SECTION **LAN**

LAN SYSTEM

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PRECAUTIONS
PFP:00001

Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"
AKS003EX

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

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

Precautions for Battery Service
AKS005IS

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Precautions When Using CONSULT-II
AKS00AIN

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

CAUTION:
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

CHECK POINTS FOR USING CONSULT-II
1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
   - If YES, GO TO 2.
   - If NO, GO TO 5.
2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
   - If YES, GO TO 3.
   - If NO, GO TO 4.
3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
5. Diagnose CAN communication system. Refer to .

Precautions For Trouble Diagnosis
AKS003EY
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

Precautions For Harness Repair

AKS003EZ

CAN SYSTEM

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

OK: Soldered and wound with tape

PKIA0306E
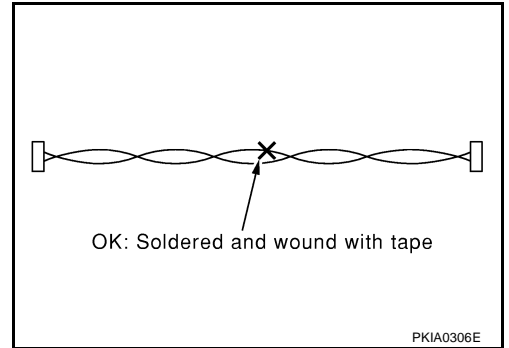
● Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)

NG: Bypass wire connection

PKIA0307E
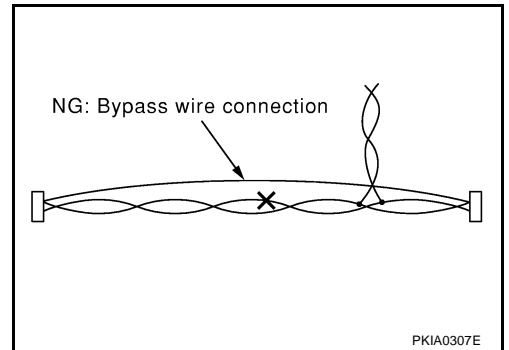
CAN COMMUNICATION

PFP:23710

System Description

AKS003F0

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

AKS003F1

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

| Body type	Coupe	
Axle	2WD	
Engine	VQ35DE	
Transmission	M/T	A/T
Brake control	VDC	
CAN system type	1	2
CAN system trouble diagnosis	LAN-8	LAN-33

TYPE 1
System Diagram
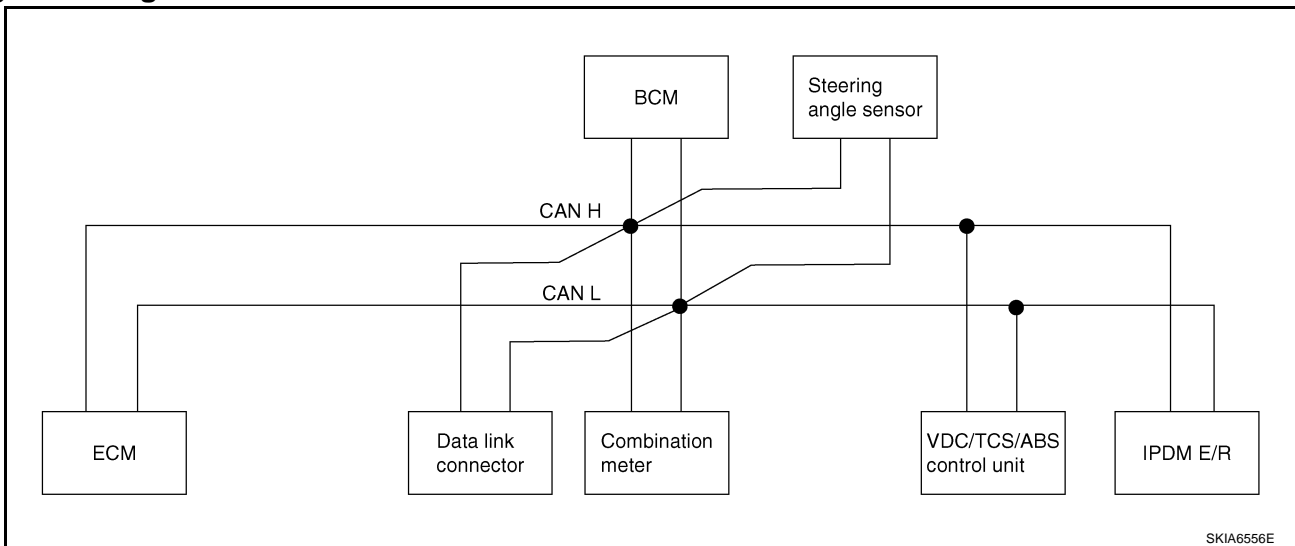
SKIA6556E

Input/output Signal Chart

T: Transmit R: Receive

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

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

TYPE 2
System Diagram

SKIA6557E

Input/output Signal Chart

T: Transmit   R: Receive

Signals	ECM	TCM	Combina-tion meter	BCM	Steering angle sensor	VDC/TCS/ABS control unit	IPDM E/R
Engine speed signal	T	R	R			R	
Engine coolant temperature signal	T	R	R				
Accelerator pedal position signal	T	R				R	
Closed throttle position signal	T	R					
Wide open throttle position signal	T	R					
Battery voltage signal	T	R					
Stop lamp switch signal		R	T				
Fuel consumption monitor signal	T		R				
A/T self-diagnosis signal	R	T					
A/T CHECK indicator lamp signal		T	R				
A/T position indicator signal		T	R			R	
ABS operation signal		R				T	
A/T shift schedule change demand signal		R				T	
A/C switch signal	R			T			
A/C compressor request signal	T						R
A/C compressor feedback signal	T		R				
Blower fan motor switch signal	R			T			
Cooling fan motor operation signal	T						R
Position lights request signal			R	T			R
Low beam request signal				T			R
Low beam status signal	R			R			T
High beam request signal			R	T			R
High beam status signal	R			R			T
Front fog lights request signal				T			R

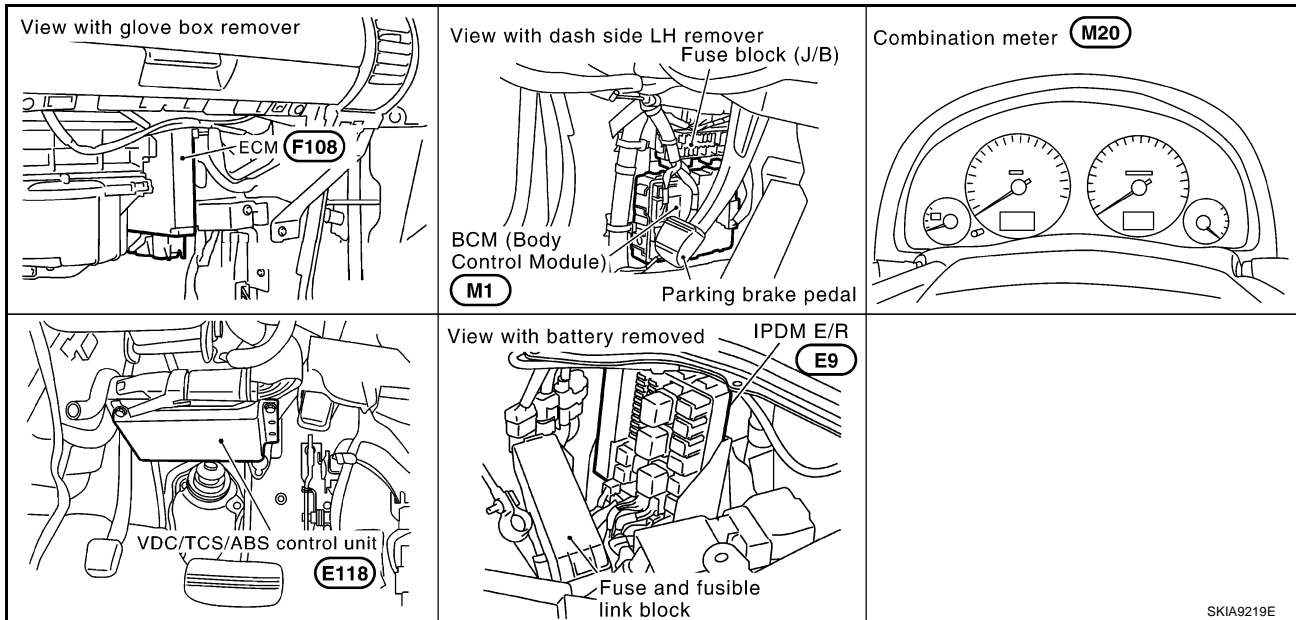| Signals	ECM	TCM	Combina-tion meter	BCM	Steering angle sensor	VDC/TCS/ABS control unit	IPDM E/R
Vehicle speed signal			R			T	
	R	R	T	R			
Sleep request 1 signal			R	T			
Sleep request 2 signal				T			R
Wake up request 1 signal			R	T			
Wake up request 2 signal			R	T			
Door switch signal			R	T			R
Turn indicator signal			R	T			
Seat belt buckle switch signal			T	R			
Oil pressure switch signal			R				T
Buzzer output signal			R	T			
Malfunction indicator lamp signal	T		R				
ASCD SET lamp signal	T		R				
ASCD CRUISE lamp signal	T		R				
Fuel level sensor signal	R		T				
Output shaft revolution signal	R	T					
Turbine revolution signal	R	T					
Front wiper request signal				T			R
Front wiper stop position signal				R			T
Rear window defogger switch signal				T			R
Rear window defogger control signal	R			R			T
Manual mode signal		R	T				
Not manual mode signal		R	T				
Manual mode shift up signal		R	T				
Manual mode shift down signal		R	T				
Manual mode indicator signal		T	R				
Hood switch signal				R			T
Theft warning horn request signal				T			R
Horn chirp signal				T			R
Ignition switch signal				T			R
Steering angle sensor signal					T	R	
Tire pressure signal			R	T			

CAN SYSTEM (TYPE 1)

PFP:23710

System Description

AKS00AIO

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

AKS00AIP

View with glove box remover

ECM F108

VDC/TCS/ABS control unit E118

View with dash side LH remover

Fuse block (J/B)

BCM (Body Control Module) M1

Parking brake pedal

View with battery removed

IPDM E/R E9

Fuse and fusible link block

Combination meter M20

SKIA9219E

Schematic

TKWM0913E

Wiring Diagram - CAN -

AKS00AIR

LAN-CAN-01

■■■□□ : DATA LINE

```
        L  [24H]  L                    L  ▷ A ┐
       F102  M72                               │ NEXT PAGE
                                               │
        R  [25H]  R                    R  ▷ B ┘
```

```
   L              R
  [94]           [86]
  CAN-H          CAN-L
                        ECM
                       (F108)
```
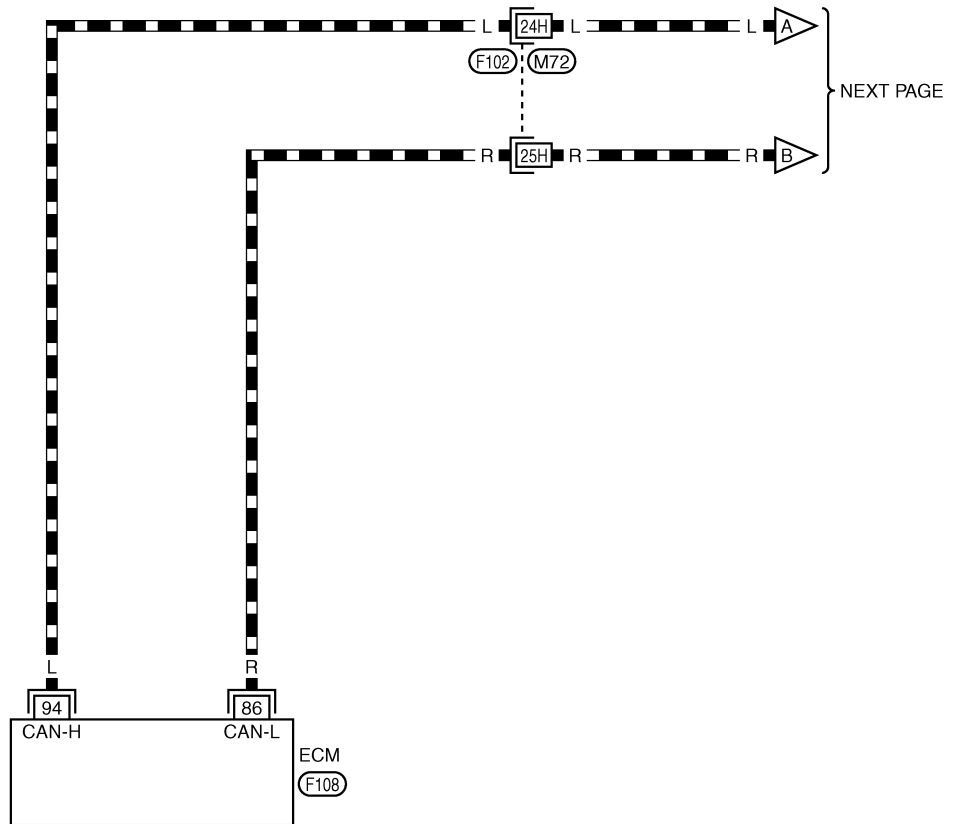
REFER TO THE FOLLOWING.
(F102) -SUPER MULTIPLE
JUNCTION (SMJ)
(F108) -ELECTRICAL UNITS

TKWT0573E

LAN-CAN-02


```
▭▬▬▭ : DATA LINE
```

BCM (BODY CONTROL MODULE) M1

STEERING ANGLE SENSOR M22

CAN-H	CAN-L		CAN-H	CAN-L
39	40		4	5
L	R		L	R

A ◁ L

PRECEDING PAGE

B ◁ R

L ▷ C

NEXT PAGE

R ▷ D

| 6 | 14 | | 28 | 27 |
| L | R | | L | R |

DATA LINK CONNECTOR M8

UNIFIED METER CONTROL UNIT

COMBINATION METER M20
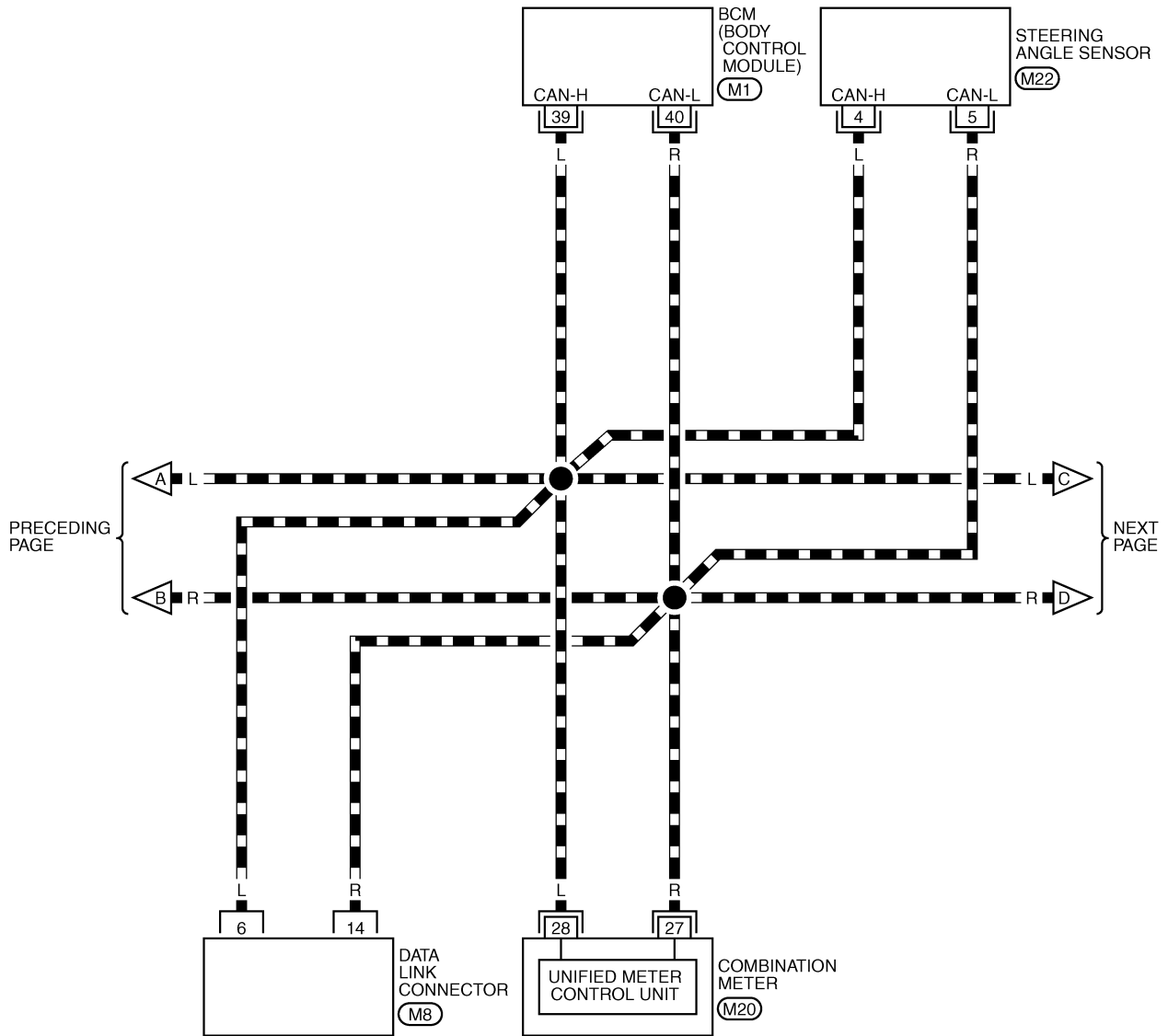
```
┌─────────────────────────────┐
│ 16 15 14 13 12 11 10 9 │  M8
│  8  7  6  5  4  3  2 1 │  W
└─────────────────────────────┘
```

```
┌───────────────────────────────────────────────┐
│ 25 26 27 28 29 30 ▭ 31 32 33 34 35 │  M20
│ 36 37 38 39 40 41 42 43 44 45 46 47 48 │  W
└───────────────────────────────────────────────┘
```

```
┌──────────────┐
│ 3  2  ▭  1 │  M22
│ 8  7  6  5  4 │  W
└──────────────┘
```

REFER TO THE FOLLOWING.
M1 -ELECTRICAL UNITS

TKWM0914E

▭▬▭ : DATA LINE

PRECEDING PAGE

C L — L 58G L

M15 E108

D R — R 59G R

L ... 61 ... CAN-H ... 63 ... CAN-L ... VDC/TCS/ABS CONTROL UNIT ... E118

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

48 ... CAN-H ... 49 ... CAN-L ... E9

| 52 | 51 | 50 | 49 | 48 | 47 | 46 | 45 |
| 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 |

E9
W

H.S.
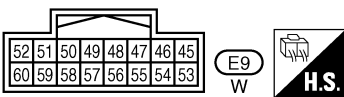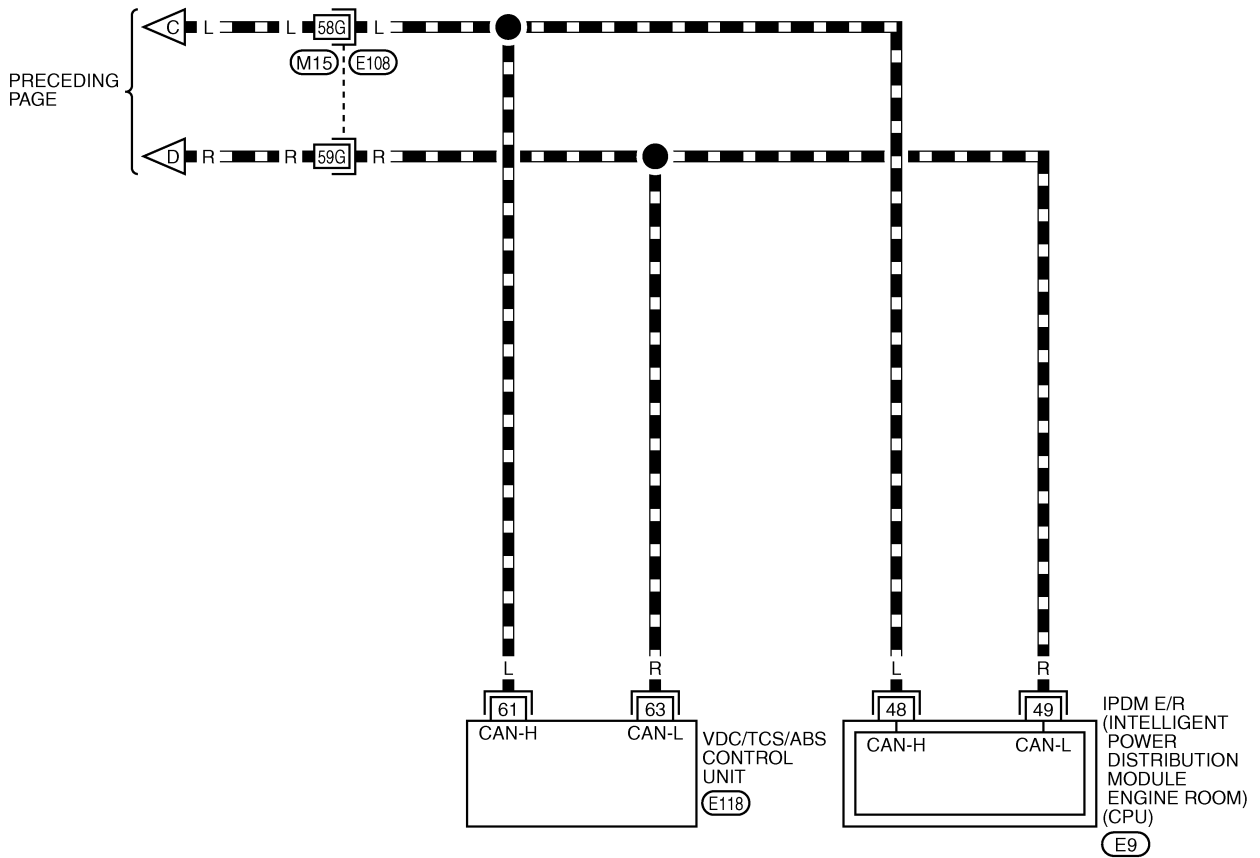
REFER TO THE FOLLOWING.

E108 -SUPER MULTIPLE JUNCTION (SMJ)

E118 -ELECTRICAL UNITS

TKWM0915E

CAN SYSTEM (TYPE 1)

Work Flow

AKS00AIS
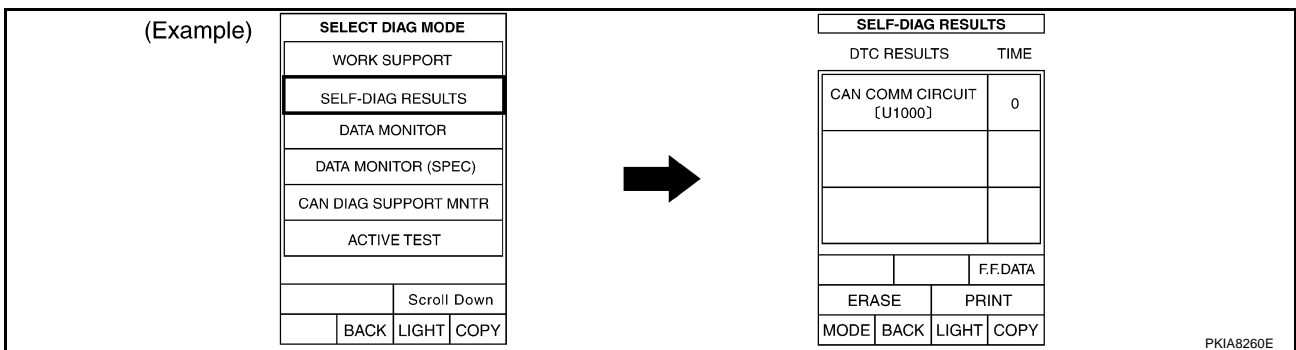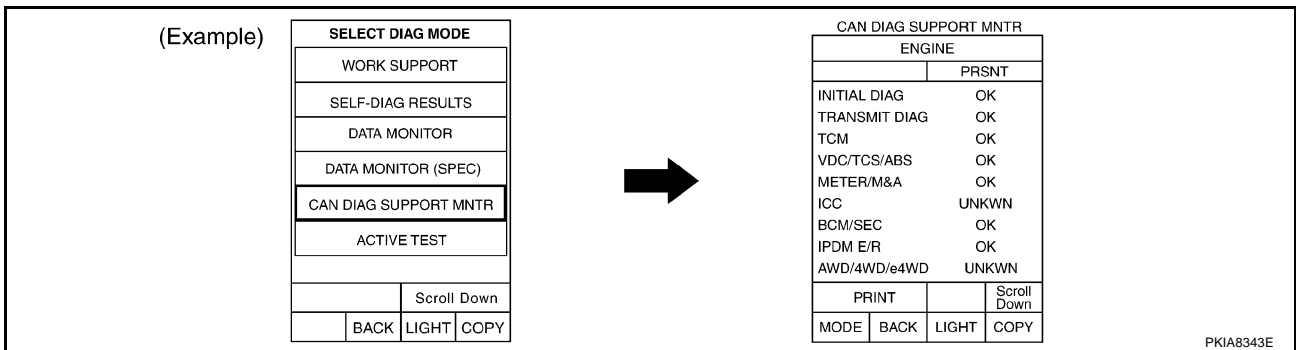
1. When there are no indications of "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".
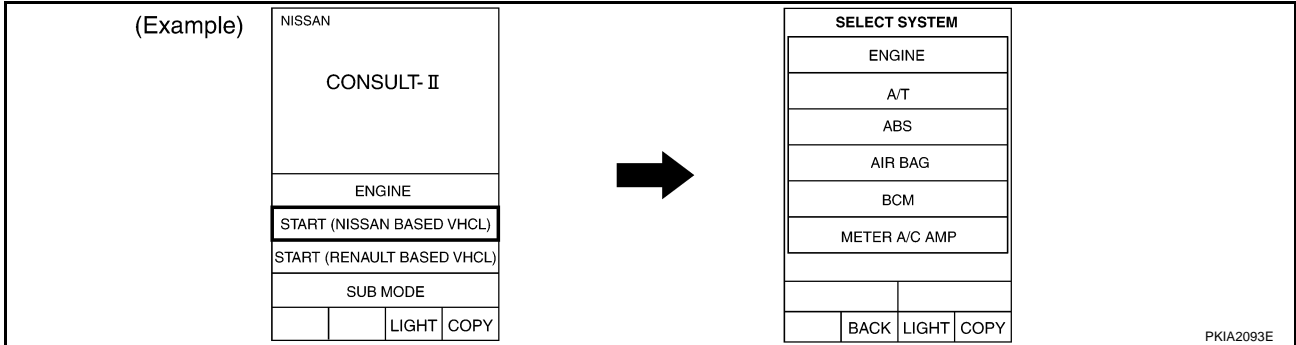
2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.

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

4. Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to LAN-14, "CHECK SHEET" .

5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-14, "CHECK SHEET" .

   NOTE:
   - If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.
   - The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
     So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.

6. According to the check sheet results (example), start inspection. Refer to LAN-16, "CHECK SHEET RESULTS (EXAMPLE)" .

CHECK SHEET

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

Check sheet table

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

Symptoms :

Attach copy of
SELECT SYSTEM

Attach copy of
SELECT SYSTEM

PKIA7913E

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
BCM
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
IPDM E/R
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
BCM
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
IPDM E/R
CAN DIAG SUPPORT
MNTR

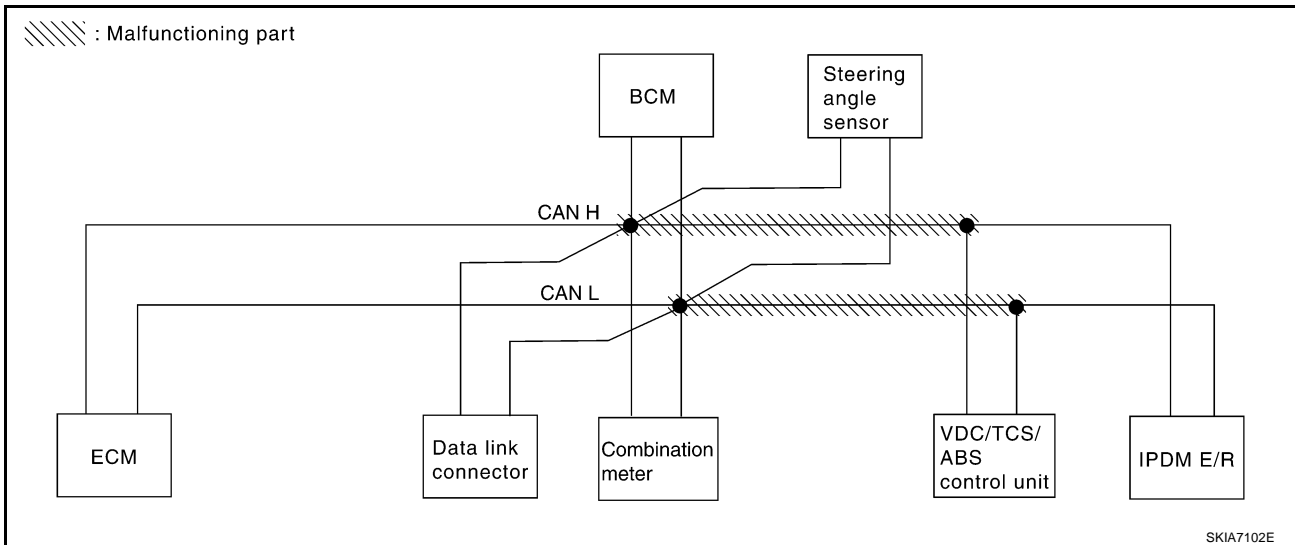PKIA7914E

LAN

L

M

CHECK SHEET RESULTS (EXAMPLE)

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

Case1

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

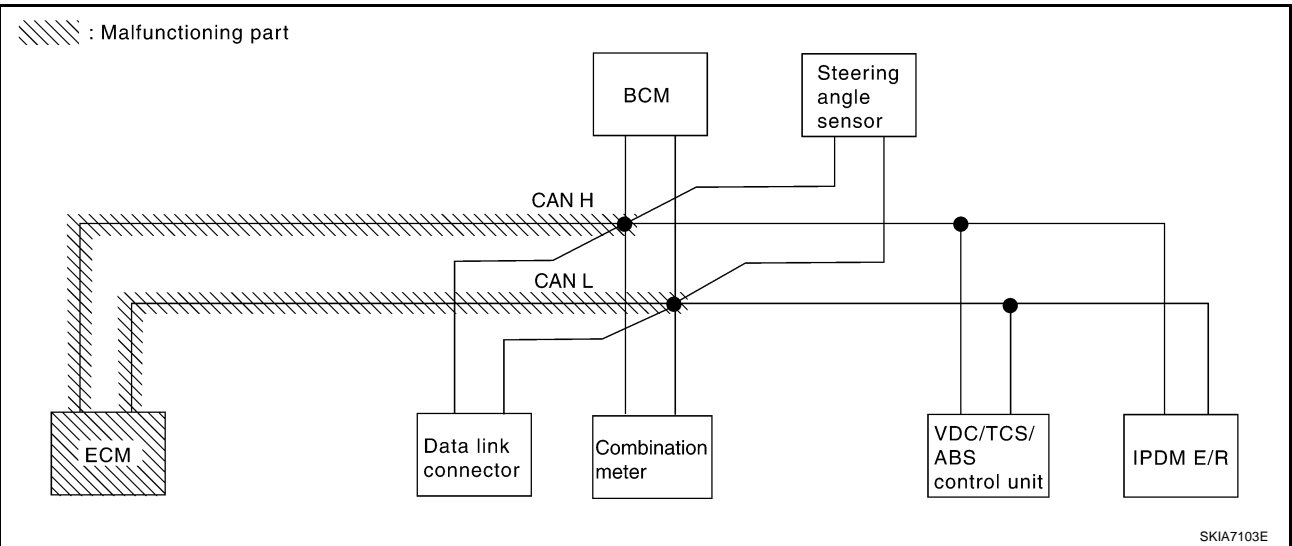| SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
					Receive diagnosis				
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7915E

: Malfunctioning part

SKIA7102E

Case2

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

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7916E

: Malfunctioning part

SKIA7103E

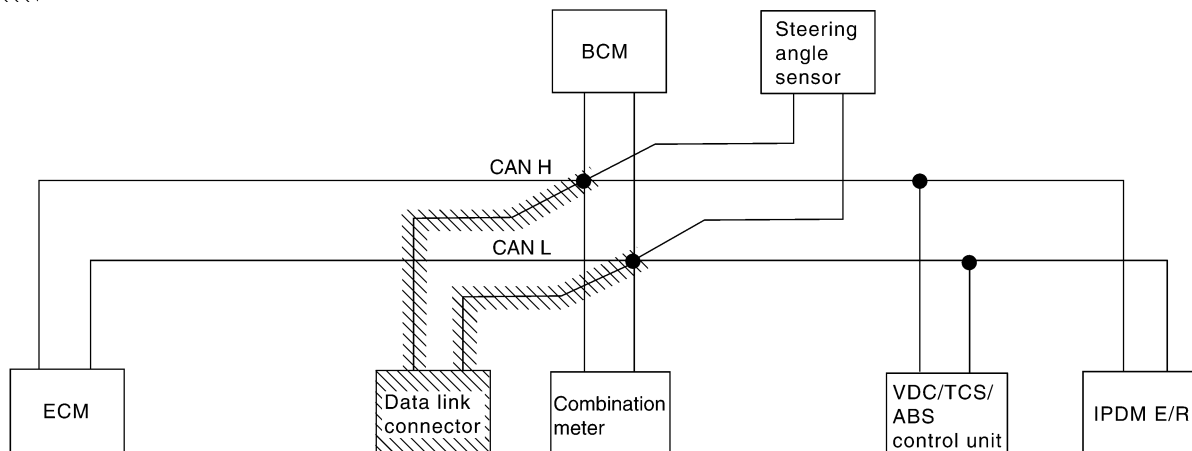## Case3

Check data link connector circuit. Refer to LAN-26, "Data Link Connector Circuit Check" .

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7917E

PKIA4658E

CAN SYSTEM (TYPE 1)

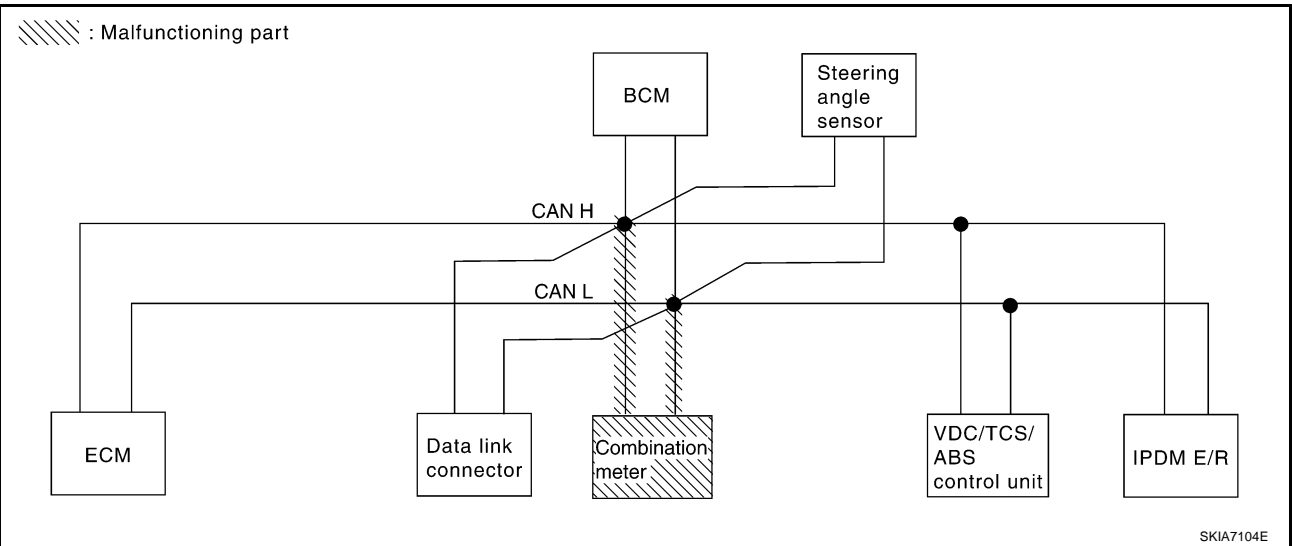## Case4

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

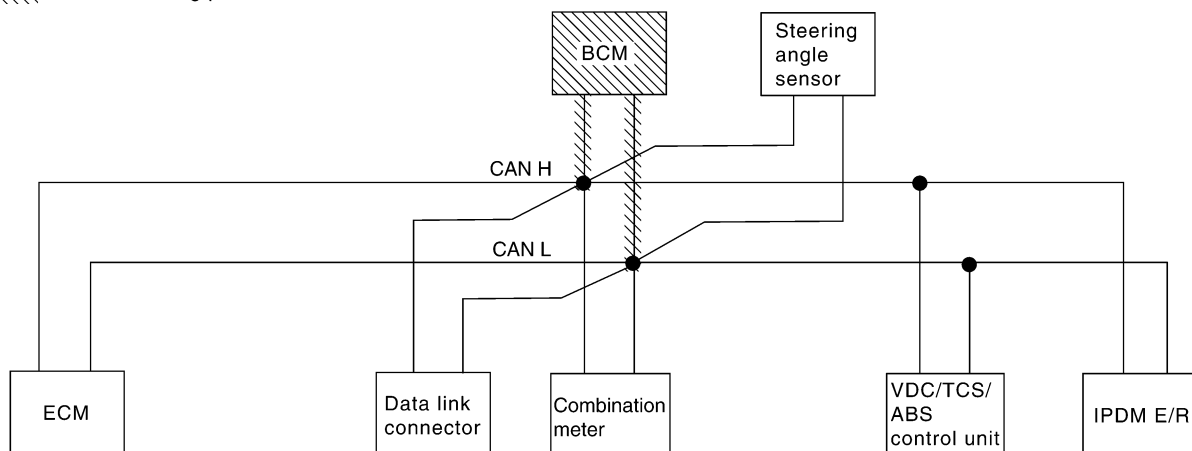| SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR							
		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7918E

: Malfunctioning part

SKIA7104E

Case5

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

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7919E

: Malfunctioning part

SKIA7105E

Case6

Check steering angle sensor circuit. Refer to .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR							
		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7920E

SKIA7106E

## Case7

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

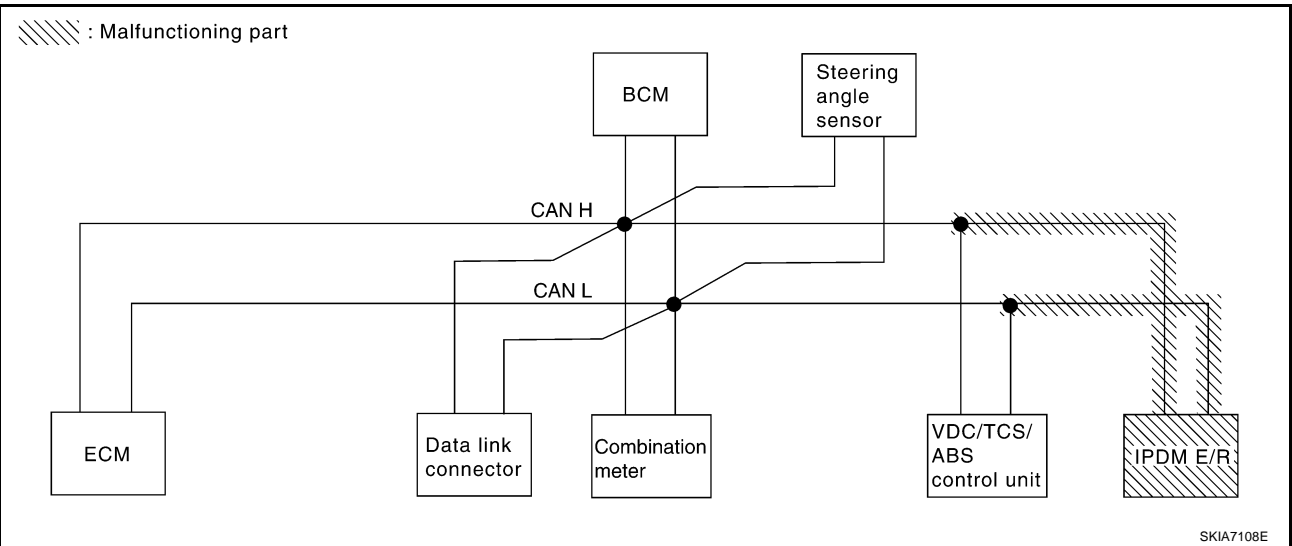| SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7921E

\\\\\ : Malfunctioning part
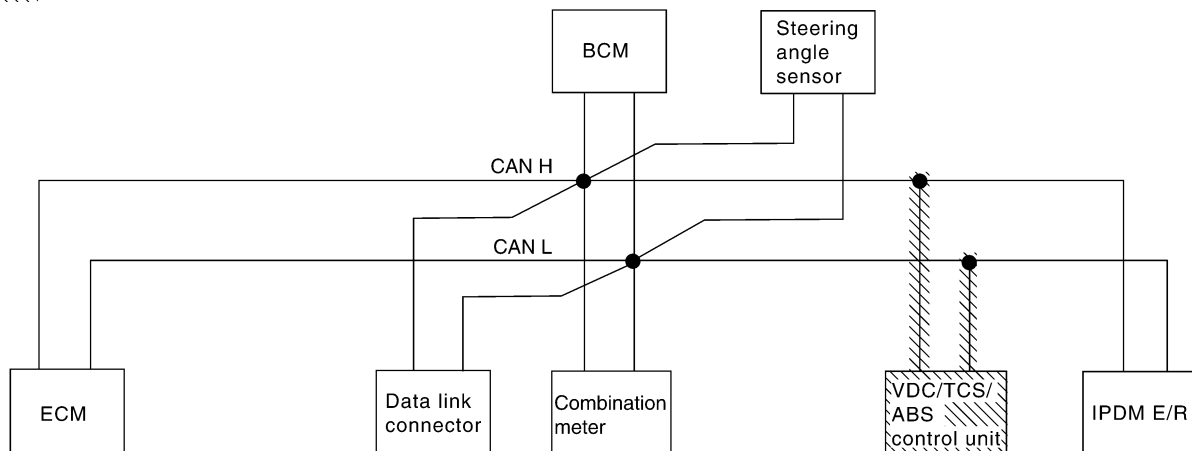
SKIA7107E

Case8

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

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR							
		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7922E

SKIA7108E

Case9

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

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7923E

Case10

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

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR					
				Receive diagnosis					
				ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	—	UNKWN	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7924E

Case11

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

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR							
	Initial diagnosis	Transmit diagnosis	Receive diagnosis						
			ECM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R	
ENGINE	—	NG	UNKWN	—	UNKWN✓	UNKWN	—	UNKWN✓	UNKWN
BCM	No indication	NG	UNKWN	UNKWN	UNKWN✓	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	UNKWN	—	—	—

PKIA7925E

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

AKS00AIT

1. CHECK CONNECTOR

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

<u>OK or NG</u>

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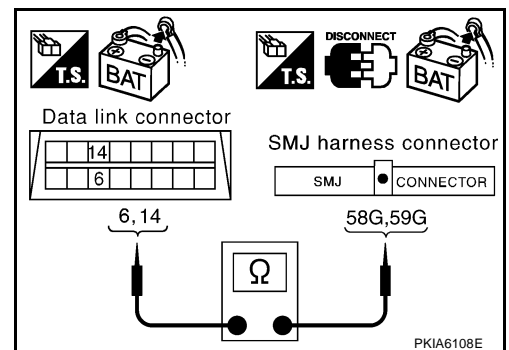NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect harness connector M15.
2. Check continuity between data link connector M8 terminals 6 (L), 14 (R) and harness connector M15 terminals 58G (L), 59G (R).

       6 (L) - 58G (L)   **: Continuity should exist.**
       14 (R) - 59G (R)   **: Continuity should exist.**

<u>OK or NG</u>

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

PKIA6108E

3. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect VDC/TCS/ABS control unit connector.
2. Check continuity between harness connector E108 terminals 58G (L), 59G (R) and VDC/TCS/ABS control unit harness connector E118 terminals 61 (L), 63 (R).

58G (L) - 61 (L)   **: Continuity should exist.**

59G (R) - 63 (R)   **: Continuity should exist.**

OK or NG

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

NG   >> Repair harness.
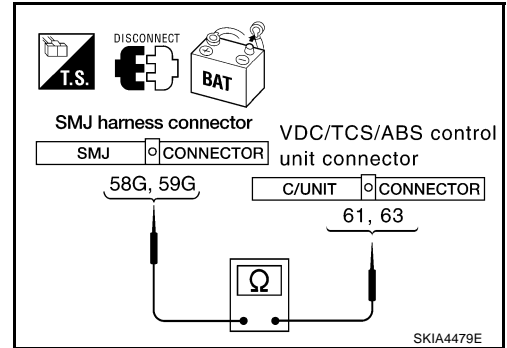
ECM Circuit Check

AKS00AIU

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the negative battery terminal.
3. Check following terminals and connector for damage, bend and loose connection (control module side and harness side).
– ECM connector
– Harness connector F102
– Harness connector M72

OK or NG

OK   >> GO TO 2.

NG   >> Repair terminal or connector.

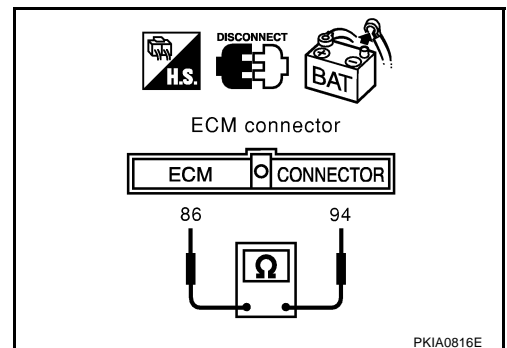## 2. CHECK HARNESS FOR OPEN CIRCUIT

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

94 (L) - 86 (R)   **: Approx. 108 - 132Ω**

OK or NG

OK   >> Replace ECM.

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

Data Link Connector Circuit Check

AKS00AIV

1. CHECK CONNECTOR

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

OK or NG

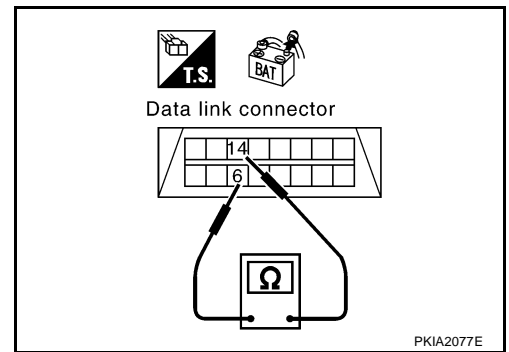OK   >> GO TO 2.

NG   >> Repair terminal or connector.

CAN SYSTEM (TYPE 1)

A

2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M8 terminals 6 (L) and 14 (R).

6 (L) – 14 (R)   **: Approx. 54 – 66Ω**

B

OK or NG

OK   >> Diagnose again. Refer to <u>LAN-13, "Work Flow"</u> .
NG   >> Repair harness between data link connector and combination meter.

C

D

Combination Meter Circuit Check
AKS00AIW

E

1. CHECK CONNECTOR

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

F

OK or NG

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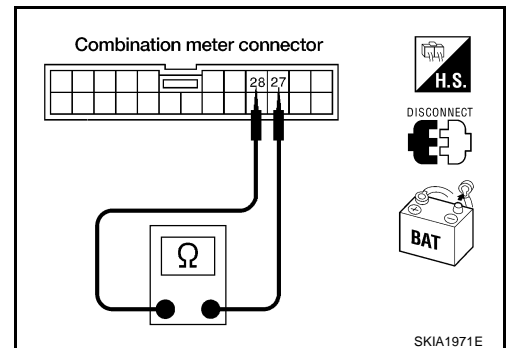NG   >> Repair terminal or connector.

G

H

2. CHECK HARNESS FOR OPEN CIRCUIT

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

I

28 (L) - 27 (R)   **: Approx. 54 - 66Ω**

J

OK or NG

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

LAN

L

BCM Circuit Check
AKS00AIX

M

1. CHECK CONNECTOR

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

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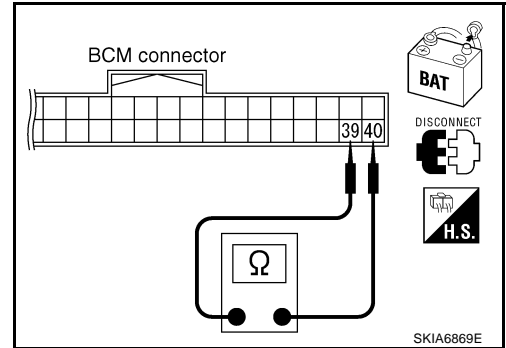
OK   >> GO TO 2.
NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect BCM connector.
2. Check resistance between BCM harness connector M1 terminals 39 (L) and 40 (R).

   39 (L) - 40 (R)   **: Approx. 54 - 66Ω**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-15, "Removal and Installation of BCM"</u> .

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

SKIA6869E

Steering Angle Sensor Circuit Check

AKS00AIY

1. CHECK CONNECTOR

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

OK or NG

  OK   >> GO TO 2.

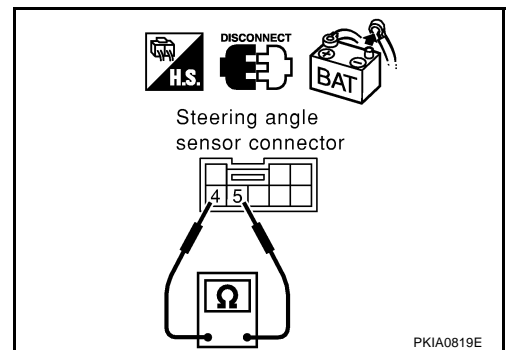 NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

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

   4 (L) - 5 (R)   **: Approx. 54 - 66Ω**

OK or NG

  OK   >> Replace steering angle sensor.

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

PKIA0819E

VDC/TCS/ABS Control Unit Circuit Check

AKS00AIZ

1. CHECK CONNECTOR

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

OK or NG

  OK   >> GO TO 2.

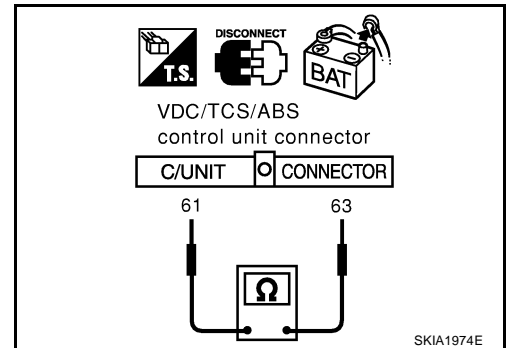 NG   >> Repair terminal or connector.

A

2. CHECK HARNESS FOR OPEN CIRCUIT

B

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

    61 (L) - 63 (R)   **: Approx. 54 - 66Ω**

C

OK or NG

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

D

E

IPDM E/R Circuit Check

AKS00AJ0

1. CHECK CONNECTOR

F

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

G

OK or NG

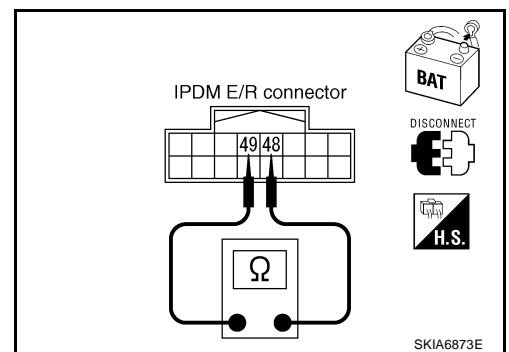OK   >> GO TO 2.
NG   >> Repair terminal or connector.

H

2. CHECK HARNESS FOR OPEN CIRCUIT

I

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

J

    48 (L) - 49 (R)   **: Approx. 108 - 132Ω**

LAN

OK or NG

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

L

M

CAN Communication Circuit Check

1. CHECK CONNECTOR

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

OK or NG

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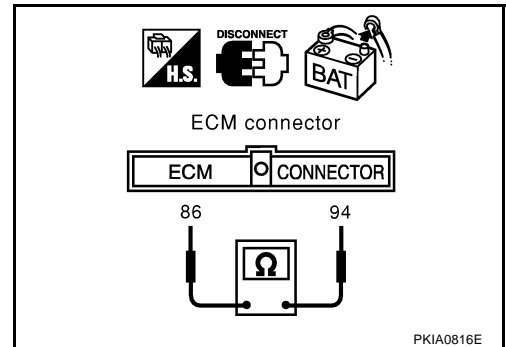NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

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

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

OK or NG

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

PKIA0816E

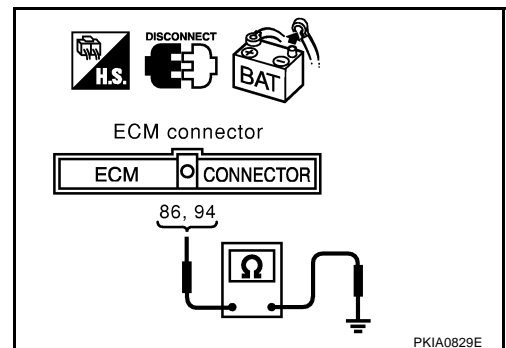## 3. CHECK HARNESS FOR SHORT CIRCUIT

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

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

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

OK or NG

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

PKIA0829E

CAN SYSTEM (TYPE 1)

4. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect following connectors.
– Combination meter connector
– BCM connector
– Steering angle sensor connector
– Harness connector M15
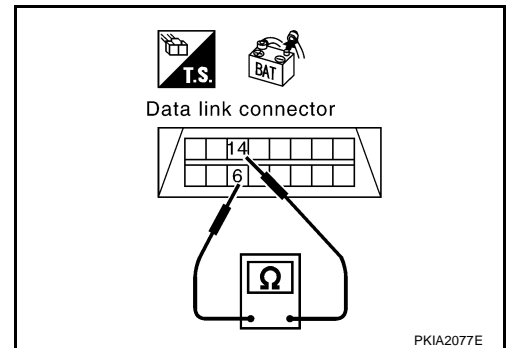2. Check continuity between data link connector M8 terminals 6 (L) and 14 (R).

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

OK or NG

OK   >> GO TO 5.
NG   >> Check the following harnesses. If any harness is damaged, repair the harness.

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

Data link connector

PKIA2077E

5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M8 terminals 6 (L), 14 (R) and ground.

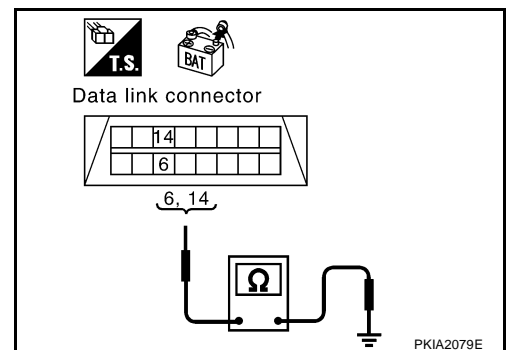**6 (L) - Ground**   **: Continuity should not exist.**
14 (R) - Ground   **: Continuity should not exist.**

OK or NG

OK   >> GO TO 6.
NG   >> Check the following harnesses. If any harness is damaged, repair the harness.

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

Data link connector

6, 14

PKIA2079E

6. CHECK HARNESS FOR SHORT CIRCUIT

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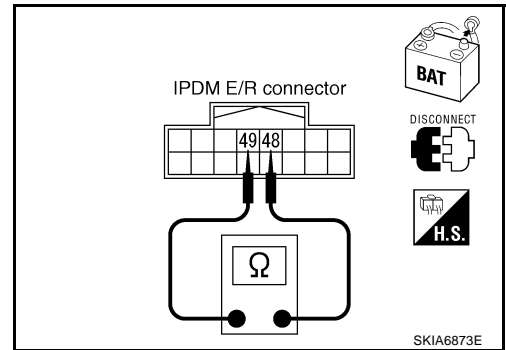2. Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (R).

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

OK or NG
  OK   >> GO TO 7.
  NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
- Harness between harness connector E108 and VDC/TCS/ABS control unit
- Harness between harness connector E108 and IPDM E/R

SKIA6873E

7. CHECK HARNESS FOR SHORT CIRCUIT

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

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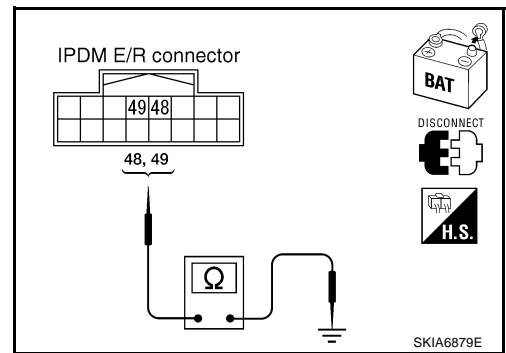
    49 (R) - Ground   **: Continuity should not exist.**

OK or NG
  OK   >> GO TO 8.
  NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
- Harness between harness connector E108 and VDC/TCS/ABS control unit
- Harness between harness connector E108 and IPDM E/R

SKIA6879E

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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

OK or NG
  OK   >> Connect all the connectors and diagnose again. Refer to LAN-13, "Work Flow" .
  NG   >> Replace ECM and/or IPDM E/R.

IPDM E/R Ignition Relay Circuit Check

AKS00AJ2

Check the following. If no malfunction is found, replace the IPDM E/R.
- IPDM E/R power supply circuit. Refer to PG-27, "IPDM E/R Power/Ground Circuit Inspection" .
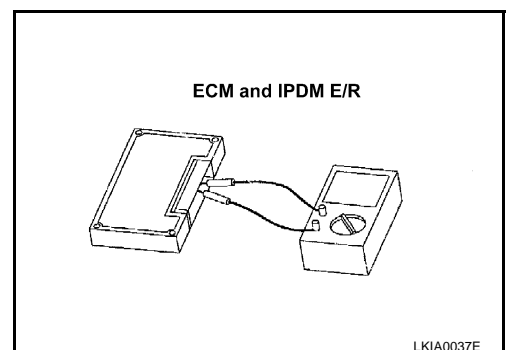- Ignition power supply circuit. Refer to PG-11, "IGNITION POWER SUPPLY — IGNITION SW. IN "ON" AND/OR "START"" .

Component Inspection

AKS00AJ3

ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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

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

ECM and IPDM E/R

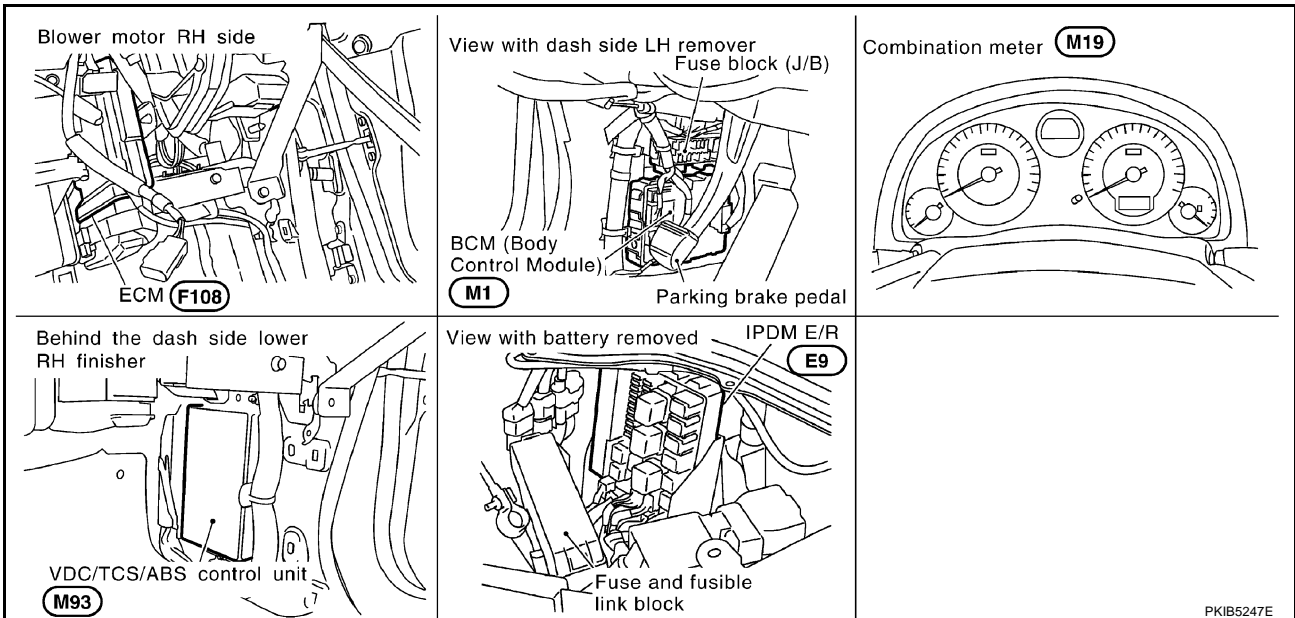LKIA0037E

CAN SYSTEM (TYPE 2)

PFP:23710

System Description

AKS00AJ4

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

AKS00AJ5

PKIB5247E

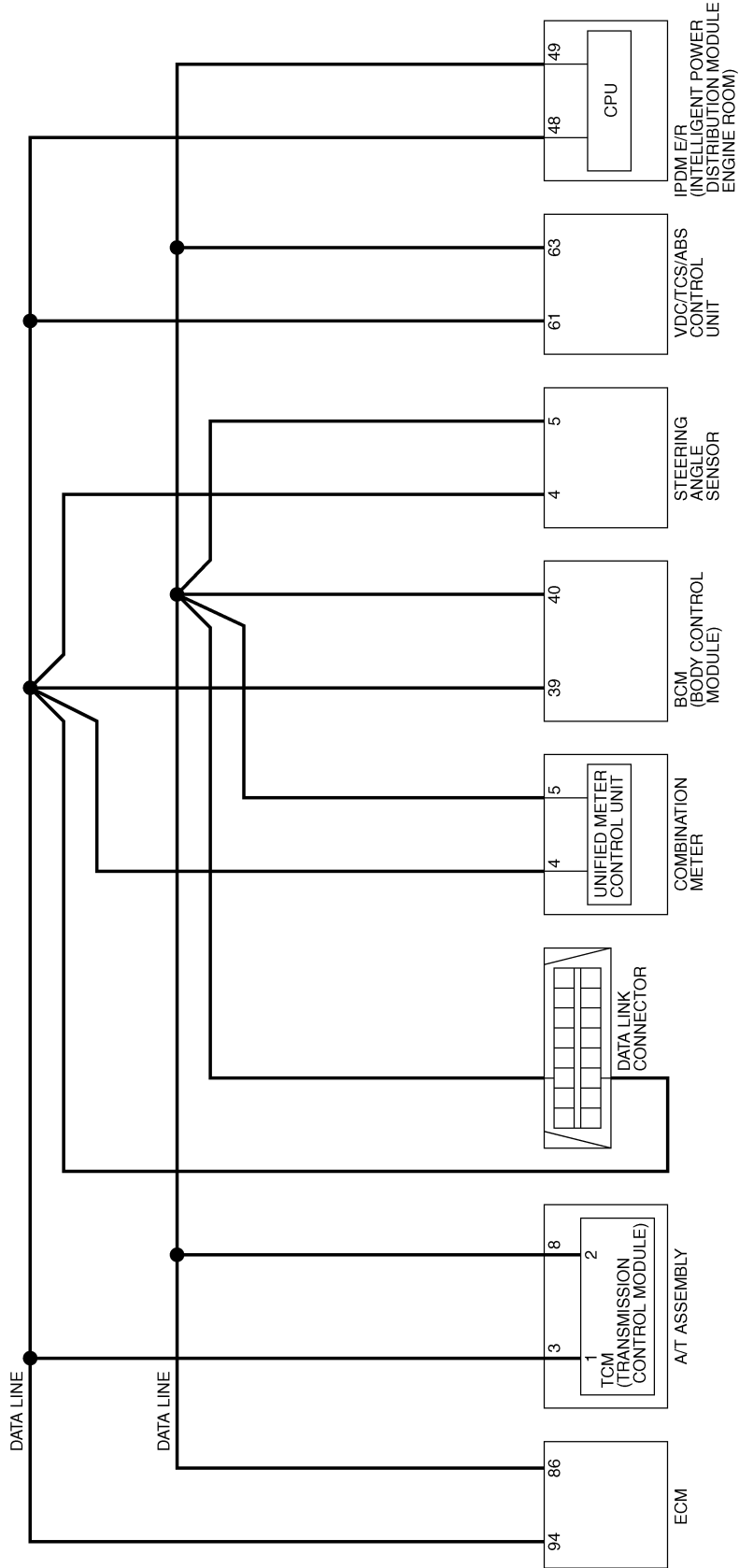## Schematic

AKS00AJ6

TKWM2234E

Wiring Diagram - CAN -

AKS00AJ7

LAN-CAN-01

▪▭▪▭▪ : DATA LINE

L — 24H — L — L ▷ A
(F102) (M72)

NEXT PAGE

P — 25H — P — P ▷ B

L
94
CAN-H

P
86
CAN-L

ECM
(F108)

L
3
BR
1
CAN-H

P
8
L/Y
2
CAN-L

TCM
(TRANSMISSION
CONTROL
MODULE)
(F502)

A/T
ASSEMBLY
(F40)

1	2	3	4	5
6	7	8	9	10

(F40)
DGY

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

★
(F502)
GY
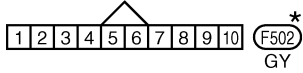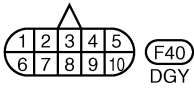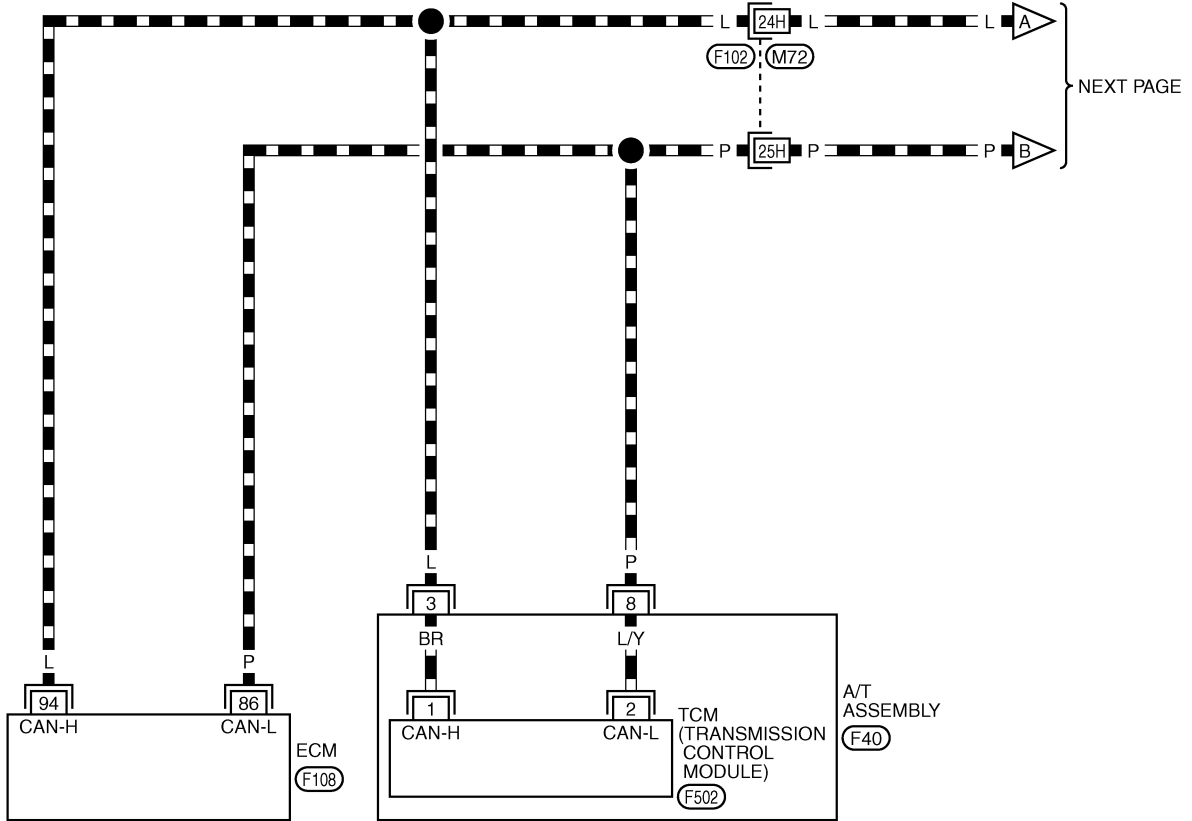
★: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.
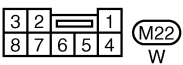
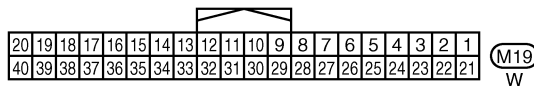REFER TO THE FOLLOWING.
(F102) -SUPER MULTIPLE
JUNCTION (SMJ)
(F108) -ELECTRICAL UNITS

TKWM2235E

LAN-CAN-02

⬛▬⬛ : DATA LINE

BCM
(BODY
CONTROL
MODULE)
(M1)

CAN-H 39   CAN-L 40

STEERING
ANGLE SENSOR
(M22)

CAN-H 4   CAN-L 5

L   P   L   P

◁A L   L ▷C

PRECEDING
PAGE

NEXT
PAGE

◁B P   P ▷D

L 6   P 14   L 4   P 5

DATA
LINK
CONNECTOR
(M8)

UNIFIED METER
CONTROL UNIT

COMBINATION
METER
(M19)

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

(M8)
W

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

(M19)
W

3	2		1
8	7	6	5	4

(M22)
W
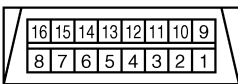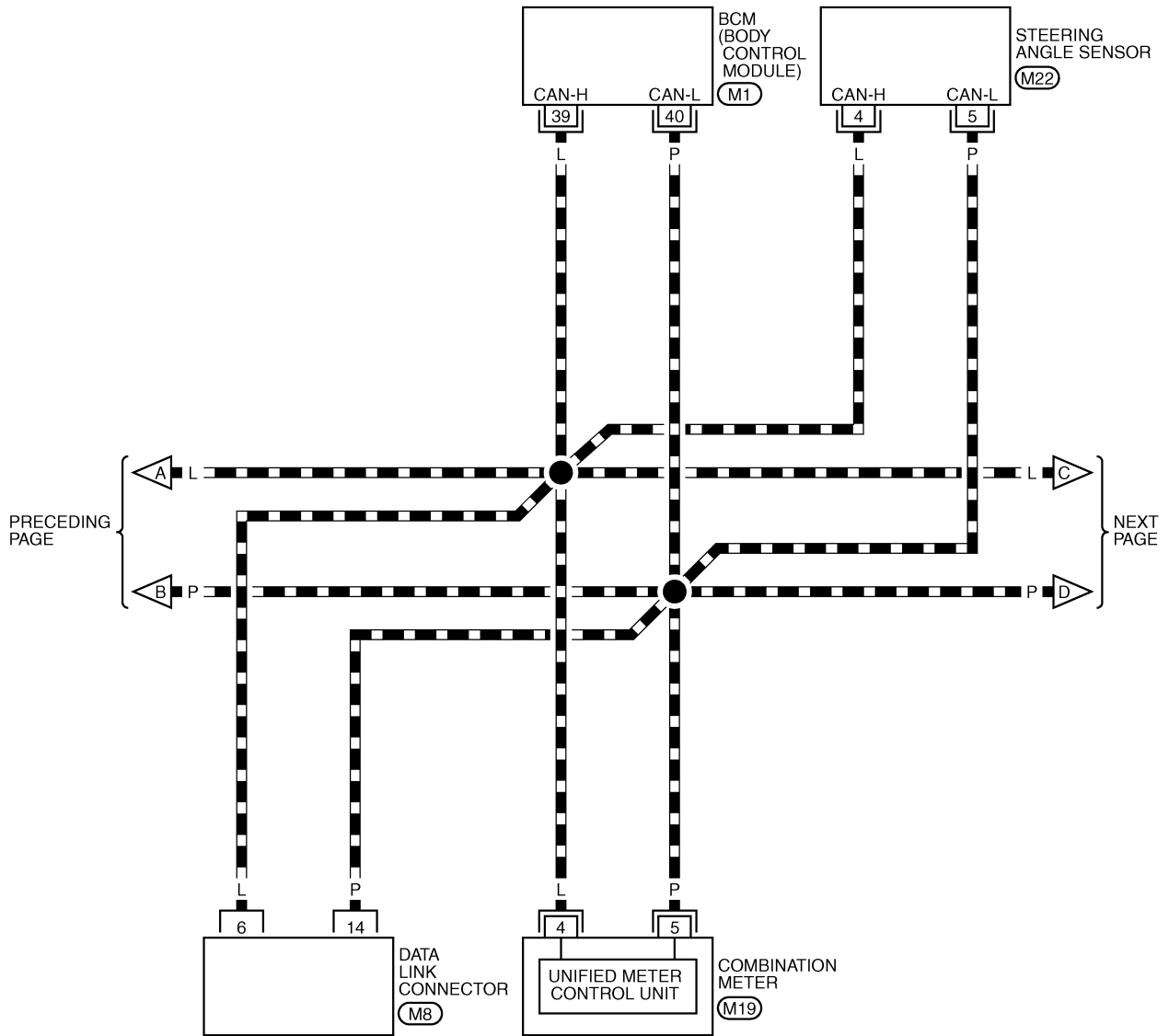
REFER TO THE FOLLOWING.
(M1) -ELECTRICAL UNITS

TKWM2236E

LAN-CAN-03

: DATA LINE

PRECEDING
PAGE

C L

D P

L M15 P
69G 70G
E108
L P

61 63
CAN-H CAN-L VDC/TCS/ABS
CONTROL
UNIT
M93

48 49 IPDM E/R
(INTELLIGENT
POWER
CAN-H CAN-L DISTRIBUTION
MODULE
ENGINE ROOM)
(CPU)
E9

52 51 50 49 48 47 46 45 E9 H.S.
60 59 58 57 56 55 54 53 W
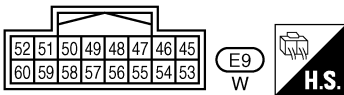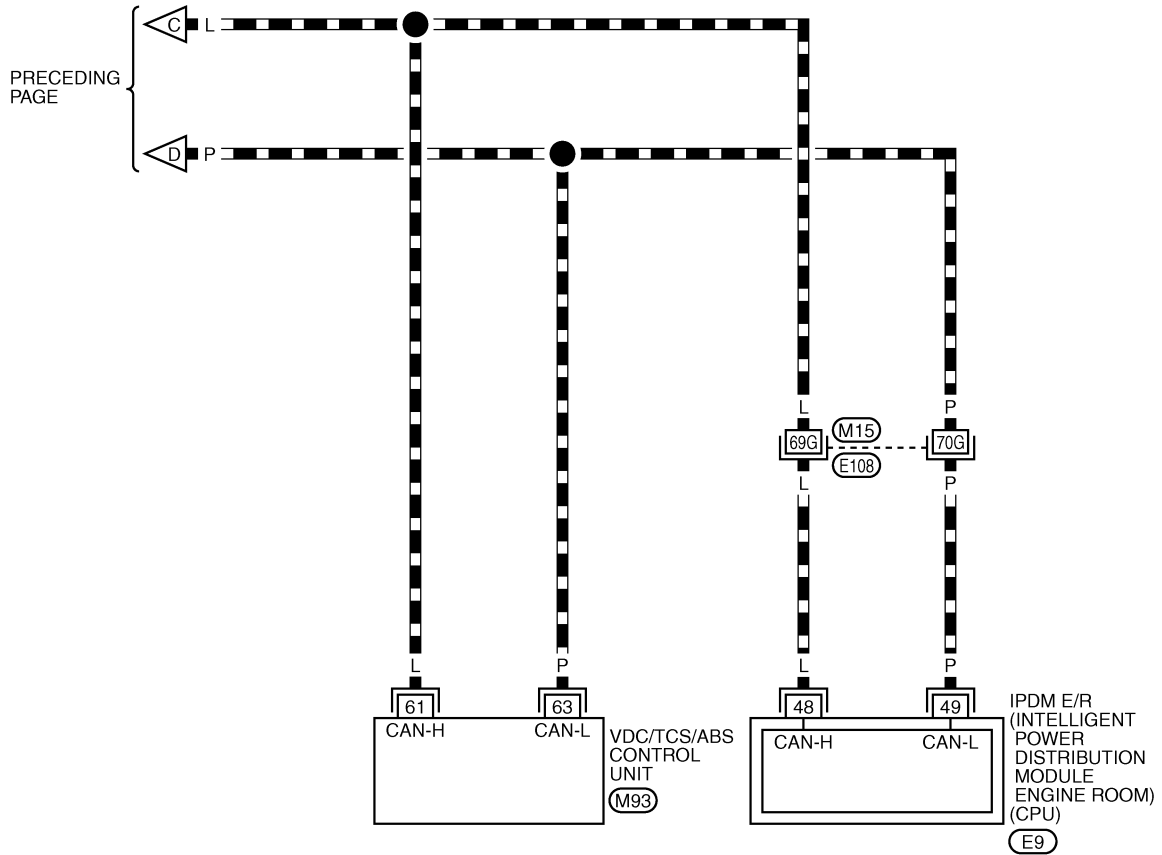
REFER TO THE FOLLOWING.
E108 -SUPER MULTIPLE
JUNCTION (SMJ)
M93 -ELECTRICAL UNITS

TKWM2237E

Work Flow

AKS00AJ8

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

PKIA2093E

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

PKIA8260E

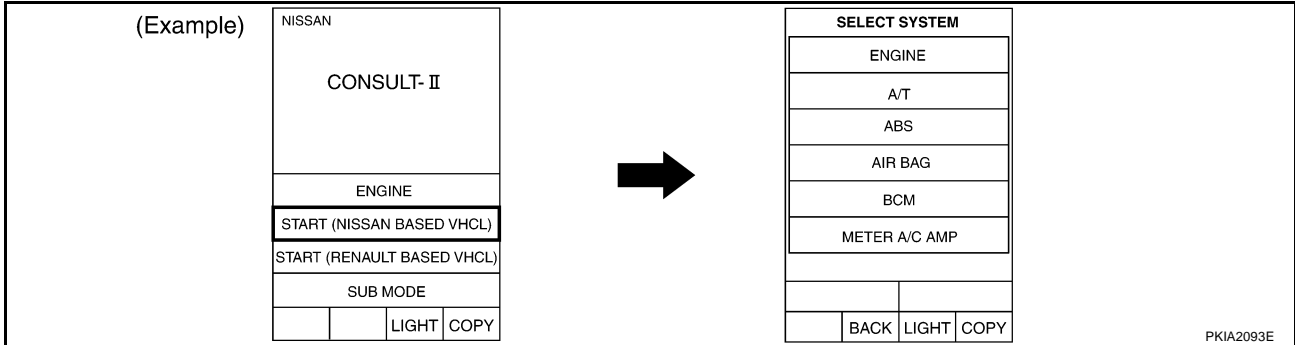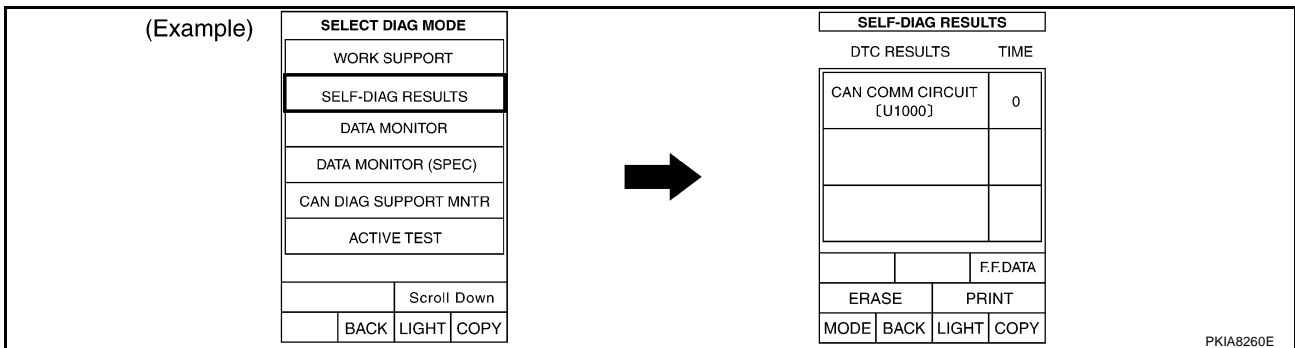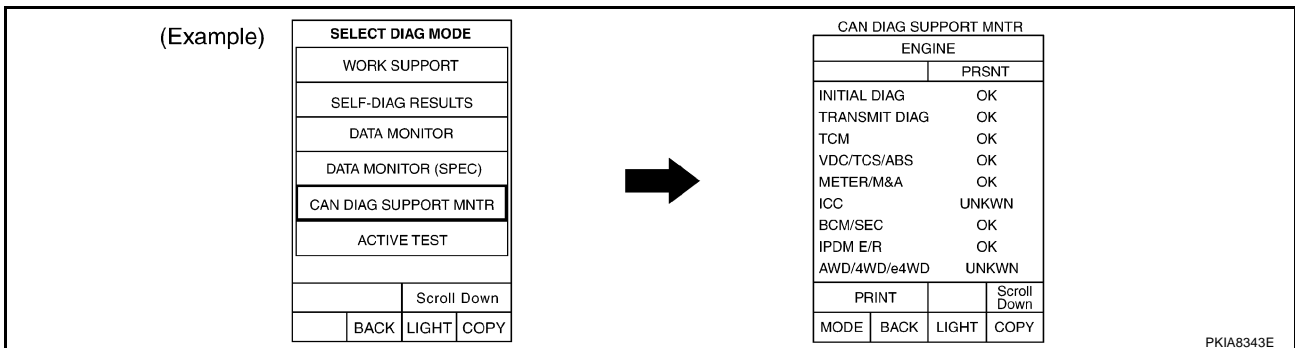3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.

PKIA8343E

4. Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to LAN-39, "CHECK SHEET" .

5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-39, "CHECK SHEET" .

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

    ● The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
    So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.

6. According to the check sheet results (example), start inspection. Refer to LAN-41, "CHECK SHEET RESULTS (EXAMPLE)" .

CHECK SHEET

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

Check sheet table

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

Symptoms :

Attach copy of
SELECT SYSTEM

Attach copy of
SELECT SYSTEM

PKIA7898E

Attach copy of
ENGINE
SELF-DIAG RESULTS

Attach copy of
A/T
SELF-DIAG RESULTS

Attach copy of
BCM
SELF-DIAG RESULTS

Attach copy of
ABS
SELF-DIAG RESULTS

Attach copy of
IPDM E/R
SELF-DIAG RESULTS

Attach copy of
ENGINE
CAN DIAG SUPPORT
MNTR

Attach copy of
A/T
CAN DIAG SUPPORT
MNTR

Attach copy of
BCM
CAN DIAG SUPPORT
MNTR

Attach copy of
ABS
CAN DIAG SUPPORT
MNTR

Attach copy of
IPDM E/R
CAN DIAG SUPPORT
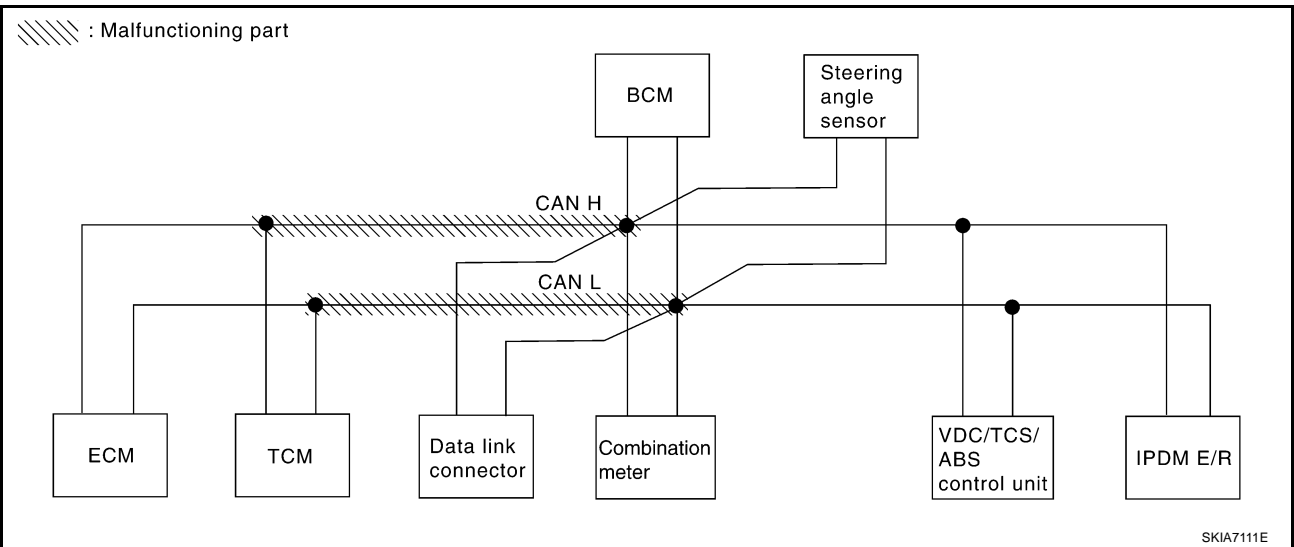MNTR

PKIA7899E

CHECK SHEET RESULTS (EXAMPLE)

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

Case1

Check harness between TCM and data link connector. Refer to LAN-52, "Inspection Between TCM and Data Link Connector Circuit" .

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

PKIA7900E

: Malfunctioning part

BCM

Steering angle sensor

CAN H

CAN L

ECM   TCM   Data link connector   Combination meter   VDC/TCS/ABS control unit   IPDM E/R
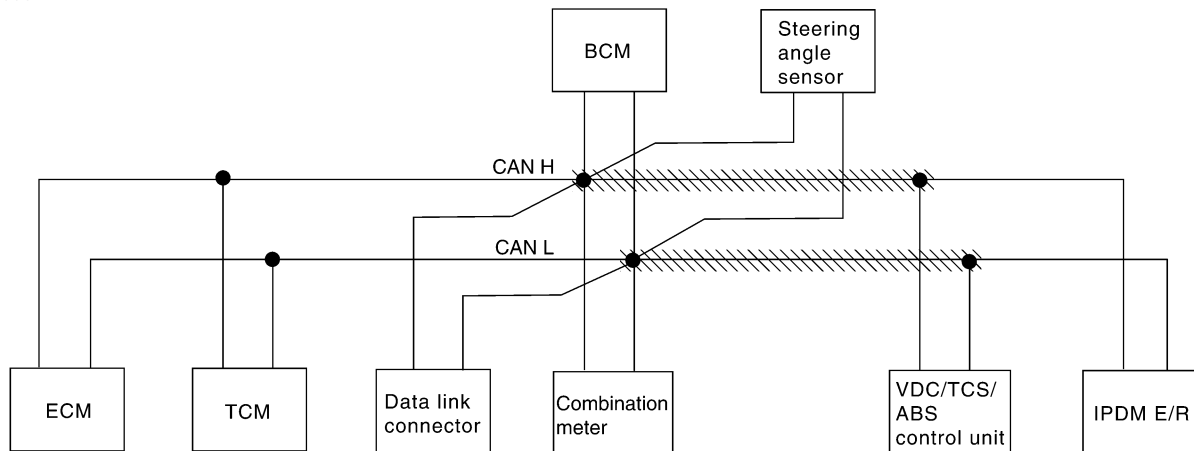
SKIA7111E

Case2

Check harness between data link connector and VDC/TCS/ABS control unit. Refer to LAN-53, "Inspection Between Data Link Connector and VDC/TCS/ABS Control Unit Circuit" .

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

PKIA7901E

: Malfunctioning part

SKIA7112E

Case3

Check ECM circuit. Refer to LAN-53, "ECM Circuit Inspection" .

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

PKIA7902E

\\\\\ : Malfunctioning part

CAN H

CAN L

BCM

Steering angle sensor

ECM

TCM

Data link connector

Combination meter

VDC/TCS/ ABS control unit

IPDM E/R

SKIA7113E

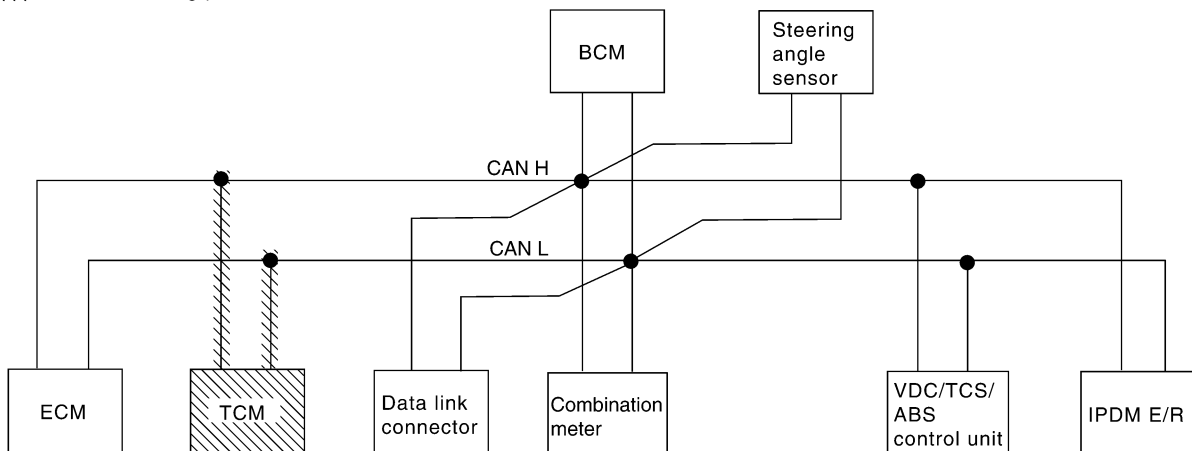## Case4

Check TCM circuit. Refer to LAN-54, "TCM Circuit Inspection" .

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

PKIA7903E

\\\\\ : Malfunctioning part

SKIA7114E

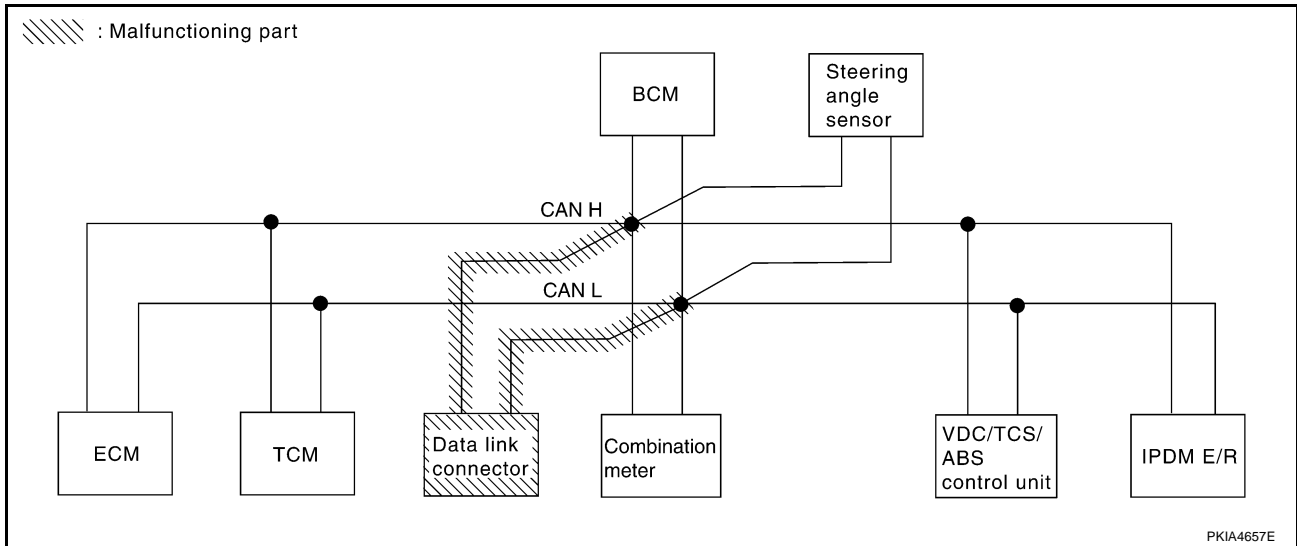## Case5

Check data link connector circuit. Refer to LAN-54, "Data Link Connector Circuit Inspection" .

SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR						
				Receive diagnosis						
				ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN
A/T	—	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—
BCM	No indication ✓	NG	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication ✓	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—

PKIA7904E

: Malfunctioning part

BCM

Steering angle sensor

CAN H

CAN L

ECM

TCM

Data link connector
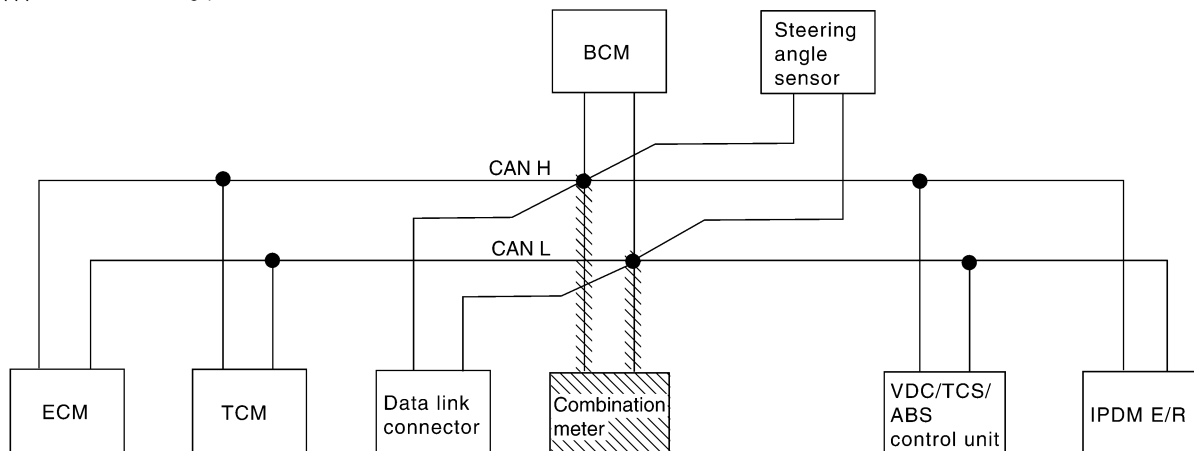
Combination meter

VDC/TCS/ABS control unit

IPDM E/R

PKIA4657E

Case6

Check combination meter circuit. Refer to LAN-55, "Combination Meter Circuit Inspection" .

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

PKIA7905E

SKIA7115E

CAN SYSTEM (TYPE 2)

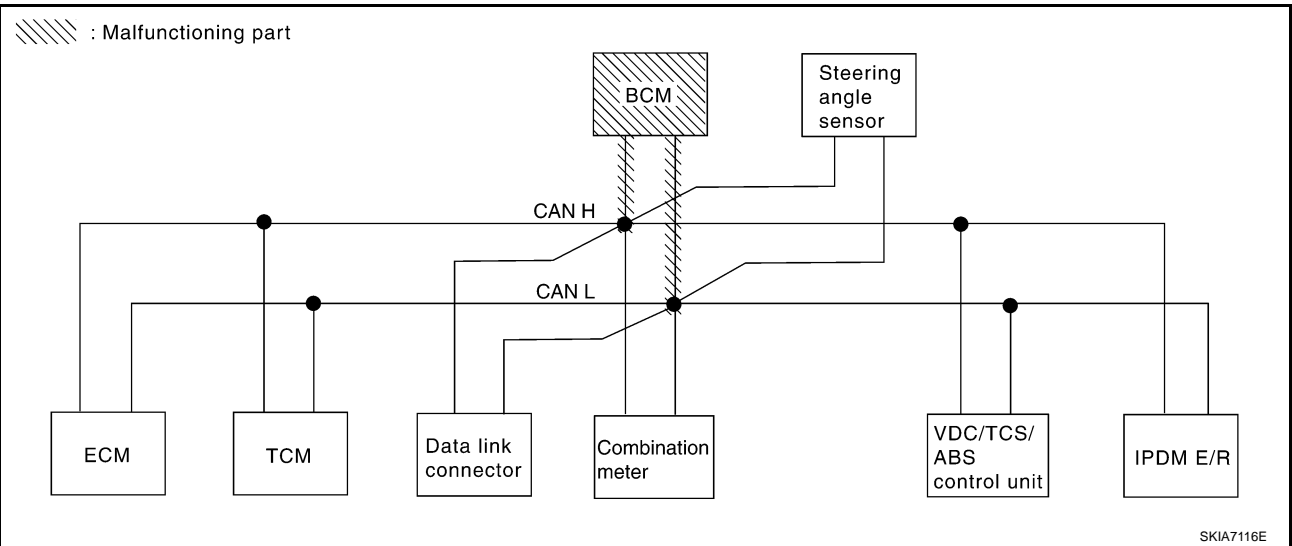## Case7

Check BCM circuit. Refer to LAN-55, "BCM Circuit Inspection" .

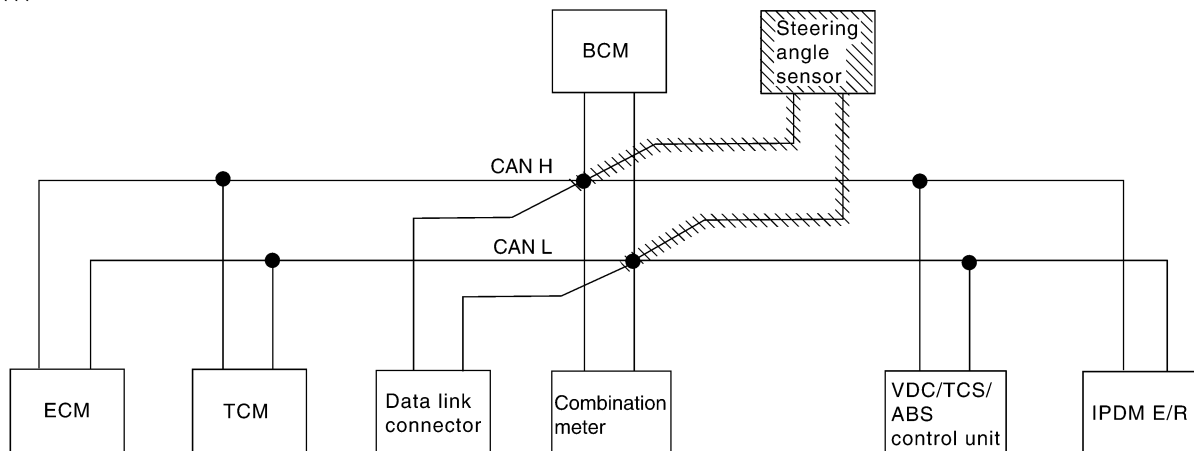| SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR						
				Receive diagnosis						
				ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	UNKWN✓	—	UNKWN	UNKWN
A/T	—	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—
BCM	No indication✓	NG	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN✓	—	—	—

PKIA7906E

: Malfunctioning part

SKIA7116E

LAN-47

Case8

Check steering angle sensor circuit. Refer to LAN-56, "Steering Angle Sensor Circuit Inspection" .

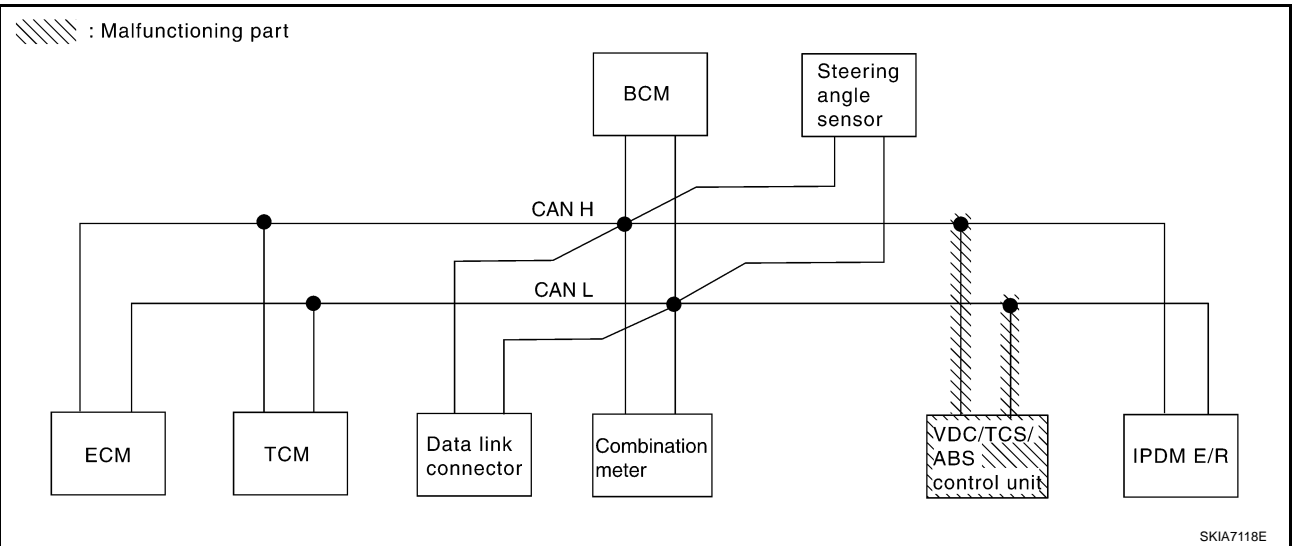| SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR						
				Receive diagnosis						
				ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN
A/T	—	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—
BCM	No indication	NG	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—

PKIA7907E

: Malfunctioning part

SKIA7117E

Case9

Check VDC/TCS/ABS control unit circuit. Refer to LAN-56, "VDC/TCS/ABS Control Unit Circuit Inspection" .

| SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	CAN DIAG SUPPORT MNTR							
				Receive diagnosis							
				ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	—	NG	UNKWN	—	UNKWN	UNKWN	UNKWN	—	UNKWN	UNKWN
A/T	—	NG	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—
BCM	No indication	NG	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—

PKIA7908E

: Malfunctioning part

SKIA7118E

Case10

Check IPDM E/R circuit. Refer to LAN-57, "IPDM E/R Circuit Inspection" .

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

PKIA7909E

: Malfunctioning part
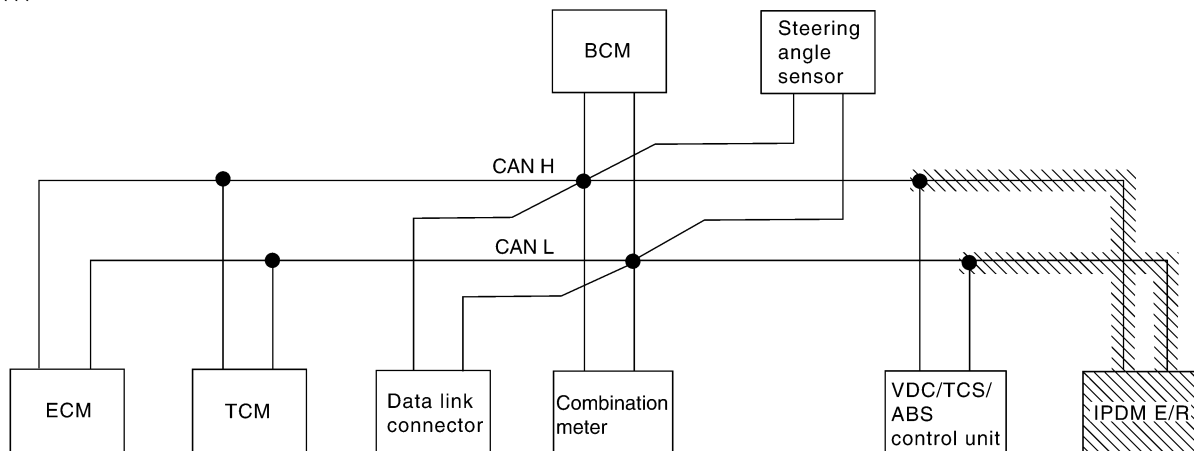
SKIA7119E

CAN SYSTEM (TYPE 2)

Case11

Check CAN communication circuit. Refer to LAN-58, "CAN Communication Circuit Inspection" .

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

PKIA7910E

Case12

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-60, "IPDM E/R Ignition Relay Circuit Check" .

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

PKIB6541E

Case13

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-60, "IPDM E/R Ignition Relay Circuit Check" .

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

PKIB6542E

Inspection Between TCM and Data Link Connector Circuit

AKS00AJ9

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
– Harness connector F102
– Harness connector M72

OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect A/T assembly connector and harness connector F102.
2. Check continuity between A/T assembly harness connector F42 terminals 3 (L), 8 (P) and harness connector F102 terminals 24H (L), 25H (P).

3 (L) – 24H (L)   **: Continuity should exist.**
8 (P) – 25H (P)   **: Continuity should exist.**

A/T assembly connector

SMJ harness connector

SMJ   CONNECTOR

3, 8   24H ,25H

SKIB0240E

OK or NG

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

A
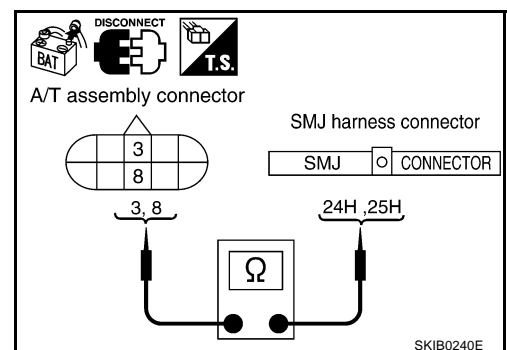
3. CHECK HARNESS FOR OPEN CIRCUIT

Check continuity between harness connector M72 terminals 24H (L), 25H (P) and data link connector M8 terminals 6 (L), 14 (P).

B

24H (L) – 6 (L)   **: Continuity should exist.**
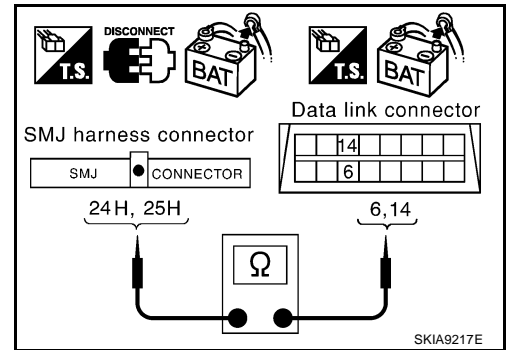**25H (P) – 14 (P)**   **: Continuity should exist.**

C

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

D

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

AKS00AJA

E

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect following connector.
   – ECM connector
   – VDC/TCS/ABS control unit connector
4. Check continuity between data link connector M8 terminals 6 (L), 14 (P) and VDC/TCS/ABS control unit harness connector M93 terminals 61 (L), 63 (P).

F

G

H

6 (L) – 61 (L)   **: Continuity should exist.**
14 (P) – 63 (P)   **: Continuity should exist.**

I

OK or NG
  OK   >> Connect all the connectors and diagnose again. Refer to LAN-38, "Work Flow" .
  NG   >> Repair terminal or connector.
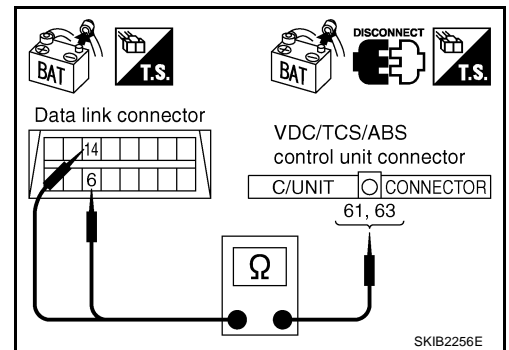
J

LAN

ECM Circuit Inspection

AKS00AJB

1. CHECK CONNECTOR

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

L

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

M

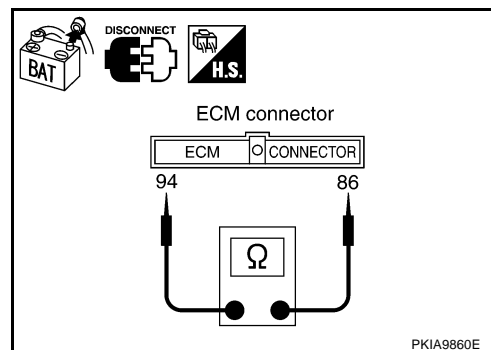## 2. CHECK HARNESS FOR OPEN CIRCUIT

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

   94 (L) – 86 (P)   **: Approx. 108 – 132 Ω**

OK or NG

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

PKIA9860E

TCM Circuit Inspection

AKS00AJC

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check terminals and connector of A/T assembly for damage, bend and loose connection (control module side and harness side).

OK or NG

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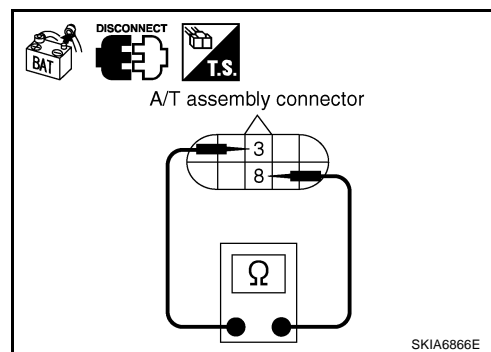 NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect A/T assembly connector.
2. Check resistance between A/T assembly harness connector F40 terminals 3 (L) and 8 (P).

   3 (L) – 8 (P)   **: Approx. 54 – 66 Ω**

OK or NG

  OK   >> Replace control valve with TCM.
  NG   >> Repair harness between A/T assembly and harness connector F102.

SKIA6866E

Data Link Connector Circuit Inspection

AKS00AJD

1. CHECK CONNECTOR

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

OK or NG

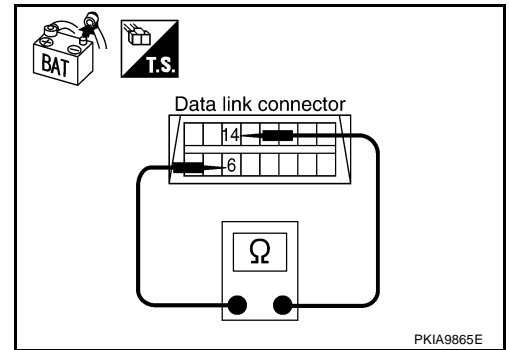 OK   >> GO TO 2.
  NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

6 (L) – 14 (P) : **Approx. 54 – 66** Ω

OK or NG

OK >> Diagnose again. Refer to <u>LAN-38, "Work Flow"</u> .
NG >> Repair harness between data link connector and combination meter.

PKIA9865E

Combination Meter Circuit Inspection
AKS00AJE
1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the battery cable from the 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.
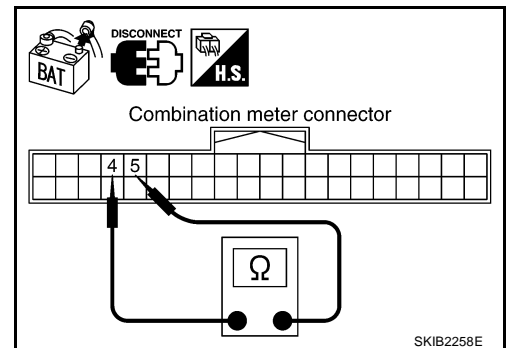NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect combination meter connector.
2. Check resistance between combination meter harness connector M19 terminals 4 (L) and 5 (P).

4 (L) – 5 (P) : **Approx. 54 – 66** Ω

OK or NG

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

SKIB2258E

BCM Circuit Inspection
AKS00AJF
1. CHECK CONNECTOR

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

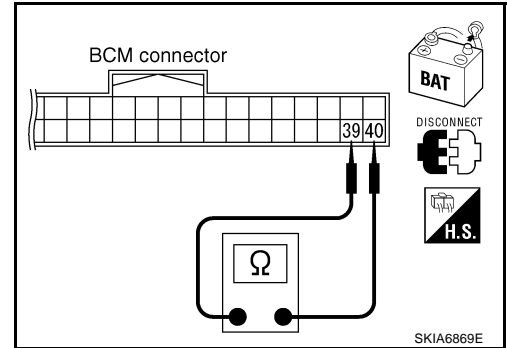OK or NG

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect BCM connector.
2. Check resistance between BCM harness connector M1 terminals 39 (L) and 40 (P).

   39 (L) – 40 (P)   **: Approx. 54 – 66 Ω**

OK or NG

  OK   >> Replace BCM. Refer to <u>BCS-15, "Removal and Installation of BCM"</u> .
  NG   >> Repair harness between BCM and data link connector.

SKIA6869E

Steering Angle Sensor Circuit Inspection

AKS00AJG

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect the battery cable from the 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.
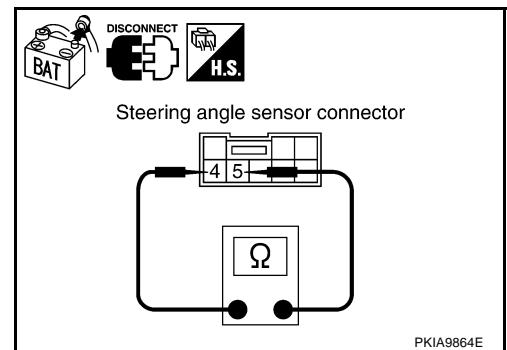 NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

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

   4 (L) – 5 (P)   **: Approx. 54 – 66 Ω**

OK or NG

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

PKIA9864E

VDC/TCS/ABS Control Unit Circuit Inspection

AKS00AJH

1. CHECK CONNECTOR

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

OK or NG

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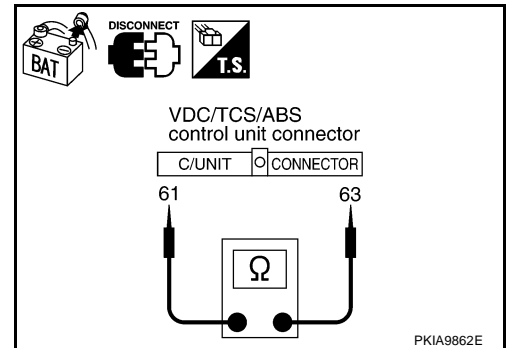 NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect VDC/TCS/ABS control unit connector.
2. Check resistance between VDC/TCS/ABS control unit harness connector M93 terminals 61 (L) and 63 (P).

61 (L) – 63 (P)   **: Approx. 54 – 66 Ω**

OK or NG

OK   >> Replace VDC/TCS/ABS control unit.
NG   >> Repair harness between harness connector M72 and VDC/TCS/ABS control unit.

VDC/TCS/ABS control unit connector

PKIA9862E

IPDM E/R Circuit Inspection

AKS00AJI

1. CHECK CONNECTOR

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

OK or NG

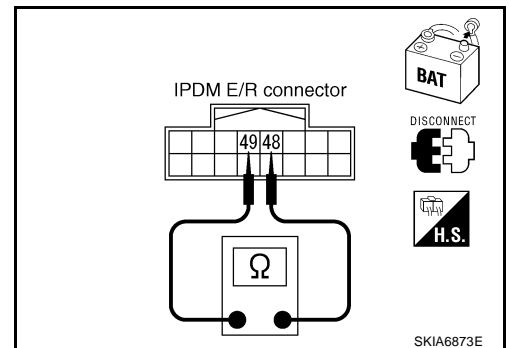OK   >> GO TO 2.
NG   >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

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

48 (L) – 49 (P)   **: Approx. 108 – 132 Ω**

OK or NG

OK   >> Replace IPDM E/R.
NG   >> Repair harness between IPDM E/R and VDS/TCS/ABS control unit.

IPDM E/R connector

SKIA6873E

CAN Communication Circuit Inspection

AKS00AJJ

1. CHECK CONNECTOR

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

OK or NG

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

2. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect following connectors.
   – ECM connector
   – A/T assembly connector
   – Harness connector F102
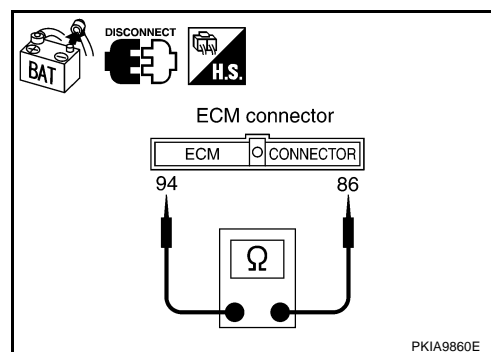2. Check continuity between ECM harness connector F108 terminals 94 (L) and 86 (P).

    94 (L) – 86 (P)   **: Continuity should not exist.**

OK or NG

  OK   >> GO TO 3.
  NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
        ● Harness between ECM and harness connector F102
        ● Harness between A/T assembly and harness connector F102

ECM connector

| ECM | O | CONNECTOR |
94   86

PKIA9860E

3. CHECK HARNESS FOR SHORT CIRCUIT

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

    94 (L) – Ground   **: Continuity should not exist.**
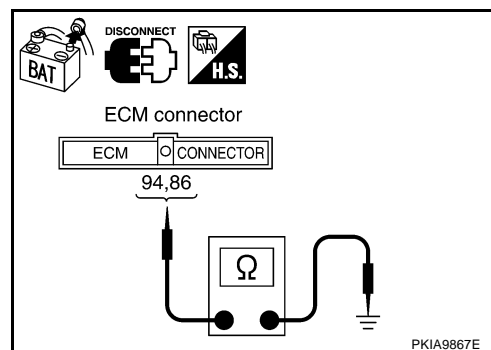
    86 (P) – Ground   **: Continuity should not exist.**

OK or NG

  OK   >> GO TO 4.
  NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
        ● Harness between ECM and harness connector F102
        ● Harness between A/T assembly and harness connector F102

ECM connector

| ECM | O | CONNECTOR |
94,86

PKIA9867E

A

B

C

4. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect following connectors.
−   Combination meter connector
−   BCM connector
−   Steering angle sensor connector
−   VDC/TCS/ABS control unit connector
−   Harness connector M15
2. Check continuity between data link connector M8 terminals 6 (L) and 14 (P).
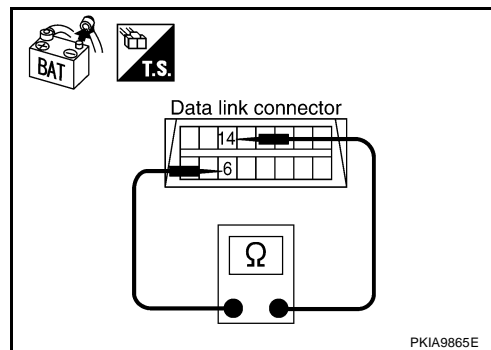
6 (L) – 14 (P)   : Continuity should not exist.

<u>OK or NG</u>

OK   >> GO TO 5.
NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
  ● Harness between harness connector M72 and combination meter
  ● Harness between harness connector M72 and data link connector
  ● Harness between harness connector M72 and BCM
  ● Harness between harness connector M72 and steering angle sensor
  ● Harness between harness connector M72 and VDC/TCS/ABS control unit
  ● Harness between harness connector M72 and harness connector M15

D

E

F

G

H

PKIA9865E

I

5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M8 terminals 6 (L), 14 (P) and ground.

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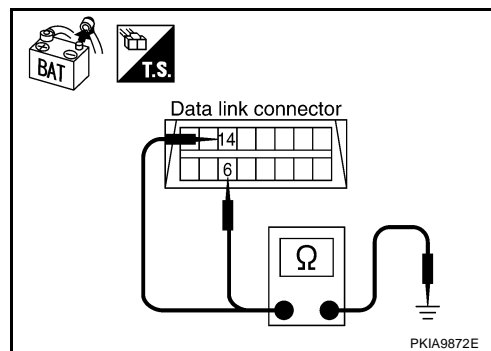**14 (P) – Ground   : Continuity should not exist.**

<u>OK or NG</u>

OK   >> GO TO 6.
NG   >> Check the following harnesses. If any harness is damaged, repair the harness.
  ● Harness between harness connector M72 and combination meter
  ● Harness between harness connector M72 and data link connector
  ● Harness between harness connector M72 and BCM
  ● Harness between harness connector M72 and steering angle sensor
  ● Harness between harness connector M72 and VDC/TCS/ABS control unit
  ● Harness between harness connector M72 and harness connector M15
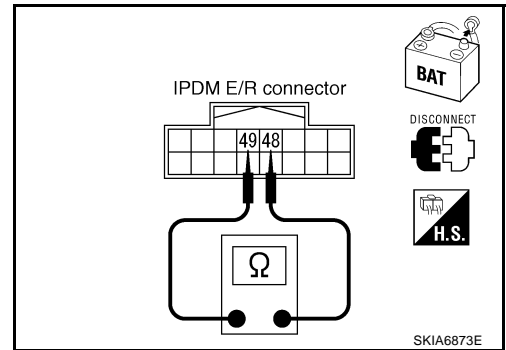
J

LAN

L

M

PKIA9872E

6. CHECK HARNESS FOR SHORT CIRCUIT

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

   48 (L) – 49 (P)   **: Continuity should not exist.**

OK or NG

OK   >> GO TO 7.
NG   >> Repair harness between harness connector E108 and IPDM E/R.

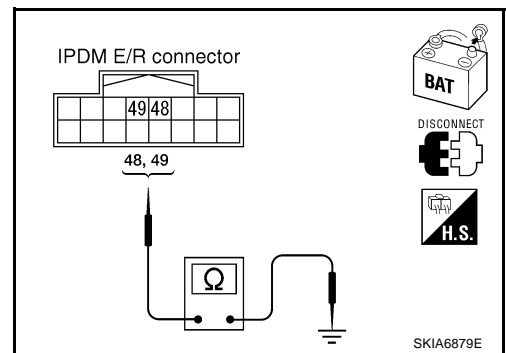

SKIA6873E

7. CHECK HARNESS FOR SHORT CIRCUIT

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

   48 (L) – Ground   **: Continuity should not exist.**

   49 (P) – Ground   **: Continuity should not exist.**

OK or NG

OK   >> GO TO 8.
NG   >> Repair harness between harness connector E108 and IPDM E/R.

SKIA6879E

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to LAN-60, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION" .

OK or NG

OK   >> Connect all the connectors and diagnose again. Refer to LAN-38, "Work Flow" .
NG   >> Replace ECM and/or IPDM E/R.

IPDM E/R Ignition Relay Circuit Check   *AKS00AJK*

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

● IPDM E/R power supply circuit. Refer to PG-27, "IPDM E/R Power/Ground Circuit Inspection" .

● Ignition power supply circuit. Refer to PG-11, "IGNITION POWER SUPPLY — IGNITION SW. IN "ON" AND/OR "START"" .

Component Inspection   *AKS00AJL*
ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

● Remove ECM and IPDM E/R from vehicle.

● Check resistance between ECM terminals 94 and 86.

● Check resistance between IPDM E/R terminals 48 and 49.

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

ECM and IPDM E/R

LKIA0037E