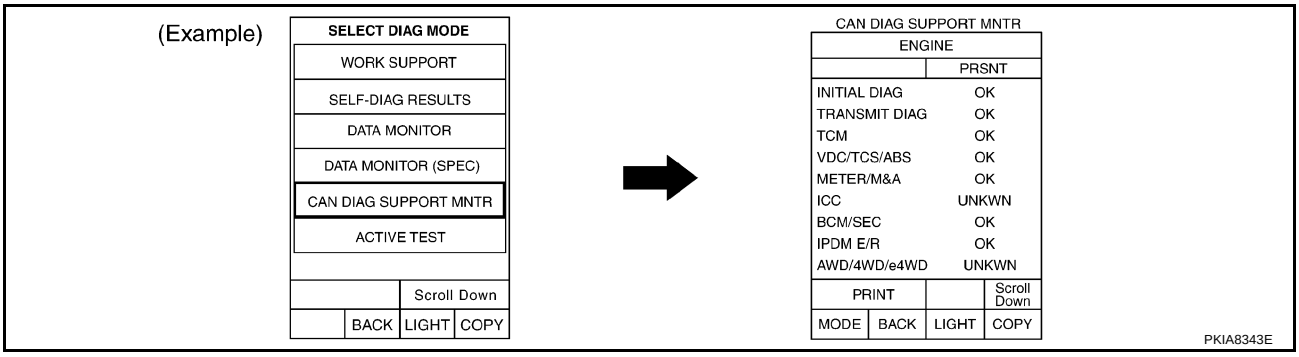
Work Flow

EKS00FWJ

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:
   - 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)" .

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

PKIA9622E

CHECK SHEET RESULTS (EXAMPLE)

NOTE:

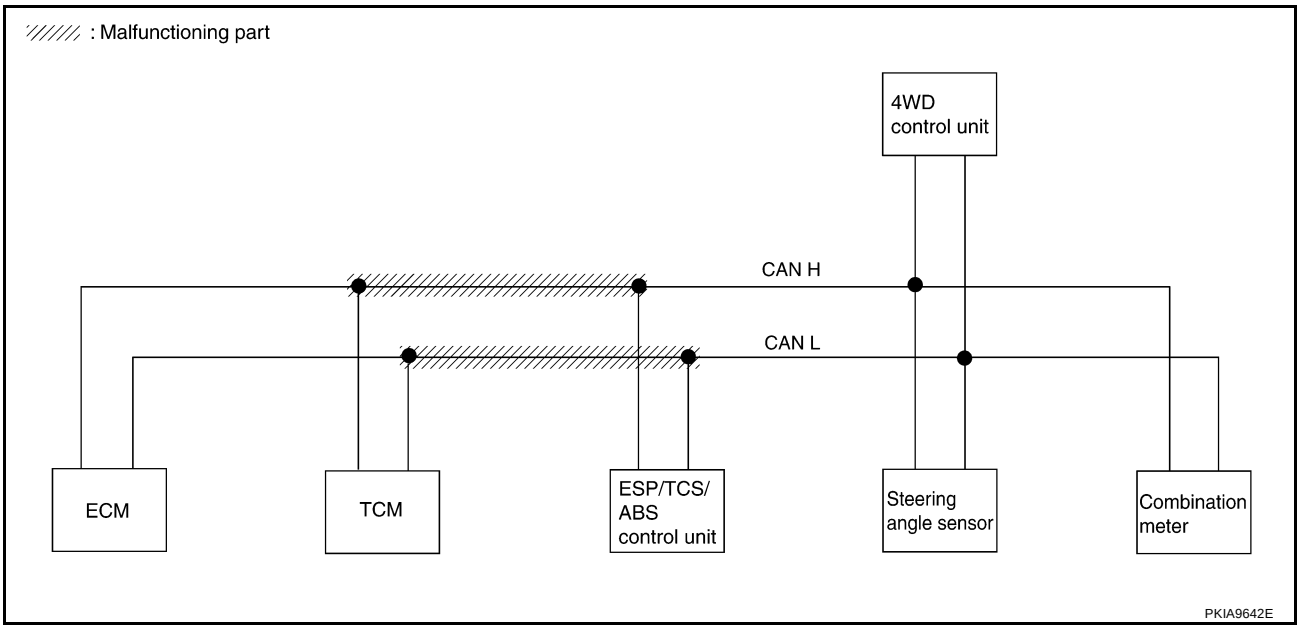
If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, replace the control unit.

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

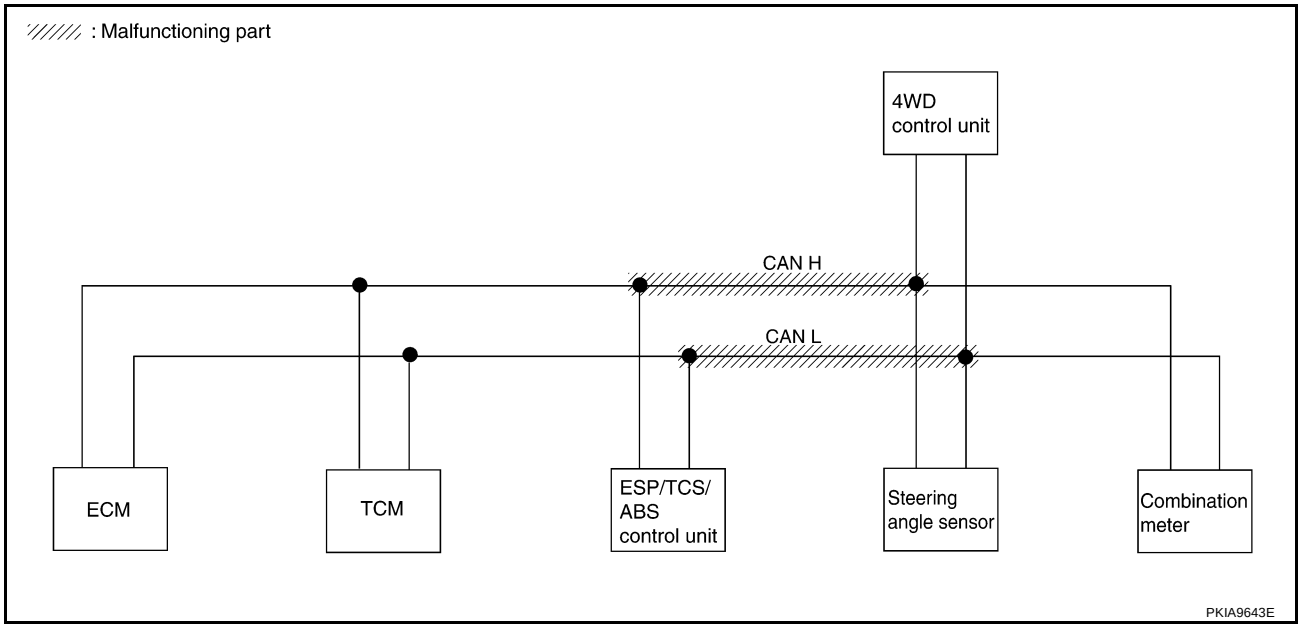


Case 2

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

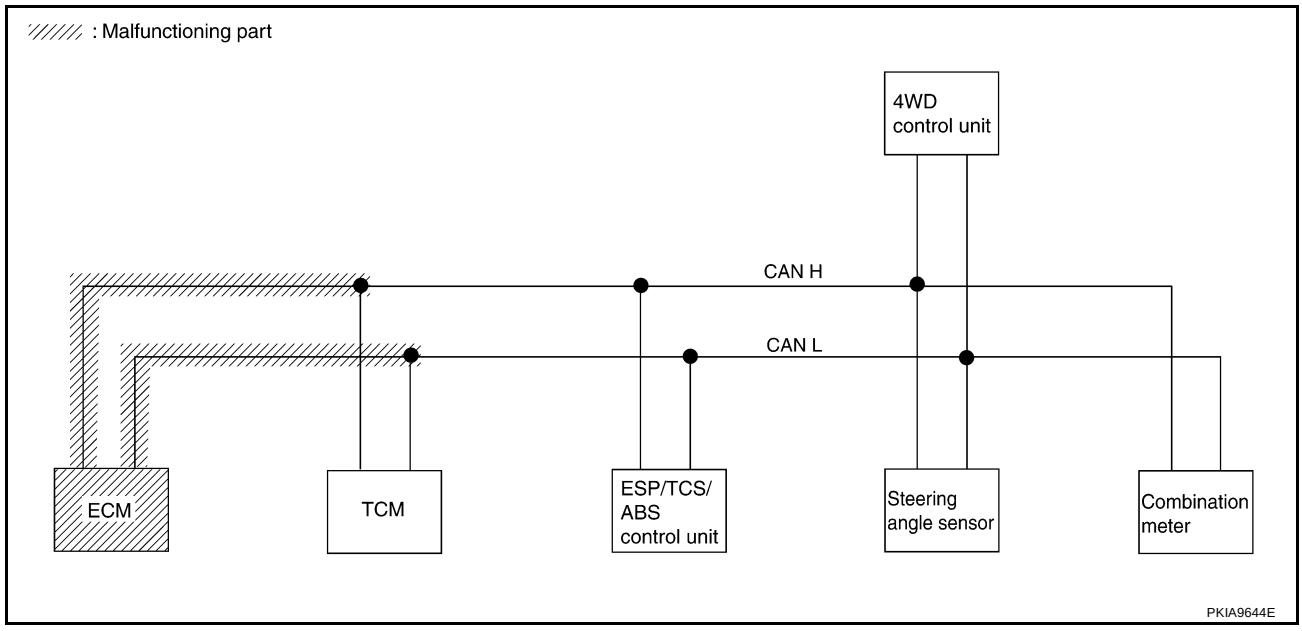


Case 3

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	–	–	–

PKIA9625E

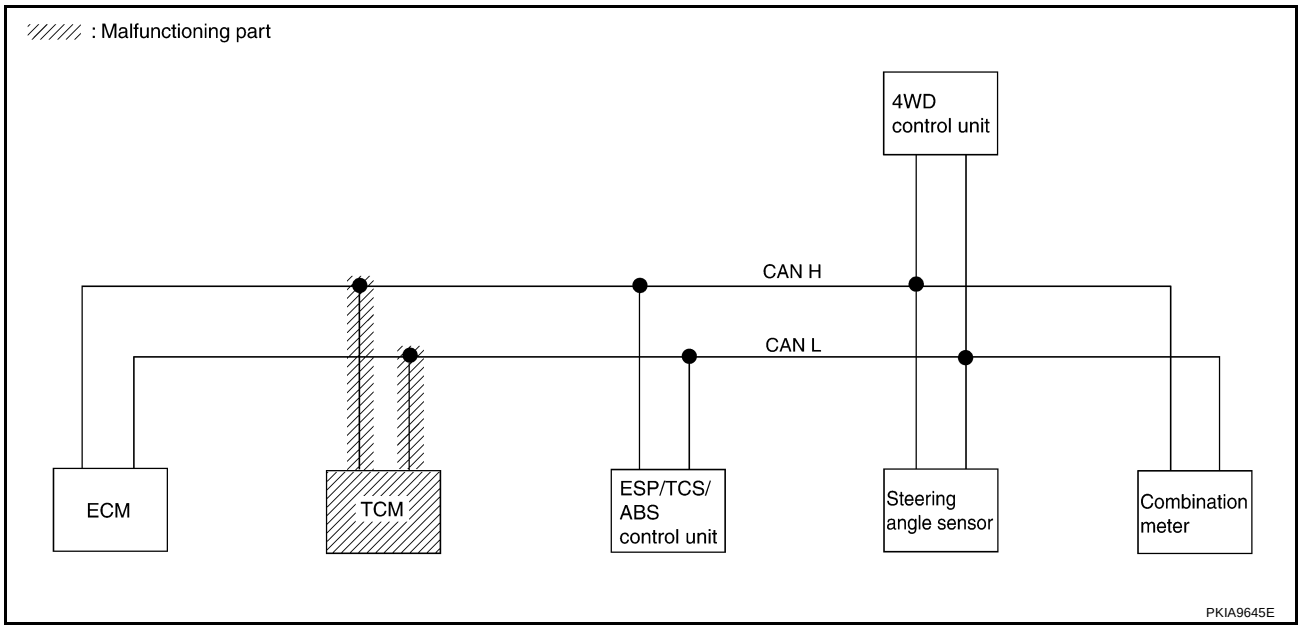


Case 4

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

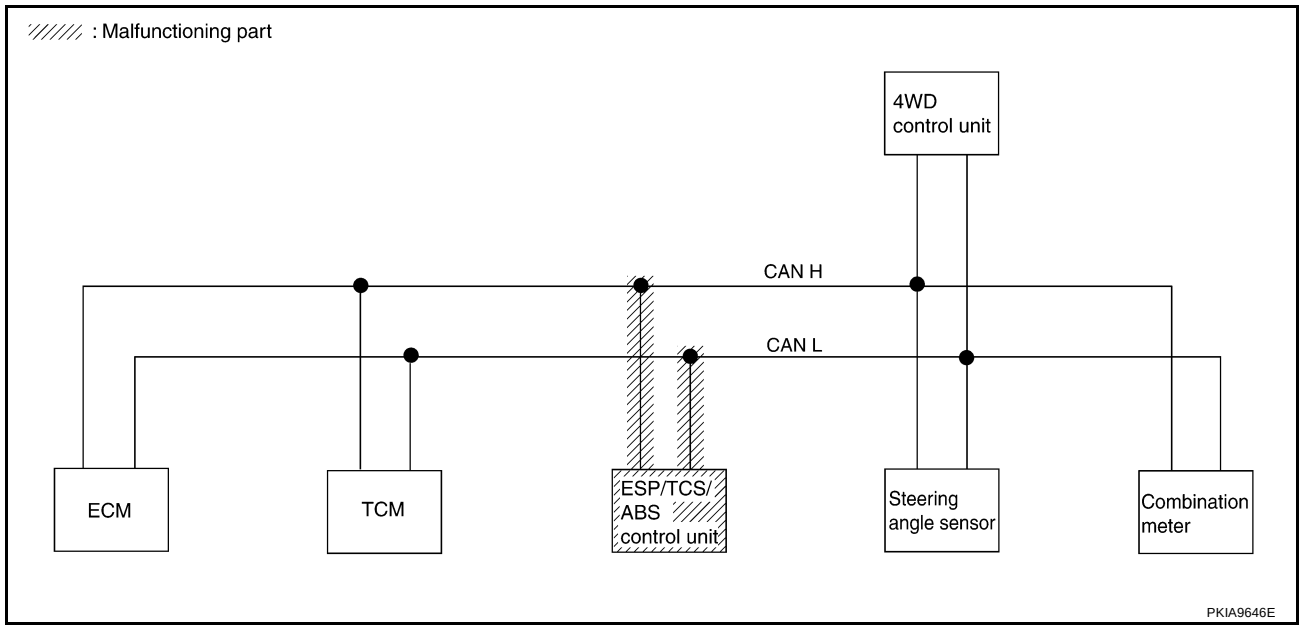


Case 5

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

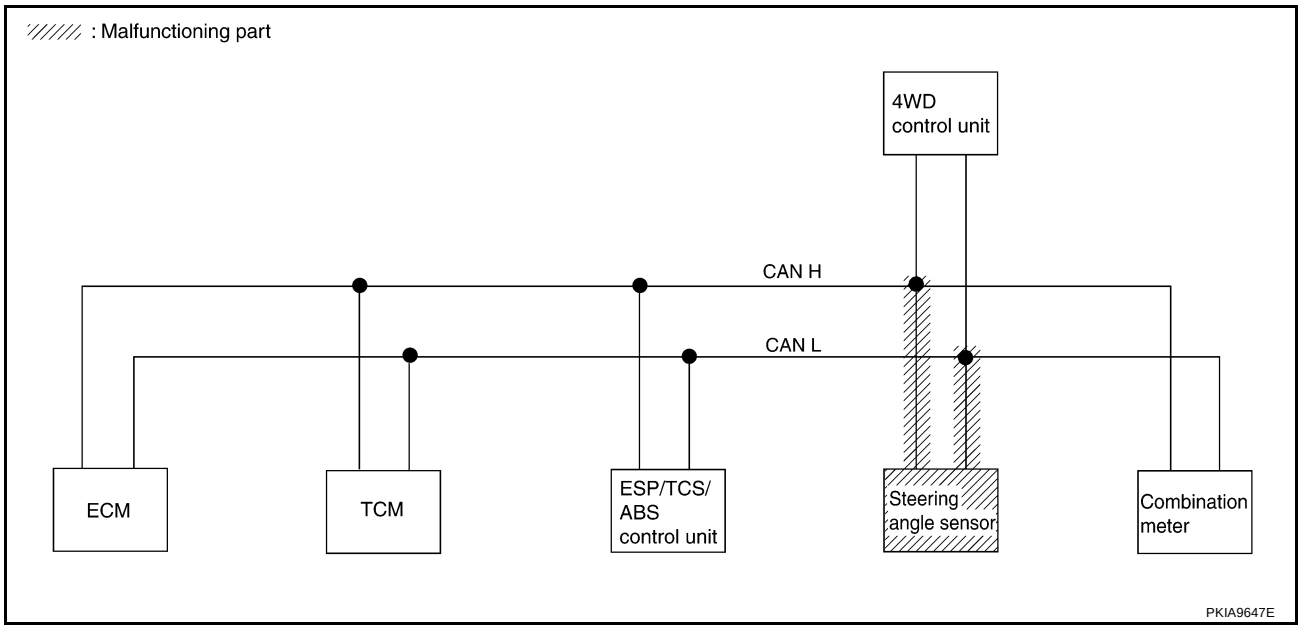


Case 6

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

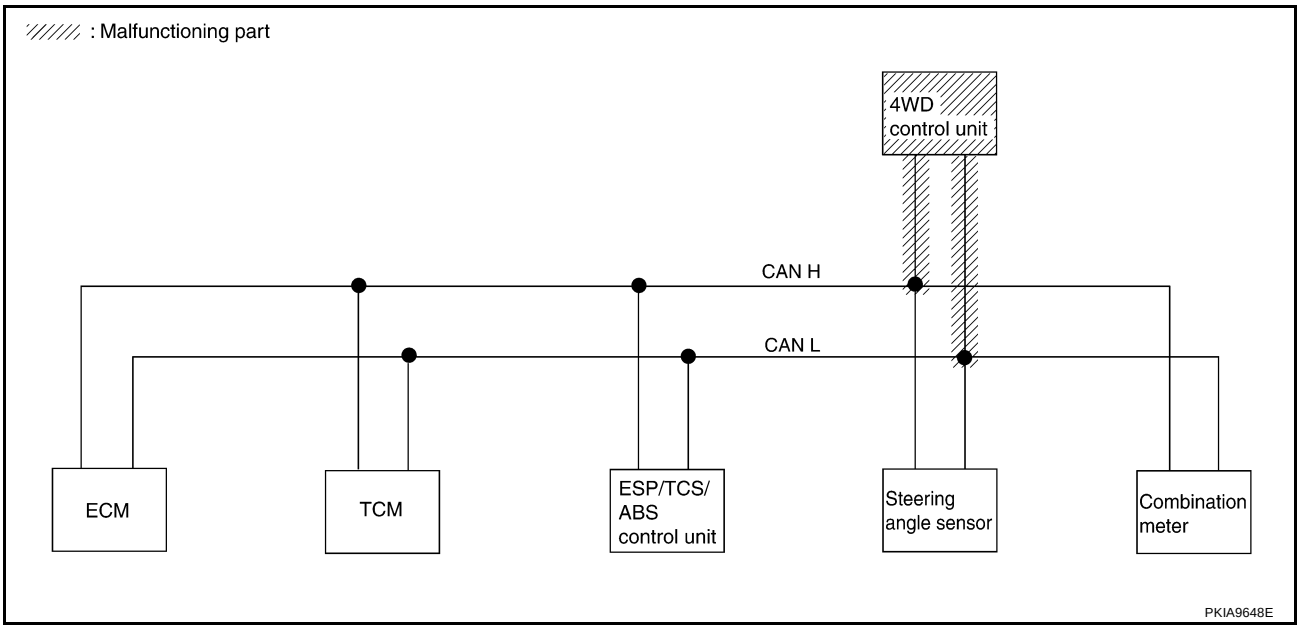


Case 7

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

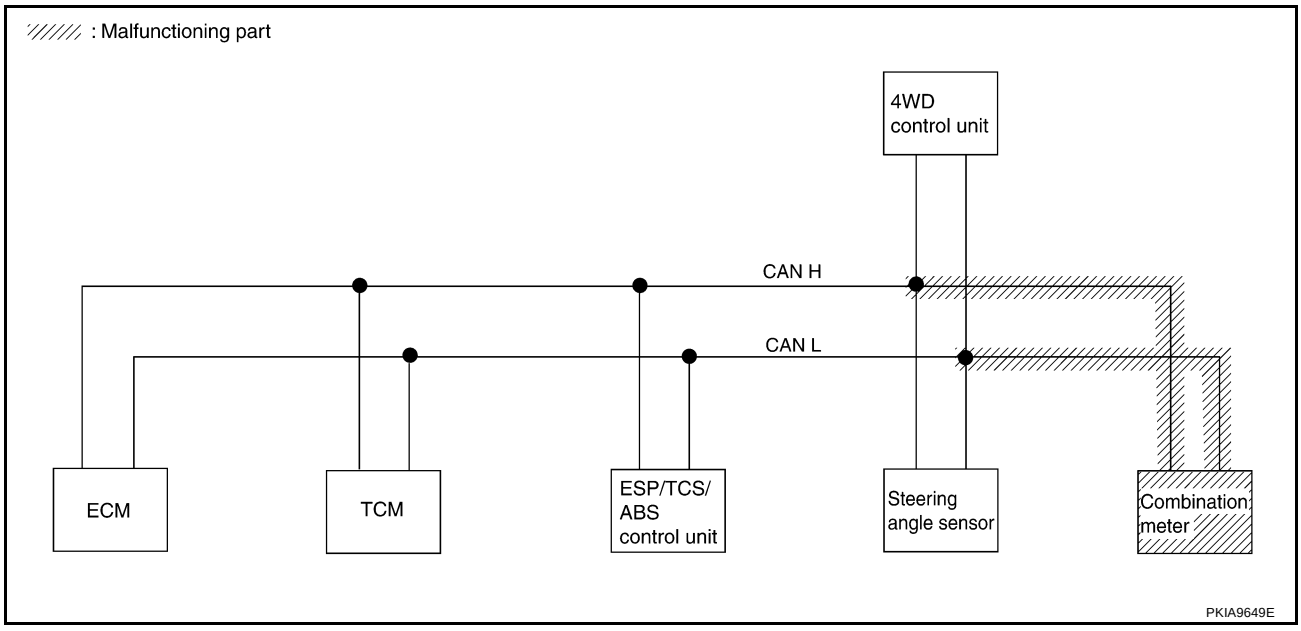


Case 8

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



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.

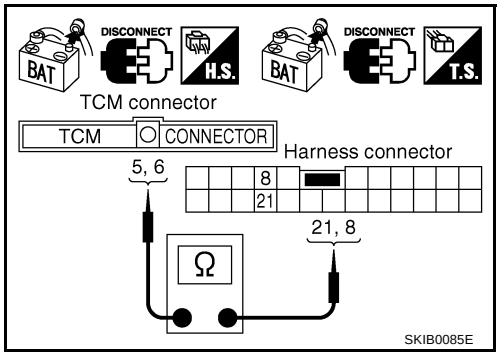
2. CHECK HARNESS FOR OPEN CIRCUIT

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.

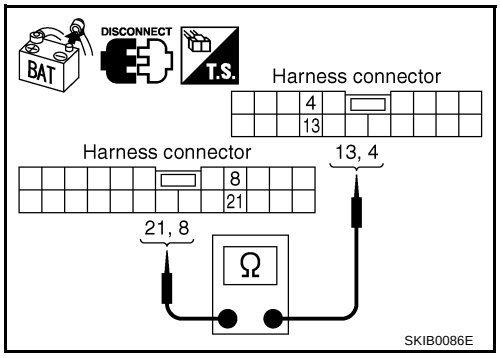
6 (GY/R) – 8 (GY/R) : Continuity should exist.



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

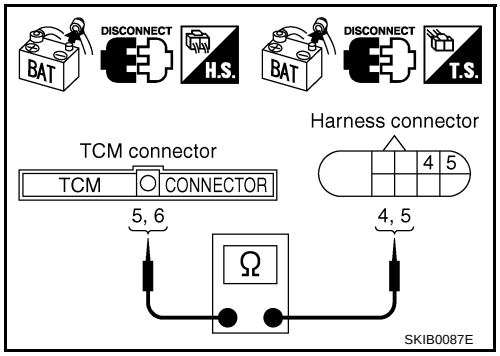
1. Disconnect TCM connector and harness connector F36.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and harness connector F36 terminals 4 (G/R), 5 (GY/R).

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.



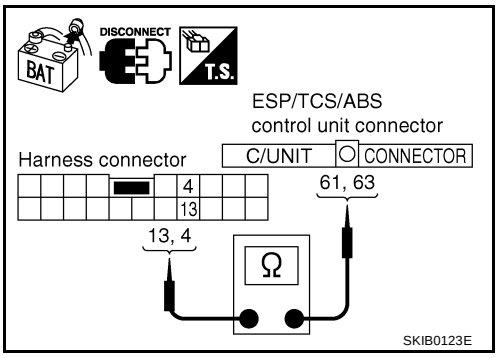
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

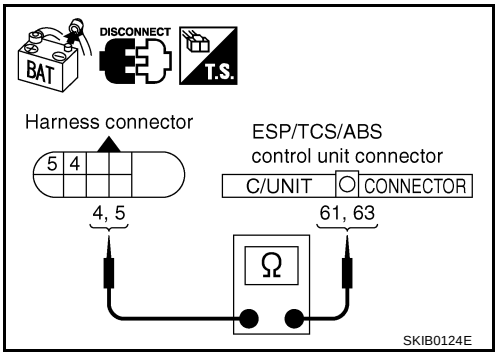
13 (W) – 61 (W) : Continuity should exist.
4 (R) – 63 (R) : Continuity should exist.



– 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.

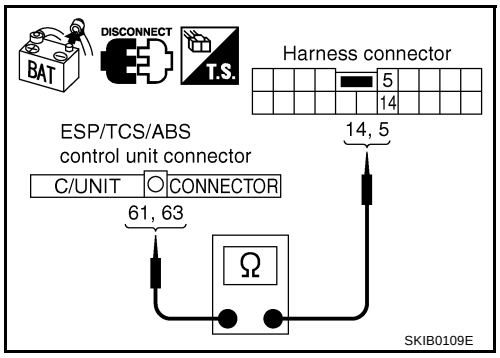
2. CHECK HARNESS FOR OPEN CIRCUIT

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).

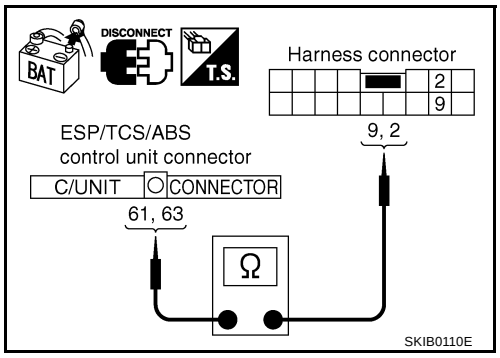
61 (W) – 14 (W) : Continuity should exist.
63 (R) – 5 (R) : Continuity should exist.



– 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.

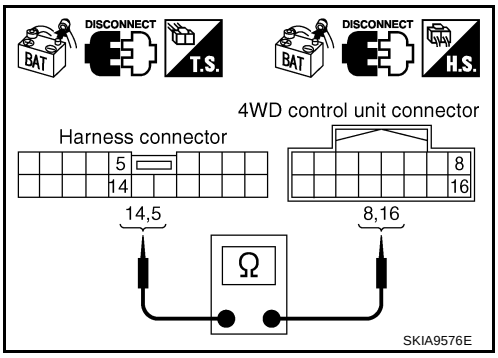
3. CHECK HARNESS FOR OPEN CIRCUIT

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).

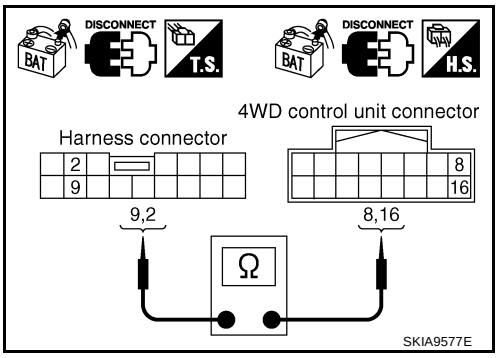
14 (W) – 8 (W) : Continuity should exist.
5 (R) – 16 (R) : Continuity should exist.



– 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

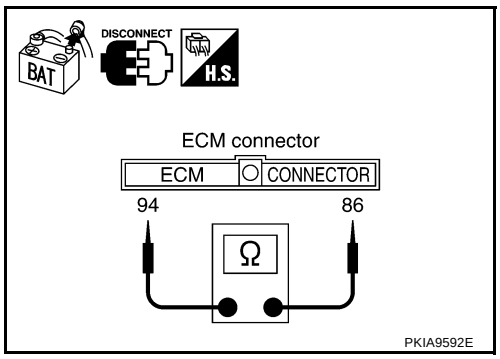
OK or NG

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

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).

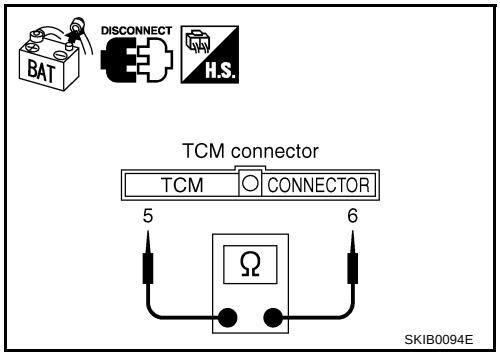
OK or NG

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).

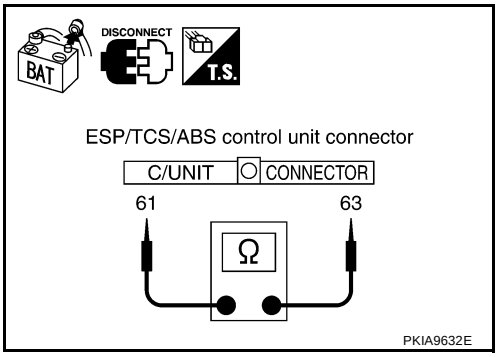
OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 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.

Steering Angle Sensor Circuit Inspection

EKS00FWT

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).

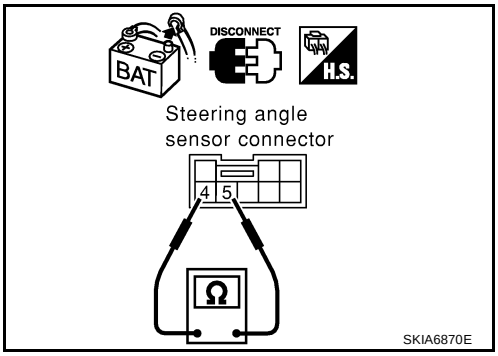
OK or NG

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

EKS00FWP

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).

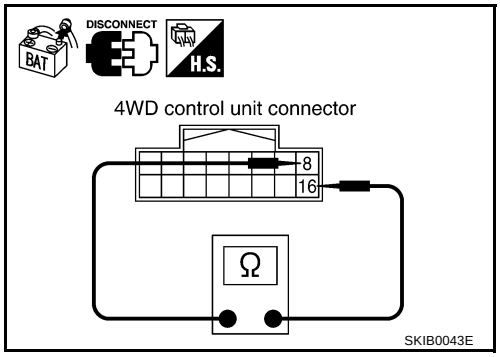
OK or NG

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

EKS00FWQ

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).

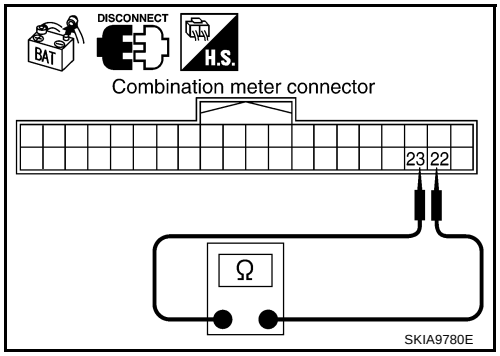
OK or NG

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.

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.

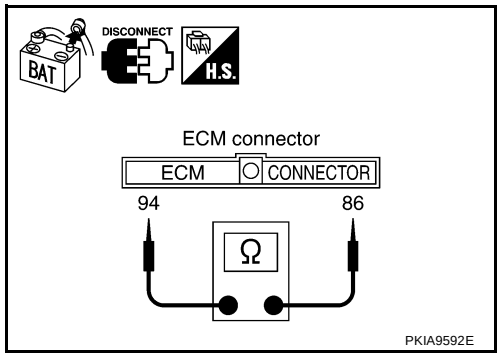
2. CHECK HARNESS FOR SHORT CIRCUIT

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.



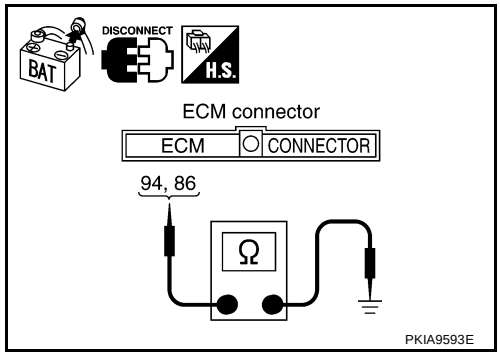
3. CHECK HARNESS FOR SHORT CIRCUIT

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.

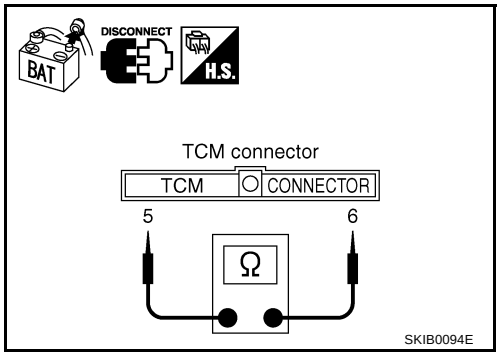


4. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

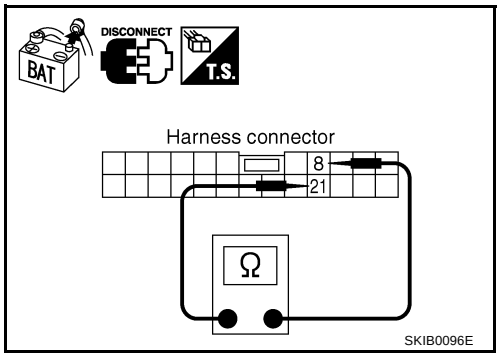
1. Disconnect TCM connector.
2. Check continuity between TCM harness connector F46 terminals 5 (G/R) and 6 (GY/R).

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).

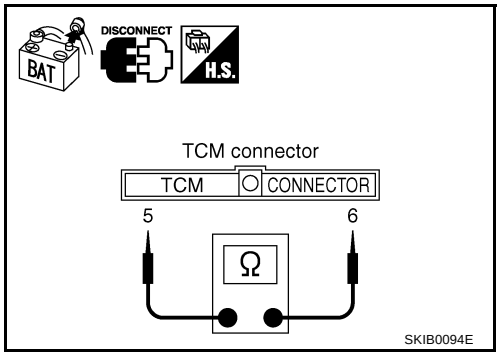
21 (L/R) – 8 (B/W) : Continuity should not exist.



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

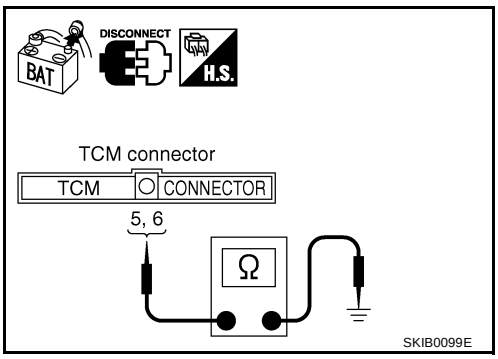
- Repair harness between TCM and harness connector F36.

5. CHECK HARNESS FOR OPEN CIRCUIT

LHD models

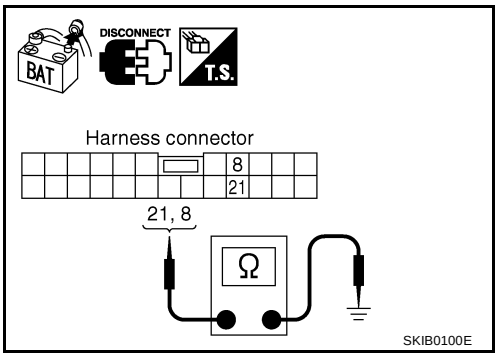
1. Check continuity between TCM harness connector F46 terminals 5 (G/R), 6 (GY/R) and ground.

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.

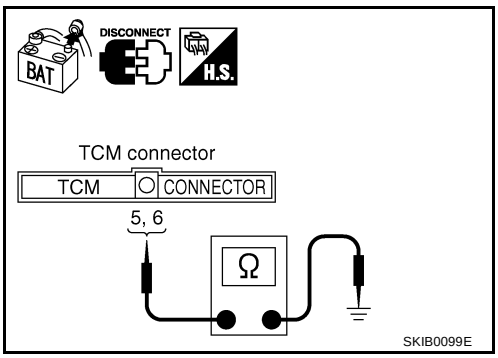
21 (L/R) – Ground : Continuity should not exist.
8 (B/W) – Ground : Continuity should not exist.



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

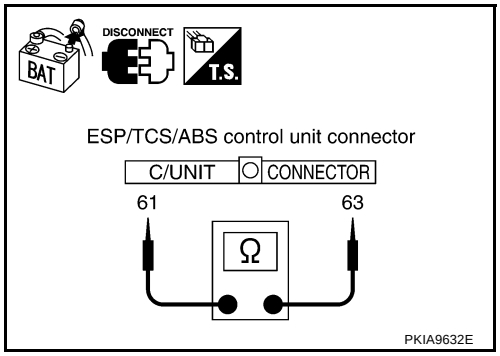
OK >> GO TO 6.
NG >> ● LHD models
Check the following harness. If any harness is damaged, repair the harness.
– Harness between TCM and harness connector F41
– Harness between harness connector M61 and harness connector M75
● RHD models
– Repair harness between TCM and harness connector F36.

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).

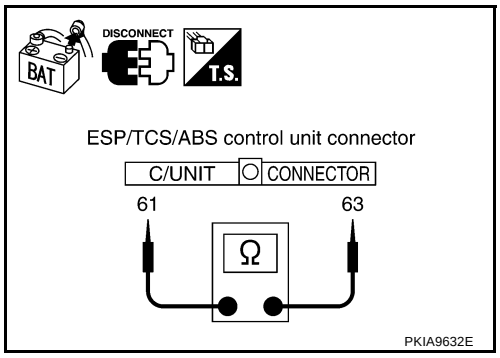
61 (W) – 63 (R) : Continuity should not exist.



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.

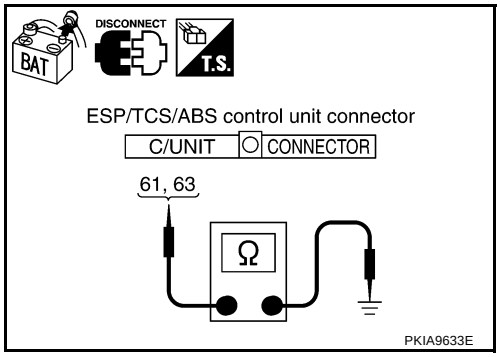
7. CHECK HARNESS FOR SHORT CIRCUIT

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

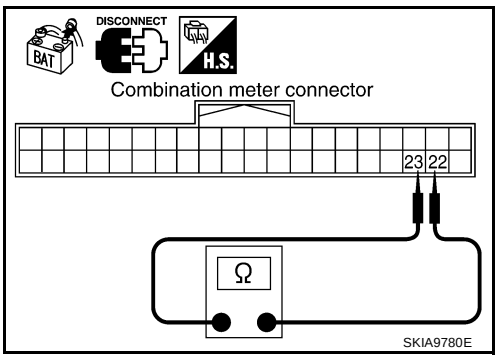
OK >> GO TO 8.
NG >> Repair harness between ESP/TCS/ABS control unit and harness connector E116.



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.



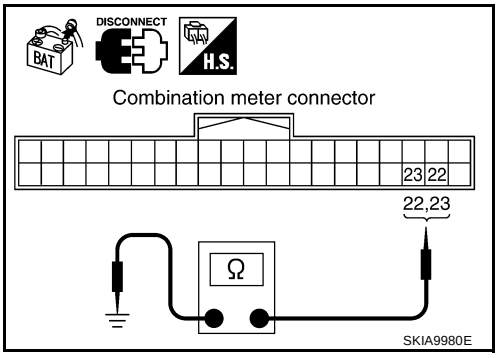
OK or NG

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

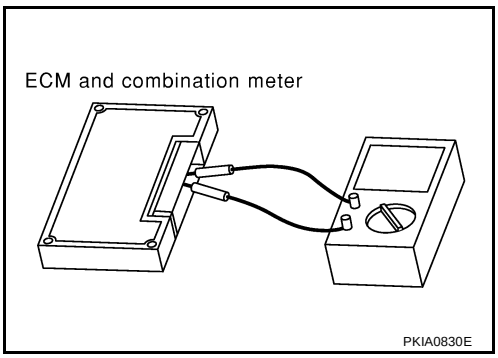
OK >> Connect all the connectors and diagnose again. Refer to LAN-89, "Work Flow" .
NG >> Replace ECM and/or combination meter.

Component Inspection

EKS00FWS

CHECK ECM AND COMBINATION METER INTERNAL CIRCUIT

- 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	