SECTION LAN

LAN SYSTEM

CONTENTS

CAN FUNDAMENTAL

CAN

PRECAUTIONS

PFP:00001

Precautions When Using CONSULT-II

NKS004H7

Use CONSULT-II CONVERTER when connecting CONSULT-II to data link connector.

CAUTION:

CAN communication does not function properly if CONSULT-II is used without connecting CONSULT-II CONVERTER.

Precautions for Trouble Diagnosis

NKS004H8

CAUTION:

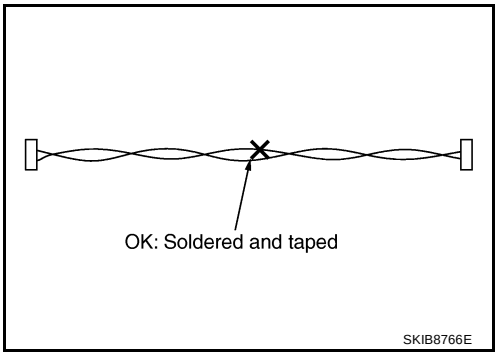
- **Never apply 7.0 V or more to the measurement terminal.**
- **Use a tester with open terminal voltage of 7.0 V or less.**
- **Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.**

Precautions for Harness Repair

NKS004H9

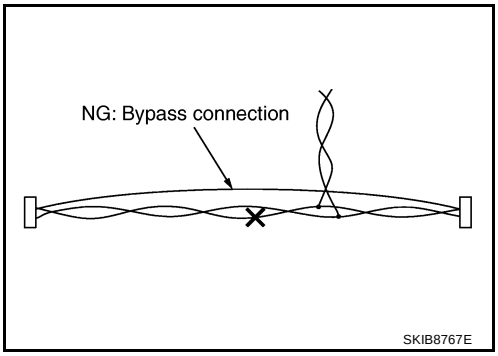
- Solder the repaired area and wrap tape around the soldered area.

  NOTE:
  A fray of twisted lines must be within 110 mm (4.33 in).



- Bypass connection is never allowed at the repaired area.

  NOTE:
  Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

SYSTEM DESCRIPTION

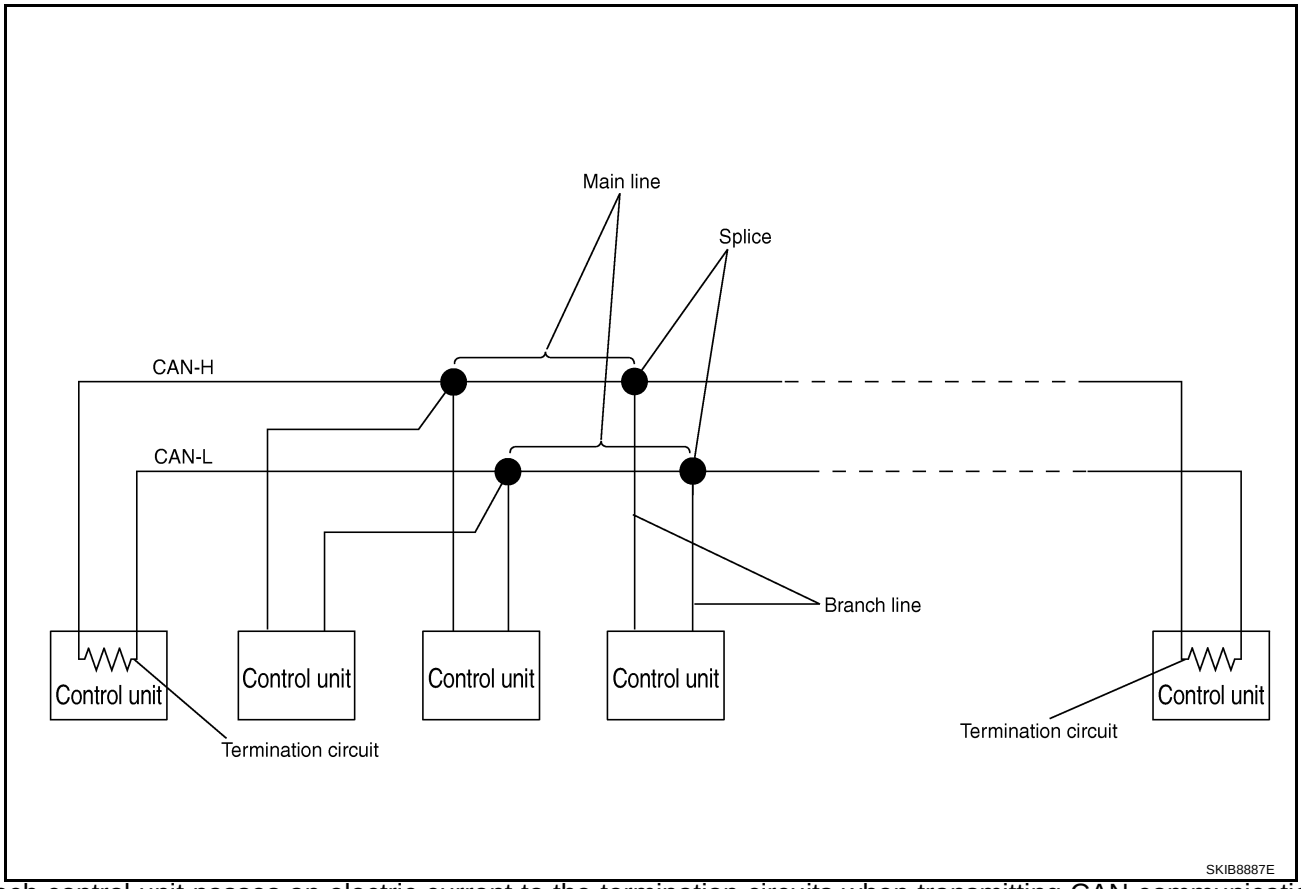
PFP:00000

CAN Communication System

NKS004HA

- CAN communication is a multiplex communication system. This enables the system to transmit and receive large quantities of data at high speed by connecting control units with two communication lines (CAN-H and CAN-L).
- Control units on the CAN network transmit signals using the CAN communication control circuit. They receive only necessary signals from other control units to operate various functions.
- CAN communication lines adopt twisted-pair line style (two lines twisted) for noise immunity.

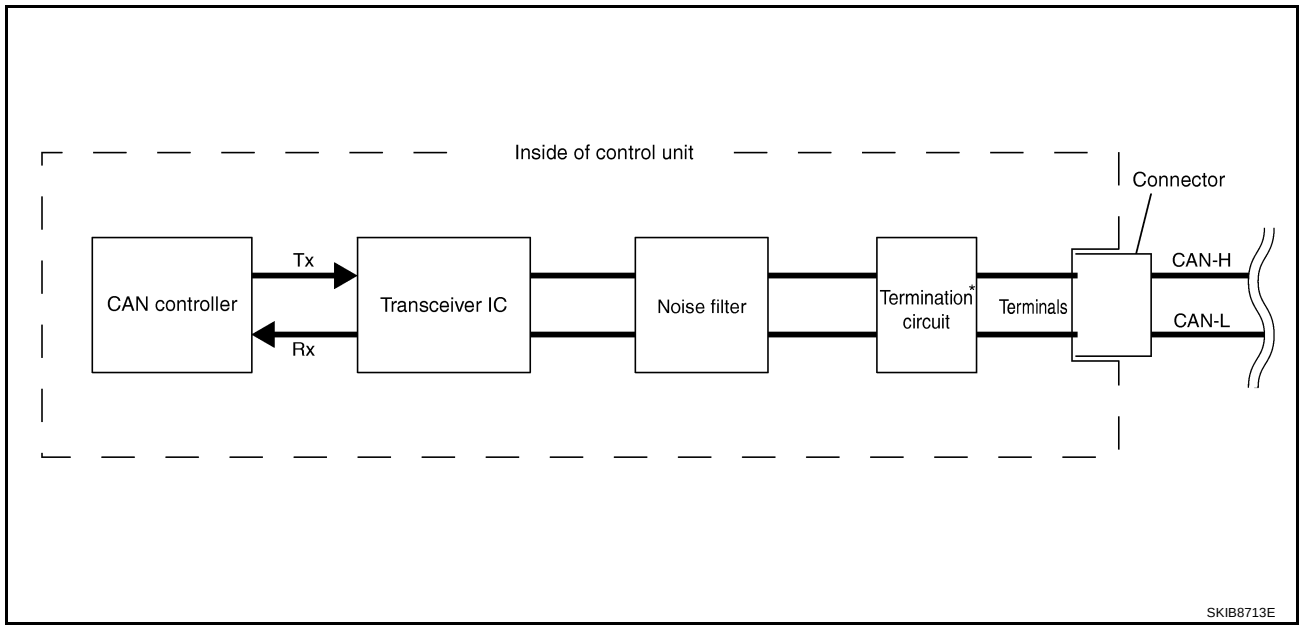
SYSTEM DIAGRAM



Each control unit passes an electric current to the termination circuits when transmitting CAN communication signal. The termination circuits produce an electrical potential difference between CAN-H and CAN-L. CAN communication system transmits and receives CAN communication signals by the potential difference.

Component	Description
Main line	CAN communication line between splices
Branch line	CAN communication line between splice and a control unit
Splice	A point connecting a branch line with a main line
Termination circuit	Refer to LAN-5, "CAN COMMUNICATION CONTROL CIRCUIT" .

CAN COMMUNICATION CONTROL CIRCUIT



Component	System description
CAN controller	It controls CAN communication signal transmission and reception, error detection, etc.
Transceiver IC	It converts digital signal into CAN communication signal, and CAN communication signal into digital signal.
Noise filter	It eliminates noise of CAN communication signal.
Termination circuit* (Resistance of approx. 120 Ω)	It produces potential difference.

*: These are the only control units wired with both ends of CAN communication system.

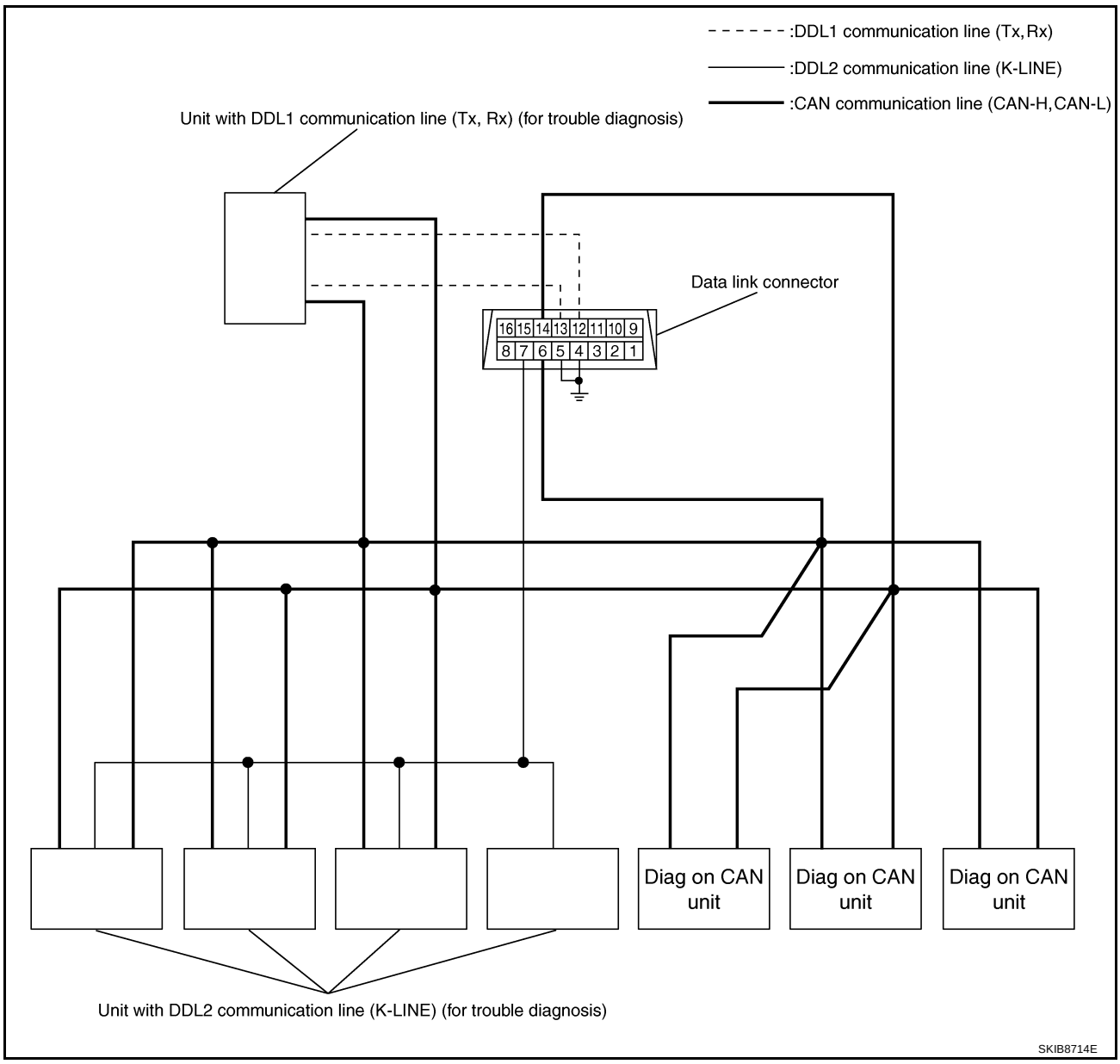
Diag on CAN

NKS004HB

DESCRIPTION

“Diag on CAN” is a diagnosis using CAN communication instead of previous DDL1 and DDL2 communication lines, between control units and diagnosis unit.

SYSTEM DIAGRAM



Name	Harness	Description
DDL1	Tx Rx	It is used for trouble diagnosis. (CAN-H and CAN-L are used for controlling)
DDL2	K-LINE	It is used for trouble diagnosis. (CAN-H and CAN-L are used for controlling)
Diag on CAN	CAN-H CAN-L	It is used for trouble diagnosis and control.

TROUBLE DIAGNOSIS

PFP:00004

Condition of Error Detection

NKS004HC

"U1000" or "U1001" is indicated on SELF-DIAG RESULTS on CONSULT-II if CAN communication signal is not transmitted or received between units for 2 seconds or more.

CAN COMMUNICATION SYSTEM ERROR

- CAN communication line open (CAN-H, CAN-L, or both)
- CAN communication line short (ground, between CAN communication lines, other harnesses)
- Error of CAN communication control circuit of the unit connected to CAN communication line

WHEN "U1000" OR "U1001" IS INDICATED EVEN THOUGH CAN COMMUNICATION SYSTEM IS NORMAL

- CONSULT-II CONVERTER not connected: Error may be detected by the self-diagnosis when not using CONSULT-II CONVERTER (Depending on the control unit which carries out CAN communication).
- Removal/installation of parts: Error may be detected when removing and installing CAN communication unit and related parts while turning the ignition switch ON. (A DTC except for CAN communication may be detected.)
- Fuse blown out (removed): CAN communication of the unit may cease.
- Voltage drop: Error may be detected if voltage drops due to discharged battery when turning the ignition switch ON (Depending on the control unit which carries out CAN communication).
- Error may be detected if the power supply circuit of the control unit, which carries out CAN communication, malfunctions (Depending on the control unit which carries out CAN communication).
- Error may be detected if reprogramming is not completed normally.

NOTE:
CAN communication system is normal if "U1000" or "U1001" is indicated on SELF-DIAG RESULTS of CONSULT-II under the above conditions. Erase the memory of the self-diagnosis of each unit.

Symptom When Error Occurs in CAN Communication System

NKS004HD

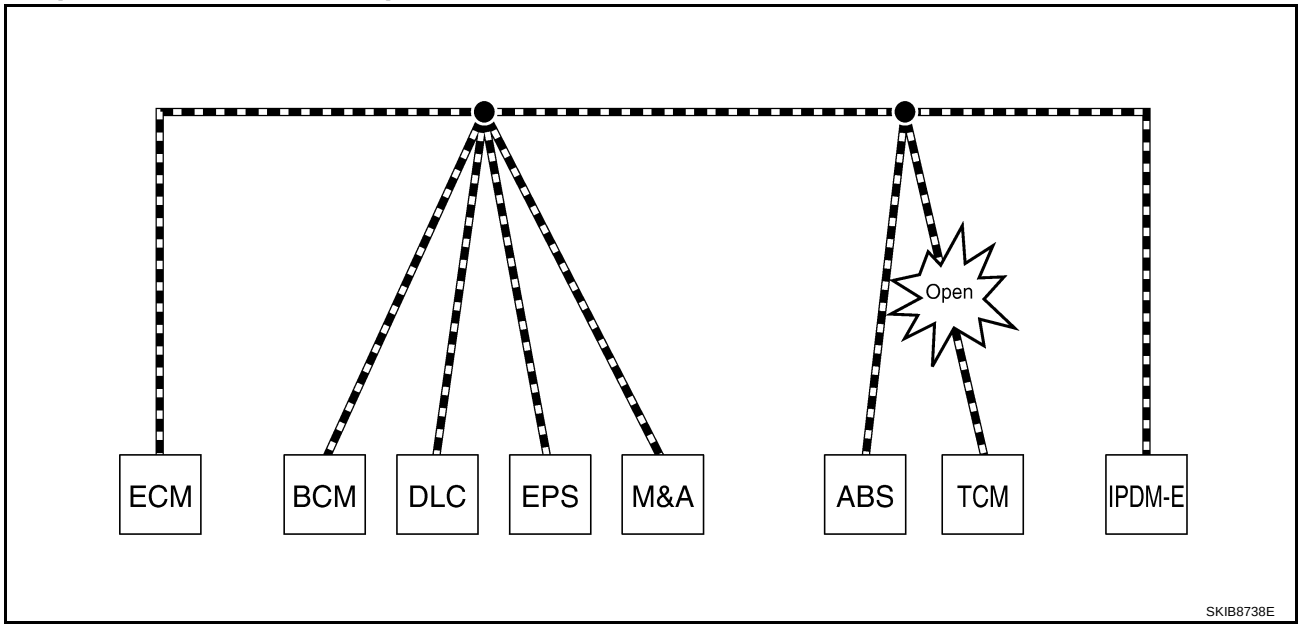
In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

ERROR EXAMPLE

NOTE:

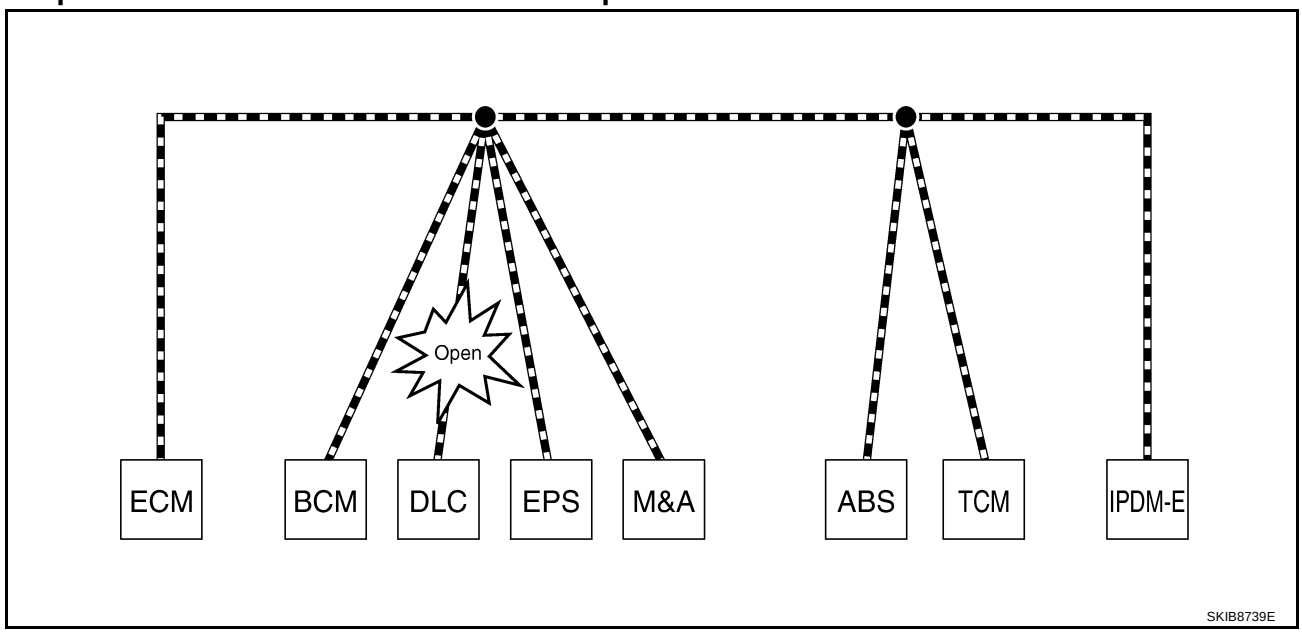
- Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.
- Refer to LAN-41, "Abbreviation List" for the unit abbreviation.

Example: TCM branch line open circuit



Unit name	Symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning chime does not sound.
EPS control unit	Normal operation.
Combination meter	● Shift position indicator and OD OFF indicator turn OFF. ● Warning lamps turn ON.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	Normal operation.

Example: Data link connector branch line open circuit



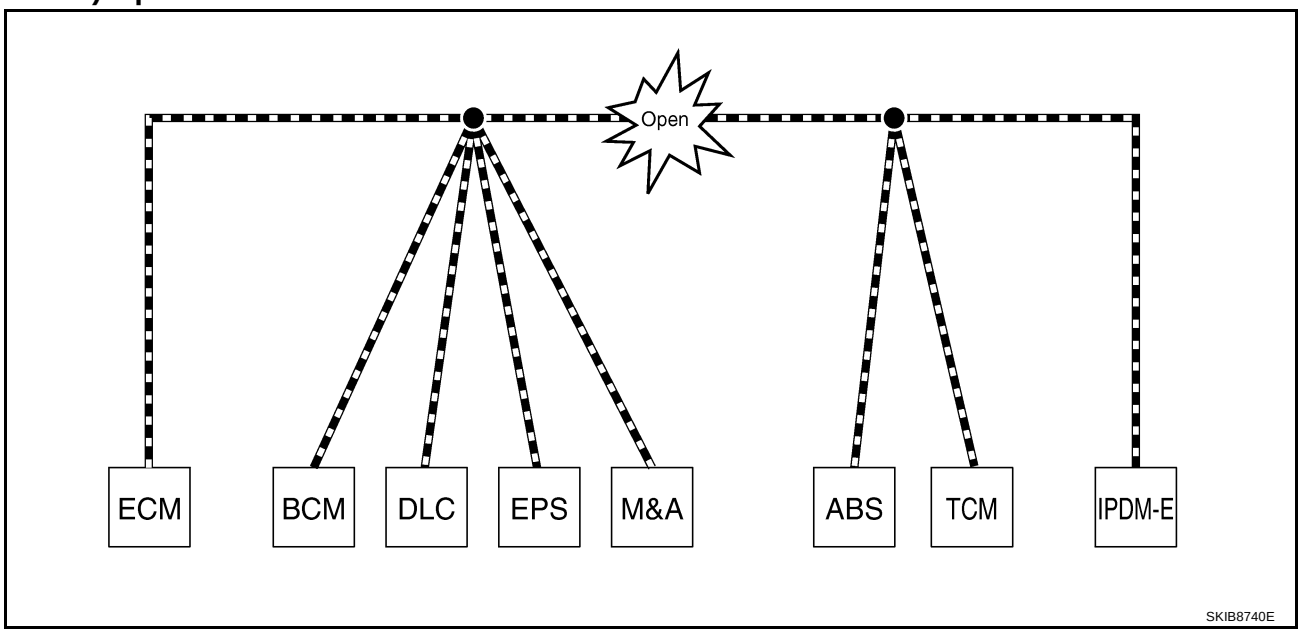
Unit name	Symptom
ECM	Normal operation.
BCM	
EPS control unit	
Combination meter	
ABS actuator and electric unit (control unit)	
TCM	
IPDM E/R	

NOTE:

- When data link connector branch line is open, transmission and reception of CAN communication signals are not affected. Therefore, no symptoms occur. However, be sure to repair malfunctioning circuit.
- When data link connector branch line is open, the screen-display of the CONSULT-II “SELECT SYSTEM” screen may be the same as when the CAN communication line has short-circuit. However, symptoms differ depending on the case. See below chart for the differences.

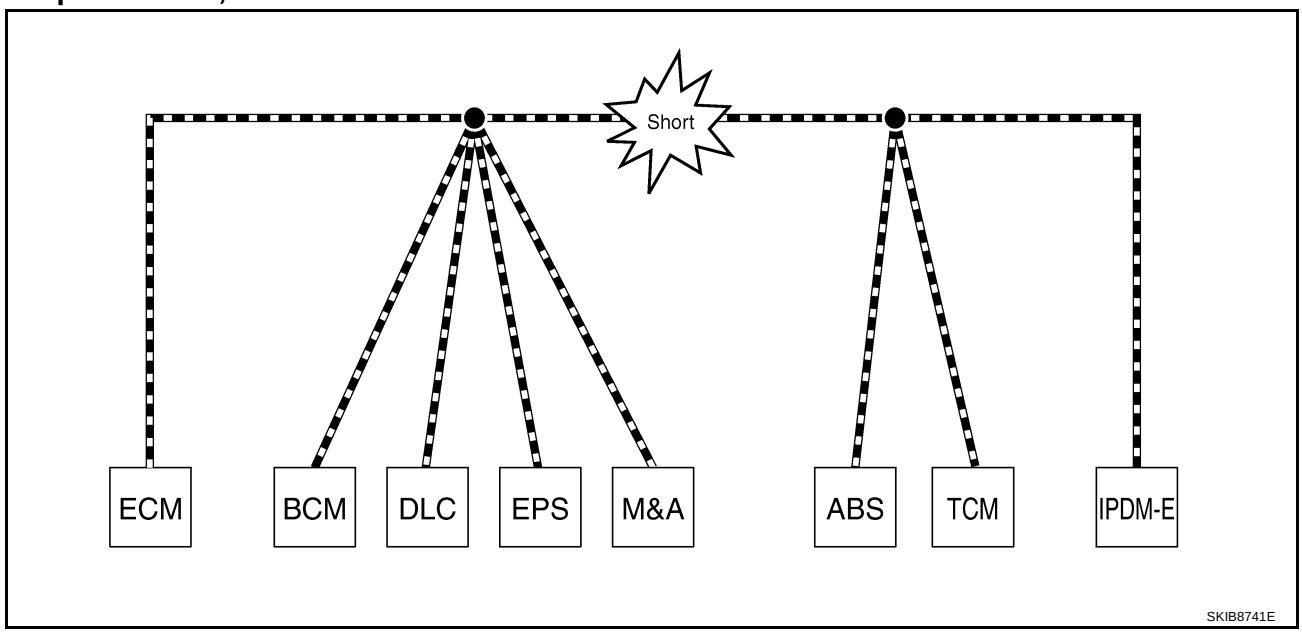
	SELECT SYSTEM (CONSULT-II)	Difference of symptom
Data link connector branch line open circuit	All Diag on CAN units are not indicated.	Normal operation.
CAN-H, CAN-L harness short-circuit		Most of the units which are connected to the CAN communication system enter fail-safe mode or are deactivated.

Example: Main Line Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Open Circuit



Unit name	Symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	● Reverse warning chime does not sound. ● The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.
EPS control unit	The steering effort increases.
Combination meter	● The shift position indicator and OD OFF indicator turn OFF. ● The speedometer is inoperative. ● The odo/trip meter stops.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	When the ignition switch is ON, ● The headlamps (Lo) turn ON. ● The cooling fan continues to rotate.

Example: CAN-H, CAN-L Harness Short Circuit



Unit name	Symptom
ECM	● Engine torque limiting is affected, and shift harshness increases. ● Engine speed drops.
BCM	● Reverse warning chime does not sound. ● The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position. ● The room lamp does not turn ON. ● The engine does not start (if an error or malfunction occurs while turning the ignition switch OFF.) ● The steering lock does not release (if an error or malfunction occurs while turning the ignition switch OFF.)
EPS control unit	The steering effort increases.
Combination meter	● The tachometer and the speedometer do not move. ● Warning lamps turn ON. ● Indicator lamps do not turn ON.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	When the ignition switch is ON, ● The headlamps (Lo) turn ON. ● The cooling fan continues to rotate.

Self-Diagnosis

NKS004HE

DTC	Self-diagnosis item (CONSULT-II indication)	DTC detection condition	Inspection/Action
U1000	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more.	Refer to LAN-15, "TROUBLE DIAGNOSES WORK FLOW" .
		When a control unit (except for ECM) is not transmitting or receiving CAN communication signal for 2 seconds or more.	
U1001	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission-related diagnosis) for 2 seconds or more.	
U1002	SYSTEM COMM	When a control unit is not transmitting or receiving CAN communication signal for 2 seconds or less.	Start the inspection. Refer to the applicable section of the indicated control unit.
U1010	CONTROL UNIT [CAN]	When an error is detected during the initial diagnosis for CAN controller of each control unit.	Replace the control unit indicating “U1010”.

CAN Diagnostic Support Monitor

NKS004HF

CONSULT-II and CAN diagnostic support monitor (on-board diagnosis function) are used for detecting root cause.

MONITOR ITEM (CONSULT-II)

Example: CAN DIAG SUPPORT MNTR indication

Without PAST

SYSTEM ENGINE
DATE
P/#

	PRSNT
INITIAL DIAG	OK
TRANSMIT DIAG	OK
TCM	OK
VDC/TCS/ABS	UNKWN
METER/M&A	OK
ICC	UNKWN
BCM/SEC	OK
IPDM E/R	OK

With PAST

SYSTEM ENGINE
DATE
P/#

	PRSNT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	-	-
METER/M&A	OK	OK
BCM/SEC	OK	OK
ICC	-	-
HVAC	-	-
TCM	OK	OK
EPS	-	-
IPDM E/R	OK	OK
e4WD	-	-
AWD/4WD	OK	OK

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Without PAST

Item	PRSNT	Description
Initial diagnosis	OK	Normal at present
	NG	Control unit error (Except for some control units)
Transmission diagnosis	OK	Normal at present
	UNKWN	Unable to transmit signals for 2 seconds or more.
		Diagnosis not performed
Control unit name (Reception diagnosis)	OK	Normal at present
	UNKWN	Unable to receive signals for 2 seconds or more.
		Diagnosis not performed
		No control unit for receiving signals. (No applicable optional parts)

With PAST

Item	PRSNT	PAST	Description
Transmission diagnosis	OK	OK	Normal at present and in the past
		1 – 39	Normal at present, but unable to transmit signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)
	UNKWN	0	Unable to transmit signals for 2 seconds or more at present.
Control unit name (Reception diagnosis)	OK	OK	Normal at present and in the past
		1 – 39	Normal at present, but unable to receive signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)
	UNKWN	0	Unable to receive signals for 2 seconds or more at present.
	–	–	Diagnosis not performed.
			No control unit for receiving signals. (No applicable optional parts)

MONITOR ITEM (ON-BOARD DIAGNOSIS)

NOTE:
For some models, CAN communication diagnosis result is received from the vehicle monitor. (CONSULT-II is not available.)

Example: Vehicle Display

Item	Result indicated	Error counter	Description
CAN_COMM (Initial diagnosis)	OK	0	Normal at present
	NG	1 – 50	Control unit error (The number indicates how many times diagnosis has been run.)
CAN_CIRC_1 (Transmission diagnosis)	OK	0	Normal at present
	UNKWN	1 – 50	Unable to transmit for 2 seconds or more at present. (The number indicates how many times diagnosis has been run.)
CAN_CIRC_2 – 9 (Reception diagnosis of each unit)	OK	0	Normal at present
	UNKWN	1 – 50	Unable to transmit for 2 seconds or more at present. (The number indicates how many times diagnosis has been run.)
			Diagnosis not performed.
			No control unit for receiving signals. (No applicable optional parts)

TROUBLE DIAGNOSES WORK FLOW

PFP:00004

Information Needed for Trouble Diagnosis

NKS004HG

CAN communication system performs trouble diagnosis with the following tools.

Tool	Usage
Interview sheet	For filling in vehicle information and interview with customer.
Data sheet	For attaching CONSULT-II data or on-board diagnosis data.
Diagnosis sheet	For detecting the root cause. (Diagnosis sheet includes system diagram for every CAN system type)
SELECT SYSTEM (CONSULT-II)	For checking the condition of control units and the status of CAN communication.
SELF-DIAG RESULTS (CONSULT-II)	
CAN DIAG SUPPORT MNTR (CONSULT-II)	
CAN communication signal chart	For converting information received from a customer into CAN communication signal transmission and reception. This information can be used to judge whether a circuit between control units is normal or abnormal.
Abbreviation list	For checking abbreviations in CAN communication signal chart and diagnosis sheet.

How to Use CAN Communication Signal Chart

NKS004HH

The CAN communication signal chart lists the signals needed for trouble diagnosis. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.

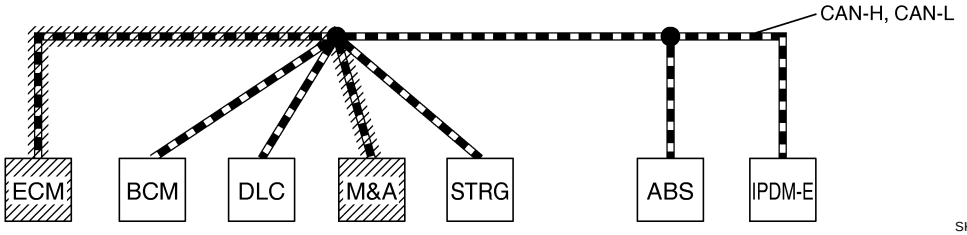
Example: Tachometer does not move even though the engine rotates.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	BCM	M&A	STRG	ABS	IPDM-E
A/C compressor feedback signal	T		R			
A/C compressor request signal	T					R
Accelerator pedal position signal	T				R	
Cooling fan motor operation signal	T					R
Engine coolant temperature signal	T		R			
Engine speed signal	T		R		R	
Fuel consumption monitor signal	T		R			
Malfunction indicator lamp signal	T		R			
A/C switch signal	R	T				
Ignition switch signal		T				R
Sleep/wake up signal		T	R			R

No communication between ECM and M&A.

It indicates that an error occurs between ECM and M&A (Shaded area).



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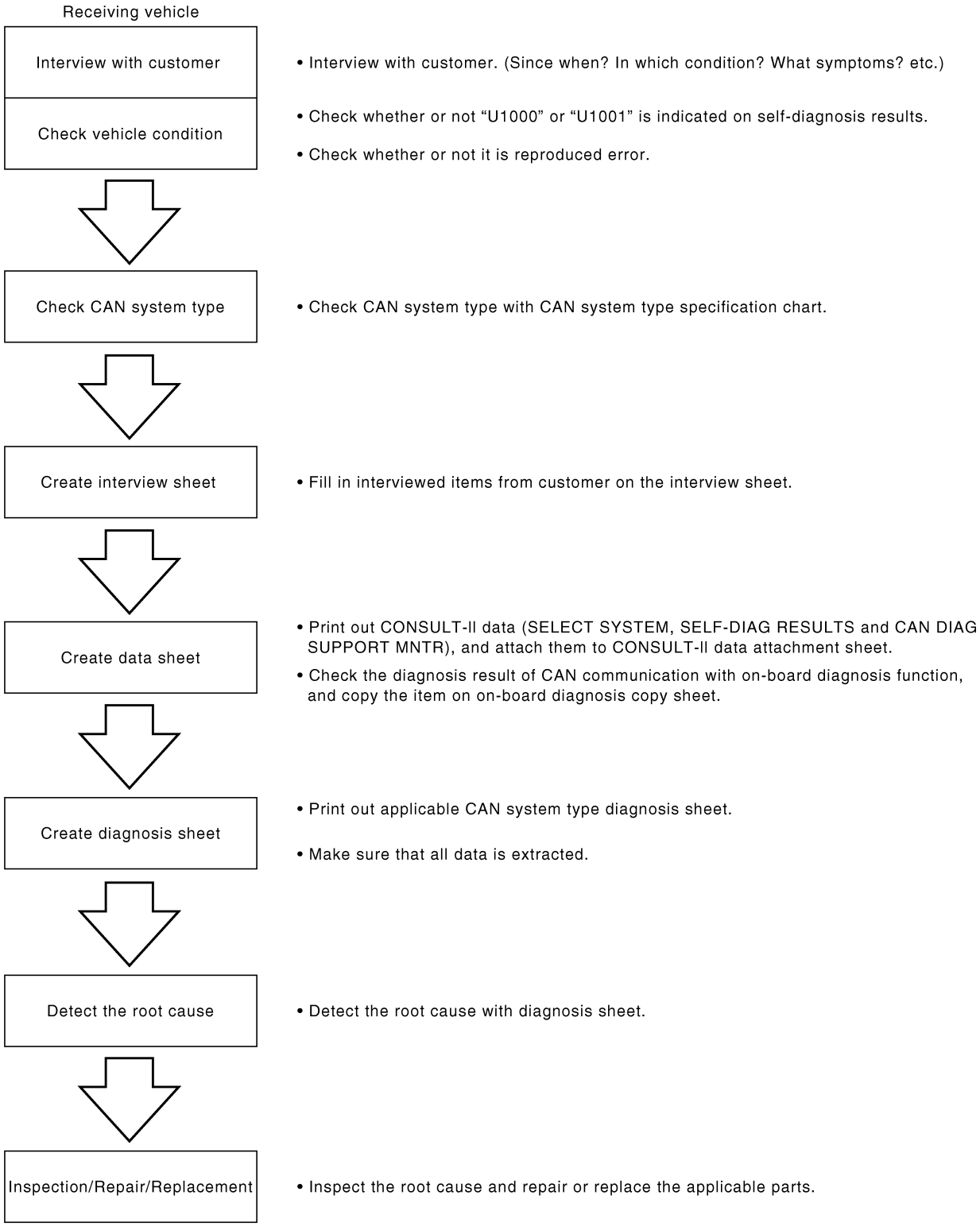
Trouble Diagnosis Flow Chart

NKS004HI



Trouble Diagnosis Procedure

NKS004HJ

INTERVIEW WITH CUSTOMER

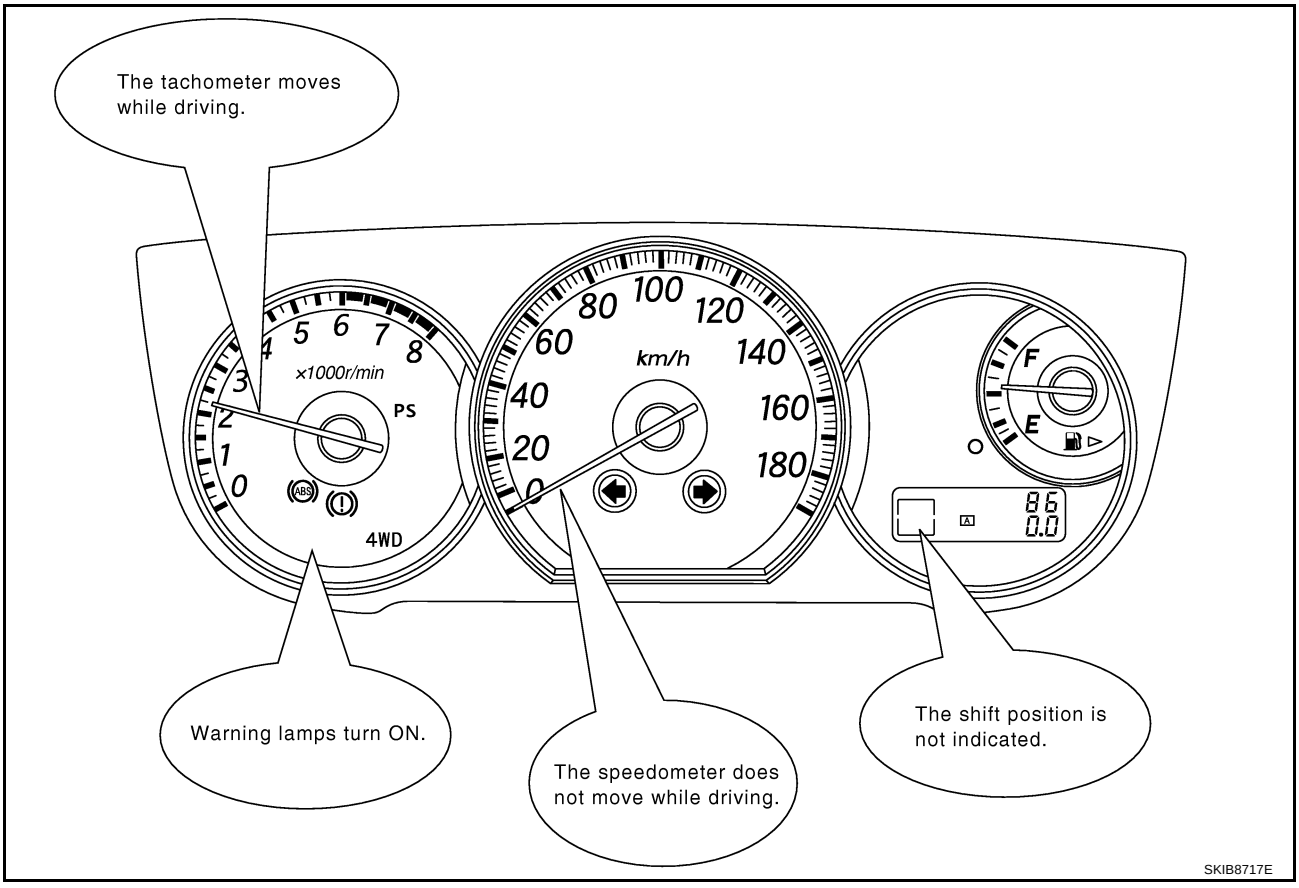
Interview with the customer is important to detect the root cause of CAN communication system errors and to understand vehicle condition and symptoms for proper trouble diagnosis.

Points in interview

- What: Parts name, system name
- When: Date, Frequency
- Where: Road condition, Place
- In what condition: Driving condition/environment
- Result: Symptom

NOTE:

- Check normal units as well as error symptoms.
  - Example: Circuit between ECM and the combination meter is judged normal if the customer indicates tachometer functions normally.
- When a CAN communication system error is present, multiple control units may malfunction or go into fail-safe mode.
- Indication of the combination meter is important to detect the root cause because it is the most obvious to the customer, and it performs CAN communication with many units.



INSPECTION OF VEHICLE CONDITION

- Check whether or not “U1000” or “U1001” is indicated on “SELF-DIAG RESULTS” by CONSULT-II.

  NOTE:
  Root cause cannot be detected using the procedure in this section if “U1000” or “U1001” is not indicated.
- Check whether the symptom is reproduced or not.

  NOTE:
  - Do not turn the ignition switch OFF or disconnect the battery cable while reproducing the error. The error may temporarily correct itself, making it difficult to determine the root cause.
  - The procedures for present errors differ from the procedures for past errors. Refer to LAN-25, "DETECT THE ROOT CAUSE" .

CHECK OF CAN SYSTEM TYPE (HOW TO USE CAN SYSTEM TYPE SPECIFICATION CHART)

Determine CAN system type based on vehicle equipment. Then choose the correct diagnosis sheet.

NOTE:

There are two styles for CAN system type specification charts. Depending on the number of available system types, either style A or style B may be used.

CAN System Type Specification Chart (Style A)

NOTE:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

Example:

Vehicle is equipped as follows: Wagon, AWD, VQ35DE, CVT, VDC, and Intelligent Key system. (oval shows an example of CAN system type.)

CAN System Specification Chart

Determine CAN system type from the following specification chart. Then choose the correct diagnosis sheet.

Body type	Wagon					
Axle	2WD				AWD	
Engine	QR25DE		VQ35DE			
Transmission	A/T		CVT			
Brake control	ABS				VDC	
Intelligent Key system		×		×		×
CAN system type	1	2	3	4	5	6
Diagnosis sheet	(XX-XX)	(XX-XX)	(XX-XX)	(XX-XX)	(XX-XX)	(XX-XX)
CAN communication signal chart	XX-XX. "TYPE 1/TYPE 2"		XX-XX. "TYPE 3/TYPE 4"		XX-XX. "TYPE 5/TYPE 6"	

×: Applicable

Check the vehicle equipment with the vehicle identification number plate.

Check the vehicle equipment.

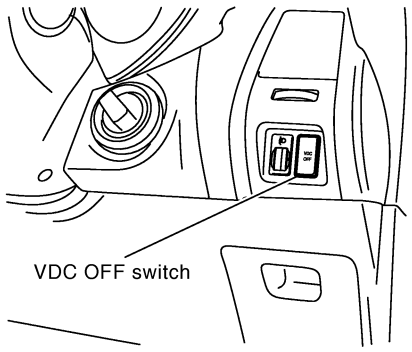
The number indicates the CAN system type of the vehicle.

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

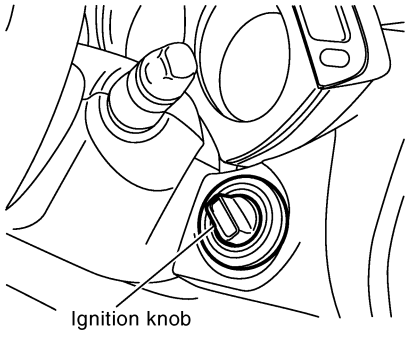
NOTE:

Check CAN system type from the vehicle shape and equipment.

With VDC



With Intelligent Key system



In the above example,

- Checking VDC OFF switch leads to judge whether or not VDC is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.

For the above case, CAN system type is "6".

SKIB8888E

CAN System Type Specification Chart (Style B)

NOTE:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

Example:

Vehicle is equipped as follows: Sedan, 2WD, MR20DE, CVT, ABS, Active AFS, Intelligent Key system, Navigation system and Automatic drive positioner. (⬭ shows an example of CAN system type.)

CAN System Specification Chart

Refer to the specification as shown in the chart.

Body type	Sedan		
Axle	2WD		AWD
Engine	HR15DE	MR20DE	HR15DE
Transmission	A/T	CVT	A/T
Brake control	ABS		
Specification chart	XX.XX "SPECIFICATION CHART A"	YY.YY "SPECIFICATION CHART B"	XX.XX "SPECIFICATION CHART C"

Check the vehicle equipment with the vehicle identification number plate.

Check the vehicle equipment.

Select the applicable vehicle equipment. Refer to the specification chart.

×: Applicable

SPECIFICATION CHART B

Determine CAN system type from the following specification chart. Then choose the correct diagnosis sheet.

Body type	Sedan											
Axle	2WD											
Engine	MR20DE											
Transmission	CVT											
Brake control	ABS											
Active AFS		×			×	×			×	×		×
Intelligent Key system			×		×		×	×	×	×	×	×
Navigation system				×		×	×		×		×	×
Automatic drive positioner								×		×	×	×
CAN system type	9	10	11	12	13	14	15	16	17	18	19	20
Diagnosis sheet	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX	AA: XX
CAN communication signal chart	XX-XX "TYPE 9/TYPE 10/TYPE 11/TYPE 12/TYPE 13/TYPE 14/TYPE 15/TYPE 16/TYPE 17/TYPE 18/TYPE 19/TYPE 20"											

Check the vehicle equipment.

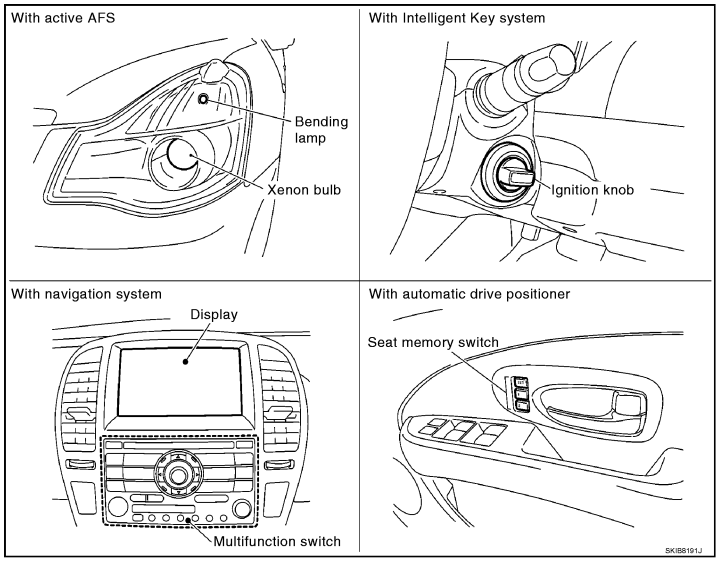
The number indicates the CAN system type of the vehicle.

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



In the above example,

- Checking Xenon bulb and bending lamp lead to judge whether or not Active AFS is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.
- Checking display and multifunction switch lead to judge whether or not Navigation system is equipped.
- Checking seat memory switch leads to judge whether or not Automatic drive positioner is equipped.

For the above case, CAN system type is "20".

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CREATE INTERVIEW SHEET

Fill out the symptom described by the customer, vehicle condition, and CAN system type on the interview sheet.

Interview Sheet (Example)

CAN Communication System Diagnosis Interview Sheet

Date received: 3,Feb.2005

Type: DBA-KG11

VIN No.: KG11-005040

Model: BDRARGZ397EDA-E-J-

First registration: 10,Jan.2005

Mileage: 952 km

CAN system type: Type 19

Symptom (Results from interview with customer)

- Headlamps suddenly turn ON while driving the vehicle.
- The engine does not restart after stopping the vehicle and turning the ignition switch OFF.
- The cooling fan continues rotating while turning the ignition switch ON.

Condition at inspection

Error Symptom: (Present) / Past

The engine does not start.
While turning the ignition switch ON,
- The headlamps (Lo) turn ON, and the cooling fan continues rotating.
- The interior lamp does not turn ON.

On CONSULT-II screen,
- IPDM E/R is not indicated on SELECT SYSTEM.
- ENGINE: U1001
- BCM, ADAPTIVE LIGHT: U1000

SKIB8890E

CREATE DATA SHEET

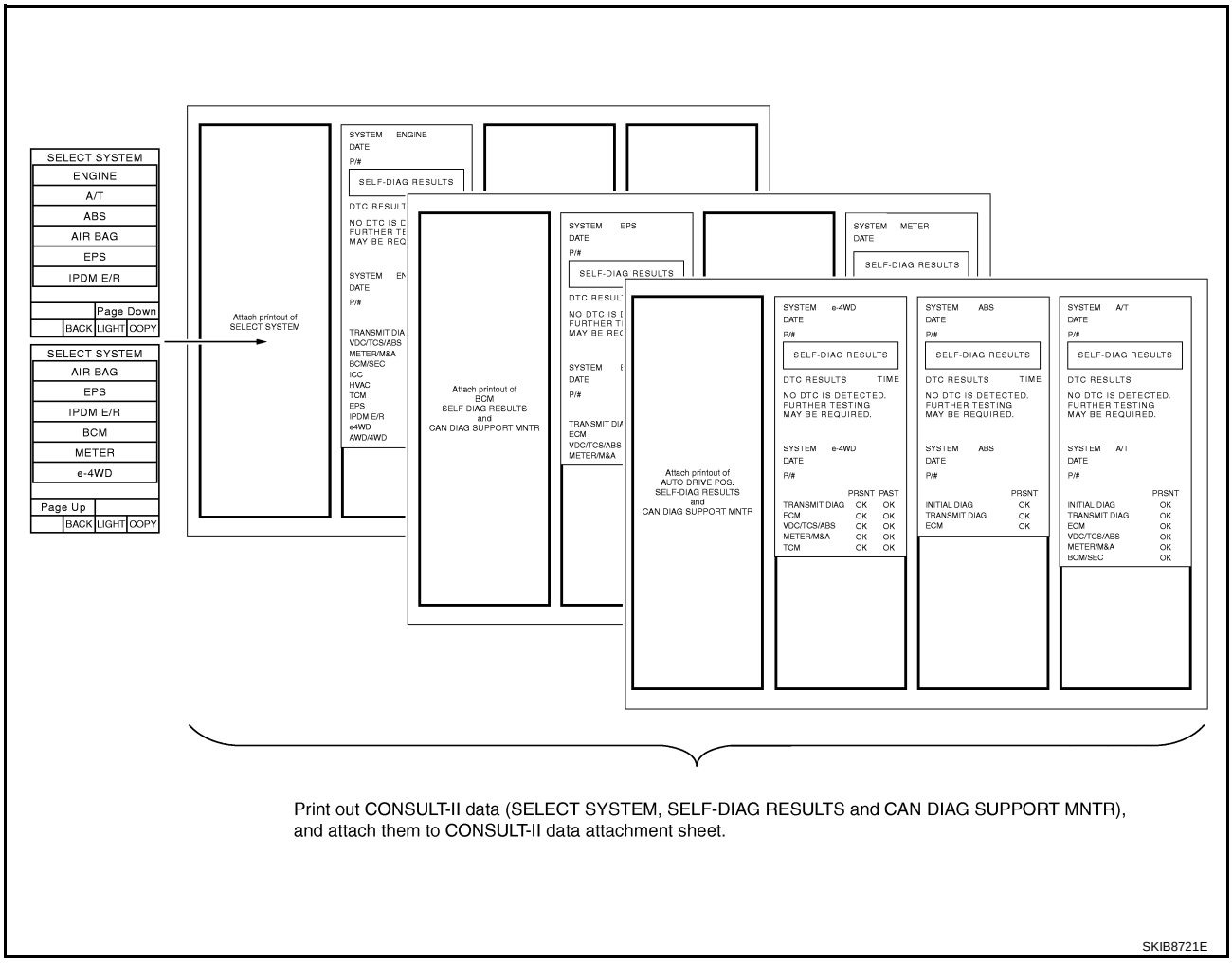
Create CONSULT-II Data Attachment Sheet

Print out the following CONSULT-II screens, and attach them to the CONSULT-II data attachment sheet.

- SELECT SYSTEM
- SELF-DIAG RESULTS
- CAN DIAG SUPPORT MNTR

NOTE:

Some items may not be needed depending on CAN system type of vehicle.



Create On-board Diagnosis Copy Sheet

Display the trouble diagnosis result of CAN communication with the on-board diagnosis function on the vehicle monitor, etc. Copy them on the on-board diagnosis copy sheet.

NOTE:
For some models, CAN communication diagnosis result is received from the vehicle monitor. (CONSULT-II is not available.)

Example: Copy the diagnosis result of CAN communication from the vehicle monitor.

Vehicle monitor indication

CAN DIAG SUPPORT MONITOR

Delete

CAN_COMM	OK	0
CAN_CIRC_1	OK	0
CAN_CIRC_2	UNKWN	12
CAN_CIRC_3	UNKWN	12
CAN_CIRC_4	UNKWN	0
CAN_CIRC_5	OK	0
CAN_CIRC_6	UNKWN	0
CAN_CIRC_7	OK	0
CAN_CIRC_8	UNKWN	0
CAN_CIRC_9	UNKWN	50

Copy

Vehicle monitor (Display control unit) CAN DIAG SUPPORT MONITOR copy sheet

Indication item (Diagnosis item)	Vehicle monitor		Indication item (Diagnosis item)	Vehicle monitor	
	Result indicated	Error counter		Result indicated	Error counter
CAN_COMM (Initial diagnosis)	**OK**	**0**	CAN_CIRC_5 (Receive diagnosis of Unified meter and A/C amp.)	**OK**	**0**
CAN_CIRC_1 (Transmit diagnosis)	**OK**	**0**	CAN_CIRC_6	Not available	
CAN_CIRC_2 (Receive diagnosis of BCM)	**UNKWN**	**12**	CAN_CIRC_7 (Receive diagnosis of IPDM E/R)	**OK**	**0**
CAN_CIRC_3 (Receive diagnosis of ECM)	**UNKWN**	**12**	CAN_CIRC_8	Not available	
CAN_CIRC_4	Not available		CAN_CIRC_9	Not available	

Result indicated: Fill in the indication (OK, NG or UNKWN).
Error counter: Fill in the indicated number.

SKIB8722E

CREATE DIAGNOSIS SHEET

NOTE:
Be sure to use the diagnosis sheet for the correct CAN system type.

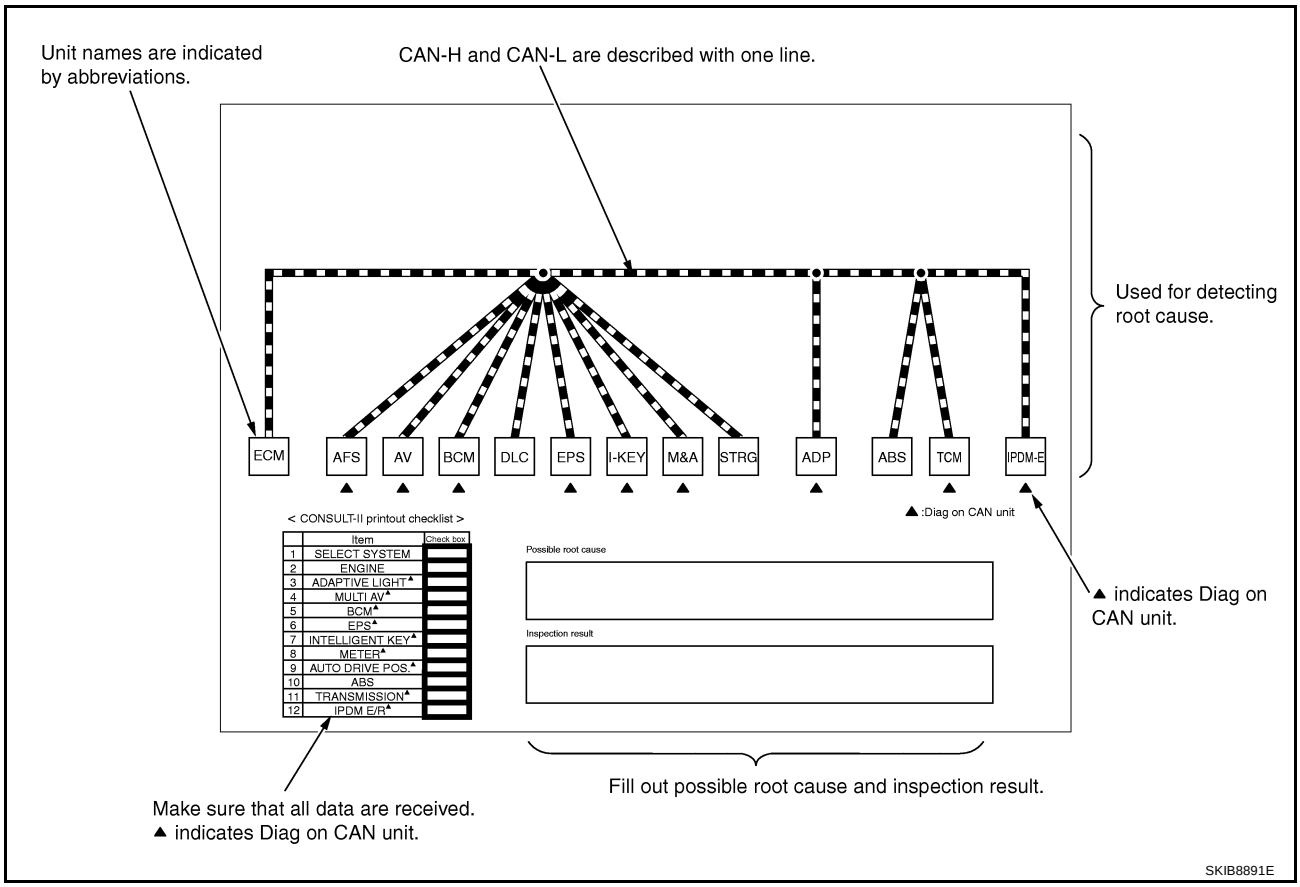
Print Diagnosis Sheet

Print the diagnosis sheet for the applicable CAN system type.

Check of Received Data

Check the created data sheet for missing information.

- For abbreviations, refer to LAN-41, "Abbreviation List" .



DETECT THE ROOT CAUSE

Identify the root cause using the created diagnosis sheet.

Identifying the root cause

- Draw a line on the diagnosis sheet to indicate the possible cause. Narrow the search.

  NOTE:
  - Color-code when drawing lines.
  - Do not draw a line onto a existing line.
- Drawing a line is not necessary if the circuit is shorted. Refer to LAN-32, "Present Error — Short Circuit —" , LAN-39, "Past Error — Short Circuit —" .

Refer to the following for details of the trouble diagnosis procedure.

- LAN-26, "Present Error — Open Circuit —"
- LAN-32, "Present Error — Short Circuit —"
- LAN-33, "Past Error — Open Circuit —"
- LAN-39, "Past Error — Short Circuit —"

NOTE:
When the root cause appears to be a branch line or short circuit, be sure to check the control unit as well as the communication line.

Present Error — Open Circuit —

Identify the error circuit using information from the “SELECT SYSTEM” and “CAN DIAG SUPPORT MNTR” screens.

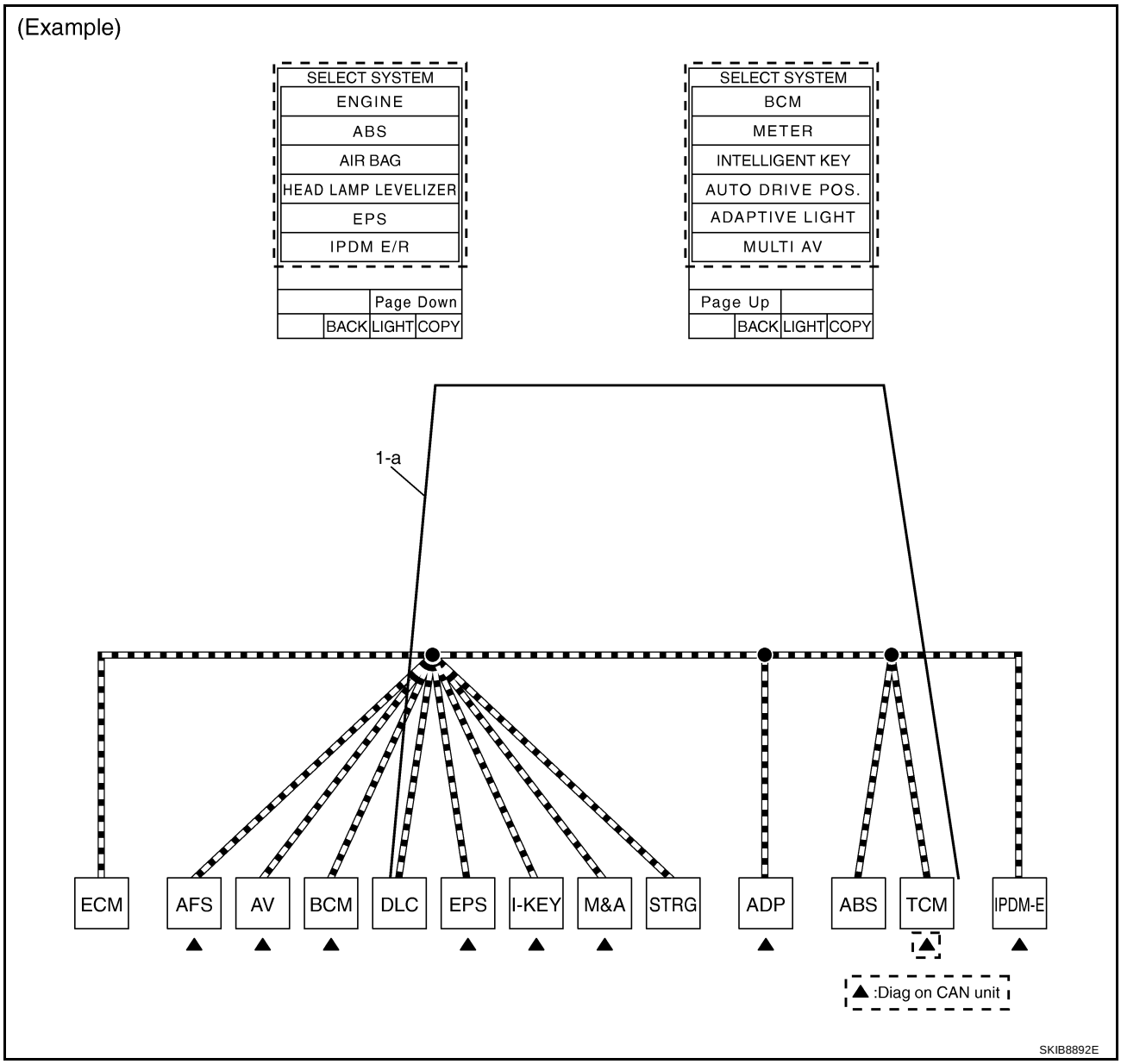
1. SELECT SYSTEM: Check the items indicated in “SELECT SYSTEM”. Draw a line on the diagnosis sheet to indicate the error circuit.

   NOTE:
   CAN communication line has no error if units other than Diag on CAN units are not indicated. An error may be on the power supply of the control unit, DDL1 line or DDL2 line.

a. “TRANSMISSION” which is Diag on CAN unit, is not indicated on “SELECT SYSTEM” screen. This indicates that DLC is not receiving a signal from TCM. Draw a line to indicate an error between DLC and TCM (line 1-a in the figure).

   NOTE:
   - Diag on CAN units are not indicated on the “SELECT SYSTEM” screen when the CAN line between Diag on CAN unit and the data link connector is open.
   - For a description of Diag on CAN, refer to LAN-6, "Diag on CAN" .

(Example)



2. CAN DIAG SUPPORT MNTR: Check each item on “CAN DIAG SUPPORT MNTR”. Draw a line on the diagnosis sheet to indicate the error circuit.

a. Reception item of “ENGINE”: On “TCM”, “UNKWN” is indicated. This means ECM cannot receive the signal from TCM. Draw a line to indicate an error between ECM and TCM (line 2-a in the figure).

NOTE:
If “UNKWN” is indicated on “TRANSMIT DIAG”, then the control unit cannot transmit CAN communication signal to each unit. Draw a line between the control unit and the splice.

b. Reception item of “ADAPTIVE LIGHT”: On “TCM”, “UNKWN” is indicated. This means AFS cannot receive the signal from TCM. Draw a line to indicate an error between AFS and TCM (line 2-b in the figure).

c. Reception item of “MULTI AV”: “UNKWN” is not indicated. This indicates normal communication between AV and its receiving units. Do not draw any line.

(Example)

SYSTEM ENGINE
DATE
P/#

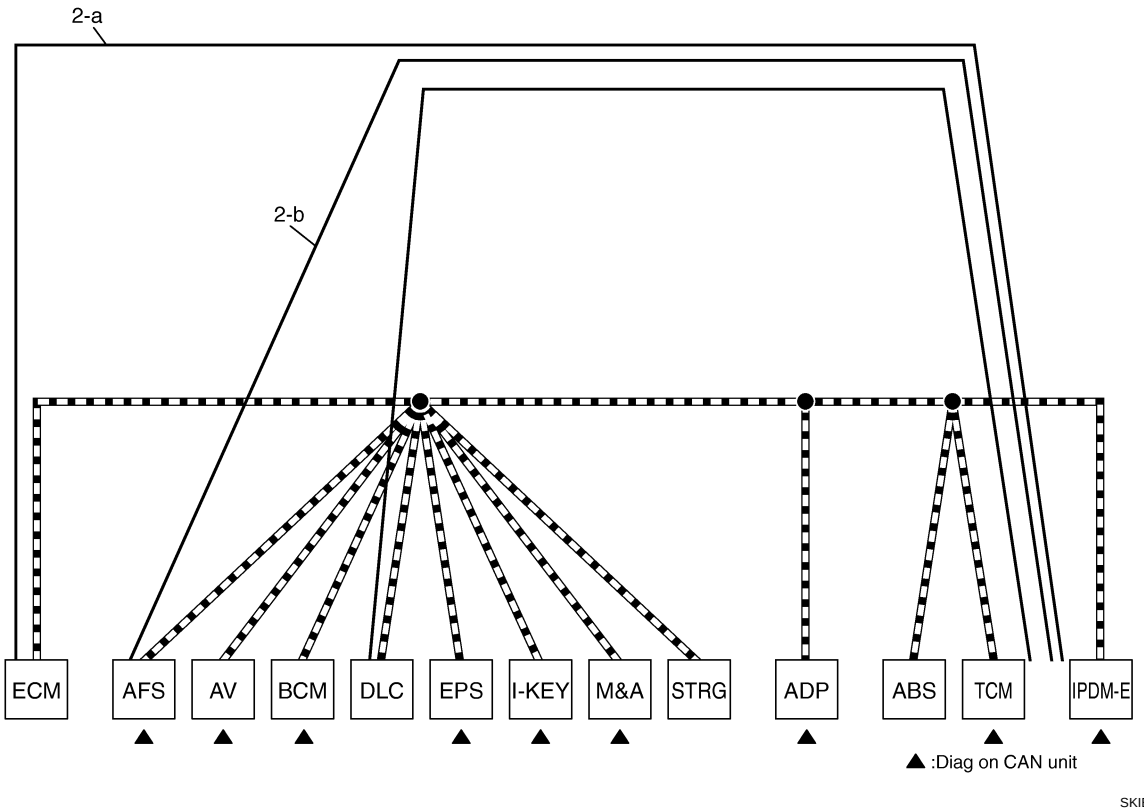
	PRSNT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	OK	OK
METER/M&A	-	-
BCM/SEC	OK	OK
ICC	-	-
HVAC	-	-
TCM	UNKWN	0
EPS	OK	OK
IPDM E/R	OK	OK
e4WD	-	-
AWD/4WD	-	-

SYSTEM ADAPTIVE LIGHT
DATE
P/#

	PRSNT	PAST
TRANSMIT DIAG	-	-
ECM	OK	OK
METER/M&A	OK	OK
TCM	UNKWN	0
STRG	OK	OK
EPS	-	-
IPDM E/R	OK	OK

SYSTEM MULTI AV
DATE
P/#

	PRSNT	PAST
TRANSMIT DIAG	-	-
ECM	OK	OK
METER/M&A	OK	OK
BCM/SEC	-	-
HVAC	-	-
IPDM E/R	-	-
TIRE-P	-	-



d. Reception item of “BCM”: On “TCM”, “UNKWN” is indicated. This means BCM cannot receive the signal from TCM. Draw a line to indicate an error between BCM and TCM (line 2-d in the figure).

e. Reception item of “EPS” and “INTELLIGENT KEY”: “UNKWN” is not indicated. This indicates normal communication between EPS and I-KEY and their receiving units. Do not draw any line.

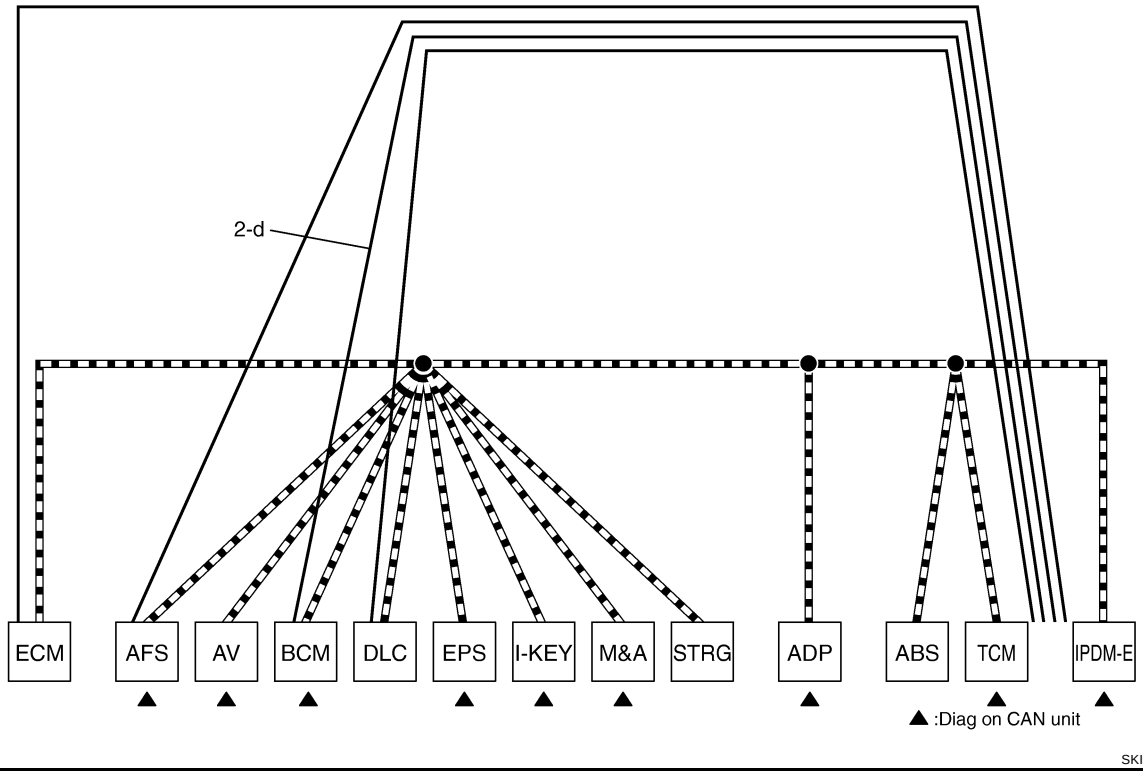
NOTE:
On CAN DIAG SUPPORT MNTR (without PAST), “UNKWN” is indicated even though the item is not used in the trouble diagnosis. For the details of each item on CAN diagnostic support monitor, refer to LAN-44, "CAN Diagnostic Support Monitor" .

(Example)

SYSTEM BCM DATE P/#	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
METER/M&A	OK	OK
TCM	UNKWN	0
MULTI AV	-	-
IPDM E/R	OK	OK
I-KEY	OK	OK

SYSTEM EPS DATE P/#	PRSNT
TRANSMIT DIAG	OK
ECM	OK
VDC/TCS/ABS	OK
METER/M&A	OK

SYSTEM INTELLIGENT KEY DATE P/#	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
METER/M&A	OK	OK
BCM/SEC	OK	OK



f. Reception item of “METER”: On “TCM”, “UNKWN” is indicated. This means M&A cannot receive the signal from TCM. Draw a line to indicate an error between M&A and TCM (line 2-f in the figure).

g. Reception item of “AUTO DRIVE POS.”: On “TCM”, “UNKWN” is indicated. This means ADP cannot receive the signal from TCM. Draw a line to indicate an error between ADP and TCM (line 2-g in the figure).

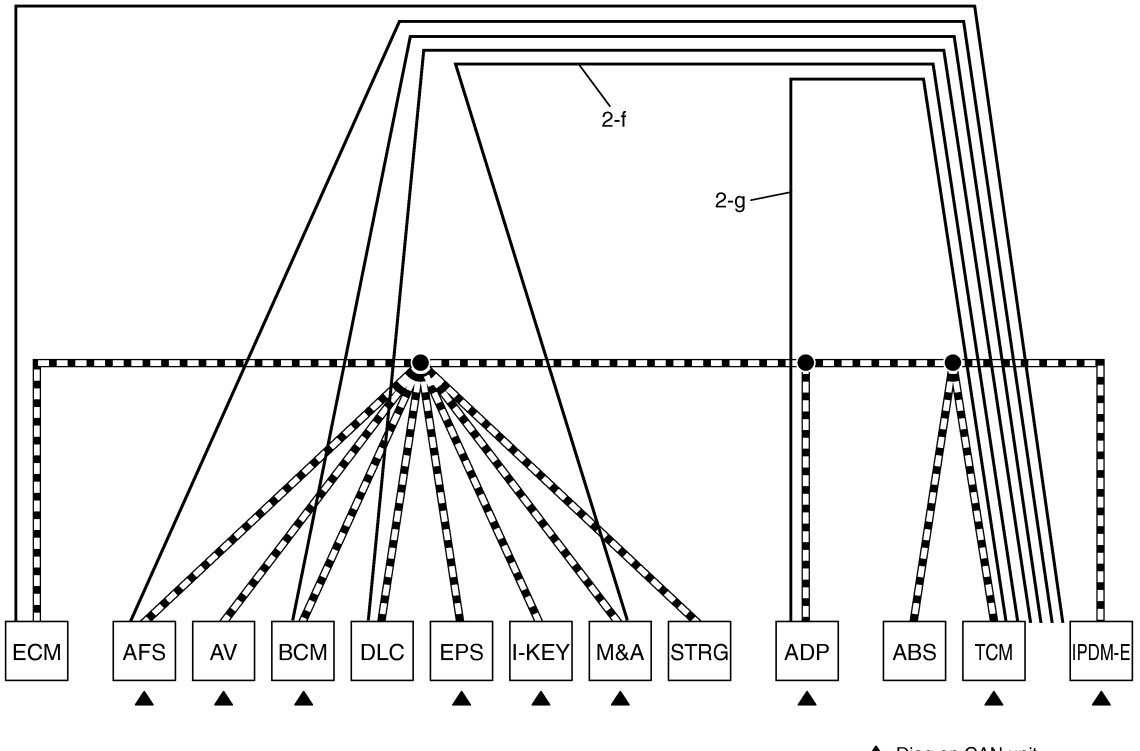
h. Reception item of “ABS”: “UNKWN” is not indicated. This indicates normal communication between ABS and its receiving units. Do not draw any line.

(Example)

SYSTEM METER		
DATE		
P/#		
	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
TCM	UNKWN	0
BCM/SEC	OK	OK
VDC/TCS/ABS	OK	OK
IPDM E/R	-	-
DISPLAY	-	-
I-KEY	OK	OK
EPS	OK	OK
AWD/4WD	-	-
e4WD	-	-
ICC	-	-
LANE KEEP	-	-
TIRE-P	-	-

SYSTEM AUTO DRIVE POS.		
DATE		
P/#		
	PRSNT	PAST
TRANSMIT DIAG	-	-
METER/M&A	OK	OK
BCM/SEC	OK	OK
TCM	UNKWN	0

SYSTEM ABS	
DATE	
P/#	
	PRSNT
INITIAL DIAG	OK
TRANSMIT DIAG	OK
ECM	OK



i. Reception item of “IPDM E/R”: “UNKWN” is not indicated. This indicates normal communication between IPDM-E and its receiving units. Do not draw any line.

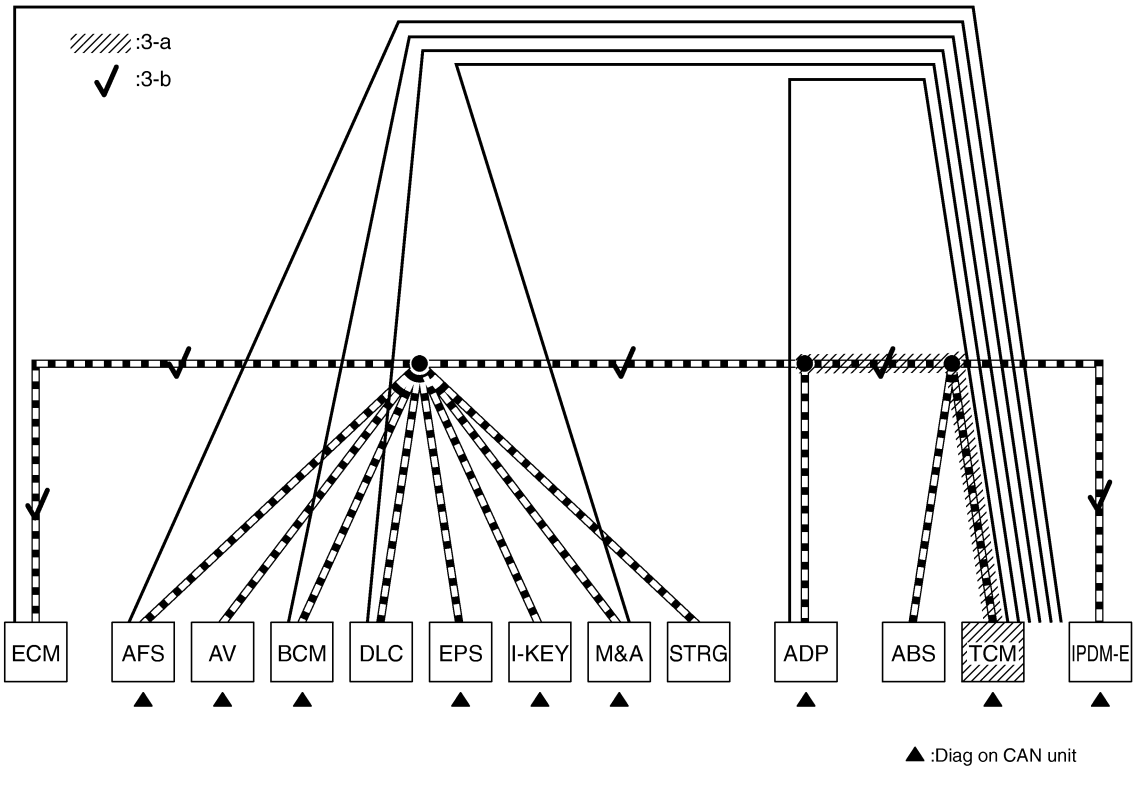
3. Based on information received from “CAN DIAG SUPPORT MNTR”, place a check mark on the known good CAN communication line between ECM and IPDM-E.

a. Through the previous procedure, the circuit between ADP splice and TCM has the most amount of lines (shade 3-a in the figure).

b. Place a check mark on the known good lines to establish the error circuit.
Reception item of “IPDM E/R”: On “ECM”, “OK” is indicated. IPDM-E communicates normally with ECM. Put a check mark on the normal circuit between ECM and IPDM-E (check mark 3-b in the figure).

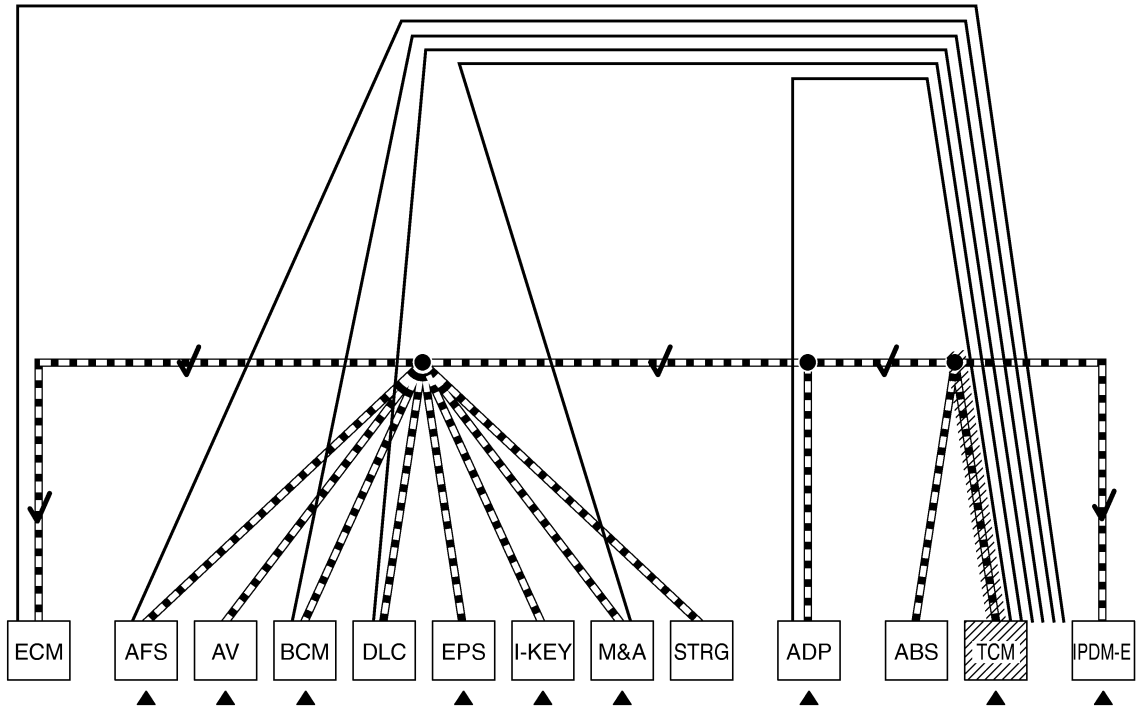
(Example)

SYSTEM	IPDM E/R	
DATE		
	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
BCM/SEC	OK	OK



4. Through the above procedure, the error is detected in the TCM branch line (shaded in the figure).
   NOTE:
   For abbreviations, refer to LAN-41, "Abbreviation List" .
5. Perform the inspection for the detected error circuit. For the inspection procedure, refer to LAN-82, "Malfunction Area Chart" .

(Example)



< CONSULT-II printout checklist >

	Item	Check box
1	SELECT SYSTEM	✓
2	ENGINE	✓
3	ADAPTIVE LIGHT▲	✓
4	MULTI AV▲	✓
5	BCM▲	✓
6	EPS▲	✓
7	INTELLIGENT KEY▲	✓
8	METER▲	✓
9	AUTO DRIVE POS.▲	✓
10	ABS	✓
11	TRANSMISSION▲	N-IDC
12	IPDM E/R▲	✓

Possible root cause

· Error between TCM and splice.
· Error in TCM.

Inspection result

SKIB8893E

Present Error — Short Circuit —

When the symptoms listed below exist, a short circuit of the CAN communication line is a possible cause.

Received data

Item (CONSULT-II)	Indication
SELECT SYSTEM	All Diag on CAN units are not indicated.
CAN DIAG SUPPORT MNTR	“UNKWN” is indicated under “TRANSMIT DIAG” and most reception items.

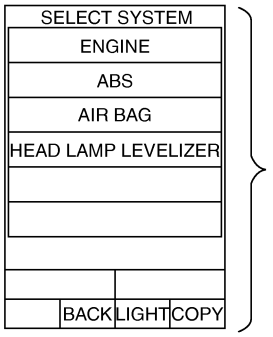
Error symptom

- Most the units connected to the CAN communication system go into fail-safe mode or are deactivated.

Inspection procedure

- Refer to LAN-82, "Malfunction Area Chart" .

(Example)



All Diag on CAN units are not indicated.

SYSTEM ENGINE
DATE
P/#

	PRSNT	PAST
TRANSMIT DIAG	UNKWN	0
VDC/TCS/ABS	UNKWN	0
METER/M&A	-	-
BCM/SEC	UNKWN	0
ICC	-	-
HVAC	-	-
TCM	UNKWN	0
EPS	UNKWN	0
IPDM E/R	UNKWN	0
e4WD	-	-
AWD/4WD	-	-

SYSTEM ABS
DATE
P/#

	PRSNT
INITIAL DIAG	NG
TRANSMIT DIAG	UNKWN
ECM	UNKWN

“UNKWN” is indicated under most reception items of CAN DIAG SUPPORT MNTR.

SKIB8894E

Past Error — Open Circuit —

Review CAN communication signal chart based on information received from the interview with the customer and on past error information from SELF-DIAG RESULTS and CAN DIAG SUPPORT MNTR.

1. SELF-DIAG RESULTS: Inspect the control units indicating “U1000” or “U1001” on SELF-DIAG RESULTS.

(Example)

SYSTEM ENGINE
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1001]	1t

SYSTEM ADAPTIVE LIGHT
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SYSTEM MULTI AV
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SYSTEM BCM
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SYSTEM EPS
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	PAST

SYSTEM INTELLIGENT KEY
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SYSTEM METER
DATE

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	3

SYSTEM AUTO DRIVE POS.
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SYSTEM ABS
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	3

SYSTEM TRANSMISSION
DATE
P/#

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	3

SYSTEM IPDM E/R
DATE

SELF-DIAG RESULTS	
DTC RESULTS	TIME
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SKIB8731E

2. CAN DIAG SUPPORT MNTR (with PAST): Check the CAN DIAG SUPPORT MNTR (with PAST) of units indicating “U1000” or “U1001” on SELF-DIAG RESULTS. Draw a line on the diagnosis sheet to indicate the possible error circuit.

NOTE:
For the details of each indication on CAN DIAG SUPPORT MNTR, refer to LAN-44, "CAN Diagnostic Support Monitor" .

a. Reception item of “ENGINE”: “VDC/TCS/ABS”, “3” is indicated in the “PAST”. This means ECM could not receive the signal from ABS in the past. Draw a line between ECM and ABS (line 2-a in the figure).

b. Reception item of “METER”: “VDC/TCS/ABS”, “3” is indicated in the “PAST”. This means M&A could not receive the signal from ABS in the past. Draw a line between M&A and ABS (line 2-b in the figure).

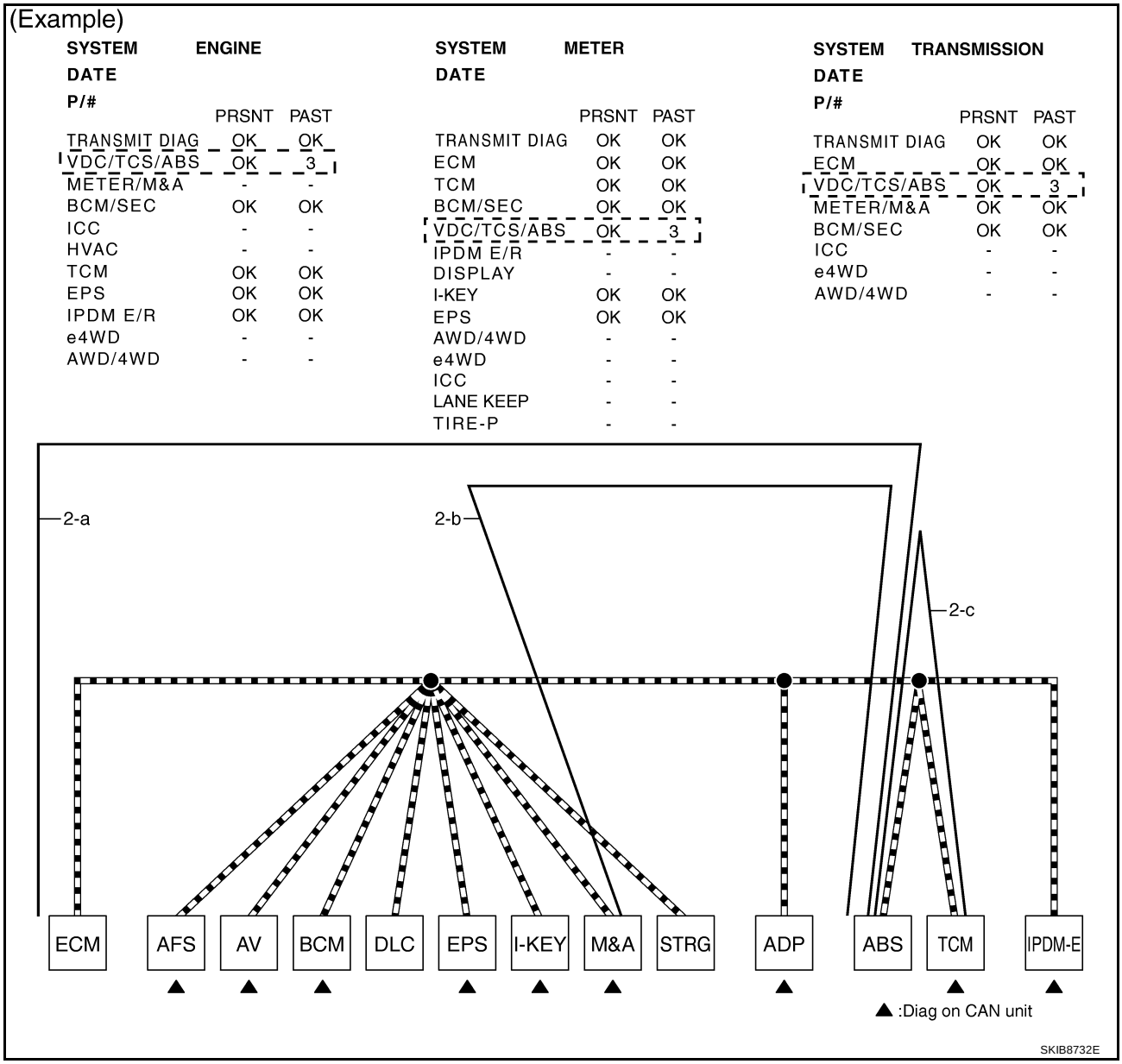
c. Reception item of “TRANSMISSION”: “VDC/TCS/ABS”, “3” is indicated in the “PAST”. This means TCM could not receive the signal from ABS in the past. Draw a line between TCM and ABS (line 2-c in the figure).

(Example)

SYSTEM ENGINE DATE P/#	PRSNT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	OK	3
METER/M&A	-	-
BCM/SEC	OK	OK
ICC	-	-
HVAC	-	-
TCM	OK	OK
EPS	OK	OK
IPDM E/R	OK	OK
e4WD	-	-
AWD/4WD	-	-

SYSTEM METER DATE	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
TCM	OK	OK
BCM/SEC	OK	OK
VDC/TCS/ABS	OK	3
IPDM E/R	-	-
DISPLAY	-	-
I-KEY	OK	OK
EPS	OK	OK
AWD/4WD	-	-
e4WD	-	-
ICC	-	-
LANE KEEP	-	-
TIRE-P	-	-

SYSTEM TRANSMISSION DATE P/#	PRSNT	PAST
TRANSMIT DIAG	OK	OK
ECM	OK	OK
VDC/TCS/ABS	OK	3
METER/M&A	OK	OK
BCM/SEC	OK	OK
ICC	-	-
e4WD	-	-
AWD/4WD	-	-



3. CAN DIAG SUPPORT MNTR (without PAST): Check the CAN DIAG SUPPORT MNTR (without PAST) of units indicating “U1000” or “U1001” on SELF-DIAG RESULTS. Draw a line on the diagnosis sheet to indicate the possible error circuit.

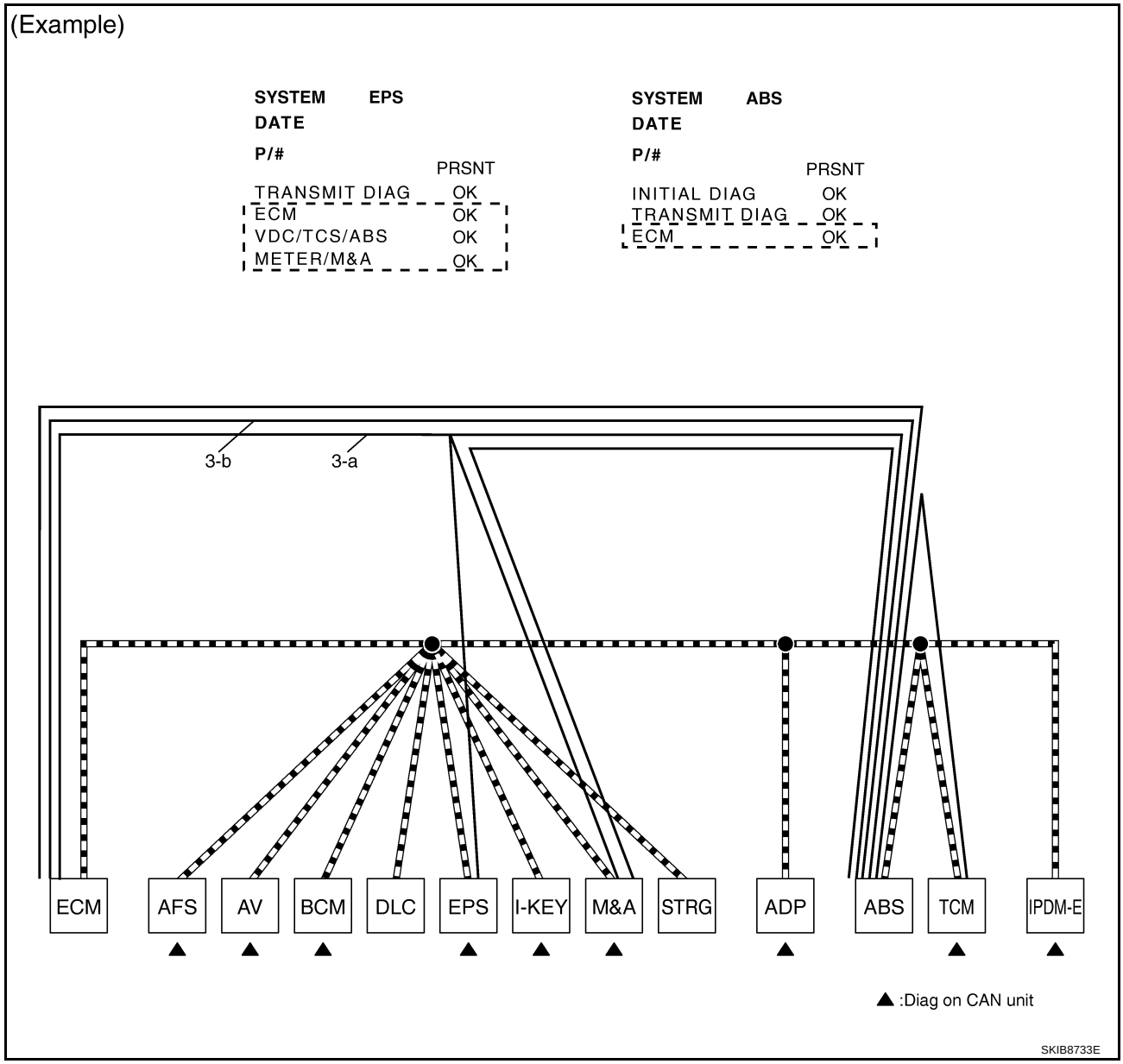
NOTE:

- While an error occurred in the past according to SELF-DIAG RESULTS, it is unclear which signal is not received. Assume that errors were detected from all reception items.
- Draw a single line among the unit and all reception items. (Work flow differs from CAN DIAG SUPPORT MNTR (with PAST).)

a. Reception item of “EPS”: Assume that the unit could not receive the signals from ECM, ABS, and M&A. Draw a line among EPS, ECM, ABS, and M&A (line 3-a in the figure).

b. Reception item of “ABS”: Assume that the unit could not receive the signal from ECM. Draw a line between ABS and ECM (line 3-b in the figure).

(Example)



4. Search for the possible cause using CAN communication signal chart using information from the interview with the customer.

NOTE:
For the details of CAN communication signal, refer to LAN-52, "CAN Communication Signal Chart" .

a. ABS warning lamp turned ON and speedometer did not move: This means that “ABS warning lamp signal” and “Vehicle speed signal” could not communicate between M&A and ABS (4-a in the figure).

b. The tachometer moved normally: This means that “Engine speed signal” could communicate normally between ECM and M&A (4-b in the figure).

(Example)

First registration: 28, Jan. 2005

CAN system type: Type 20

Symptom (Results from interview with customer)

While driving,
- ABS warning lamp turned ON.
- Speedometer did not move.
- Tachometer moved normally.

CAN Communication Signal Chart

T: Transmit R: Receive

Signal name/Connecting unit	ECM	AFS*1	AV*2	BCM	EPS	I-KEY*3	M&A	STRG*1	ADP*4	ABS	TCM	IPDM-E
A/C compressor request signal	T											R
Accelerator pedal position signal	T										R	
Closed throttle position signal	T										R	
Cooling fan speed request signal	T											R
Engine and CVT integrated control signal	T										R	
	R										T	
Engine coolant temperature signal	T						R				R	
4-b Engine speed signal	T						R				R	
Engine status signal	T		R		R							
Fuel consumption monitor signal	T		R				R					
MI signal	T						R					
Wide open throttle position signal	T										R	
4-a ABS warning lamp signal							R			T		
Brake warning lamp signal							R			T		
Steering angle sensor signal		R						T				
Vehicle speed signal	R				R		R			T	R	
		R		R	R	R	T		R			
Input shaft revolution signal	R										T	
Output shaft revolution signal	R										T	
Shift position indicator signal	R	R	R	R*5			R		R*6		T	
Second position indicator signal							R				T	
Front wiper stop position signal				R								T
High beam status signal	R	R										T
Low beam status signal	R	R										T

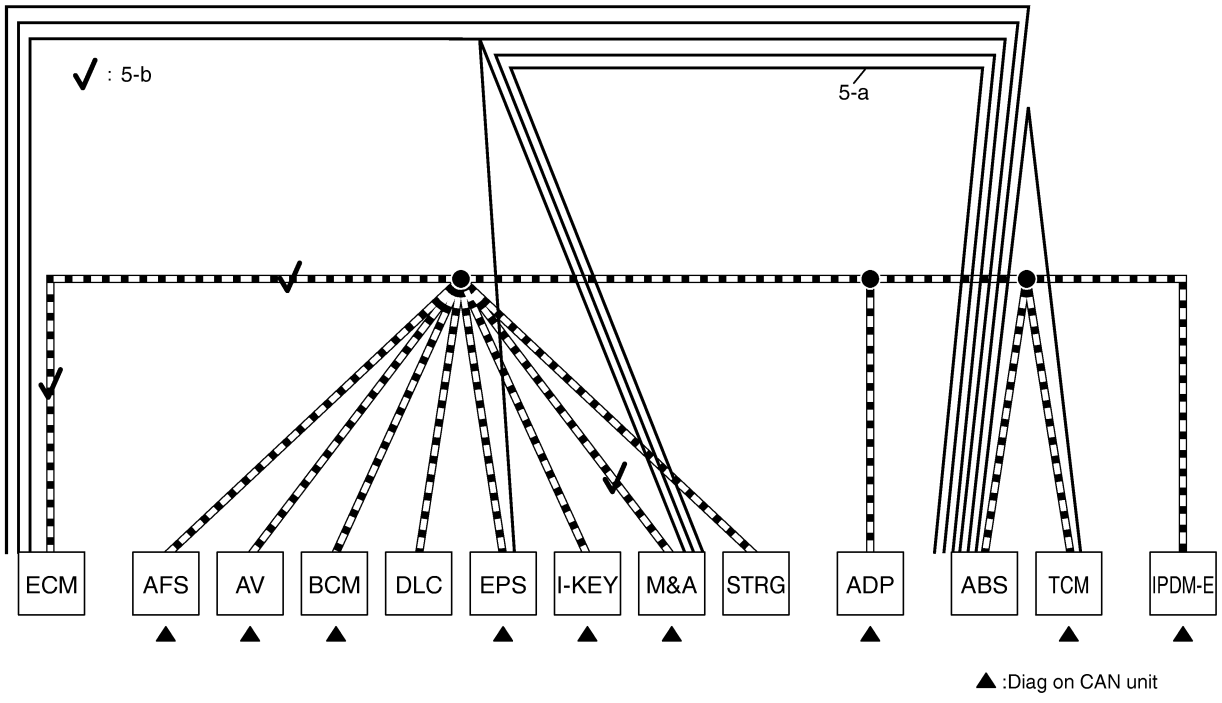
SKIB8895E

5. Fill out the diagnosis sheet based on information from step 4.

a. The ABS warning lamp turned ON and speedometer did not move: Assume that a possible cause is no communication between M&A and ABS. Draw a line between M&A and ABS. (Line 5-a in the figure).

b. The tachometer moved normally: Put check marks between ECM and M&A. The circuit between ECM and M&A is functioning properly (check marks 5-b in the figure).

(Example)

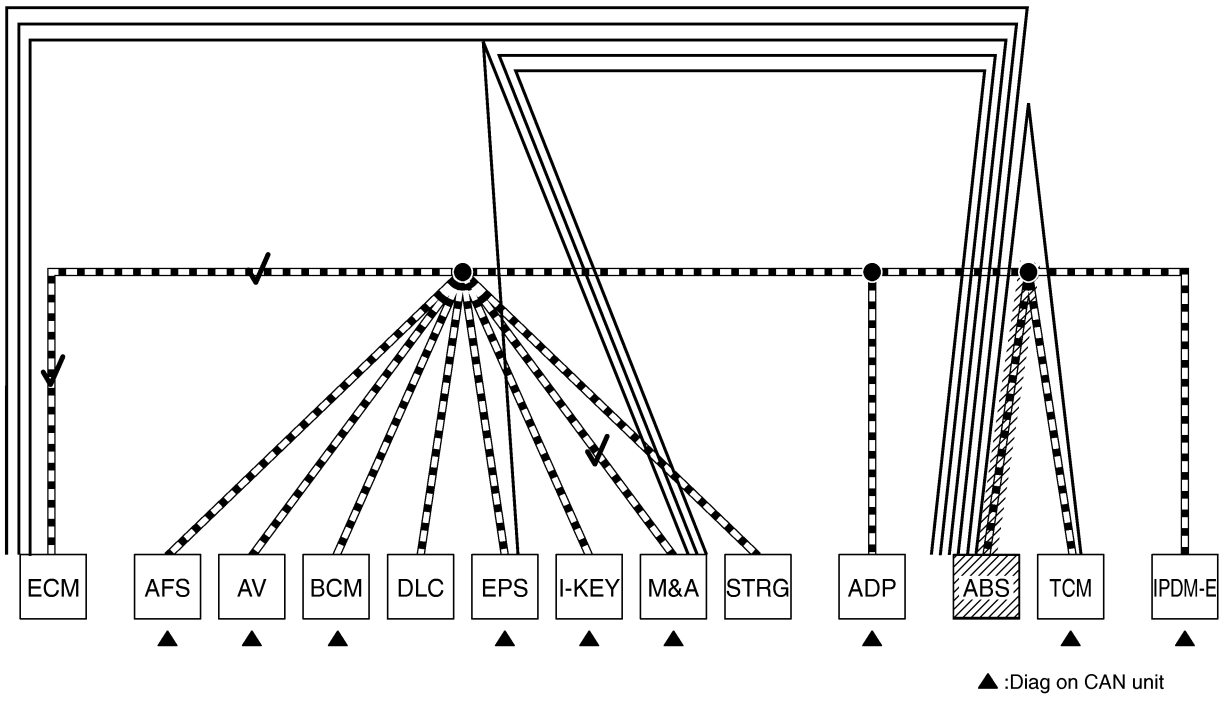


6. The circuit which has the most amount of lines are the possible cause. Error is detected from ABS actuator and electric unit (control unit) branch line (shaded in the figure).

   NOTE:
   For abbreviations, refer to LAN-41, "Abbreviation List" .

7. Perform the inspection procedure for the possible cause. Refer to LAN-82, "Malfunction Area Chart" .

(Example)



< CONSULT-II printout checklist >

	Item	Check box
1	SELECT SYSTEM	✓
2	ENGINE	✓
3	ADAPTIVE LIGHT▲	✓
4	MULTI AV▲	✓
5	BCM▲	✓
6	EPS▲	✓
7	INTELLIGENT KEY▲	✓
8	METER▲	✓
9	AUTO DRIVE POS.▲	✓
10	ABS	✓
11	TRANSMISSION▲	✓
12	IPDM E/R▲	✓

Possible root cause

- Error between ABS actuator and electric unit (control unit) and splice.
- Error in ABS actuator and electric unit (control unit).

Inspection result

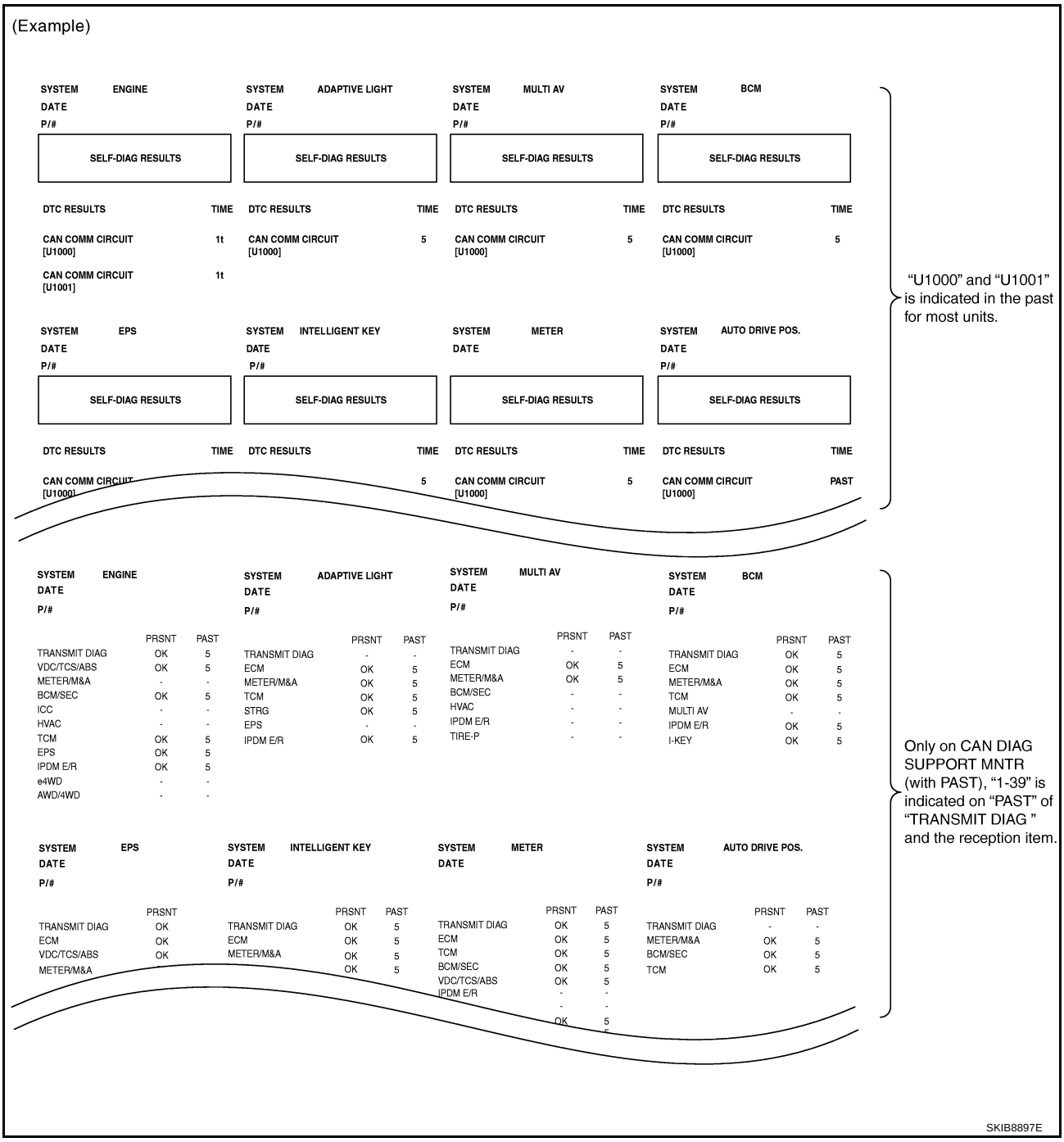
SKIB8896E

Past Error — Short Circuit —

When the symptoms listed below exist, a short circuit of the CAN communication line is a possible cause.

Item (CONSULT-II)	Indication	Inspection procedure
SELF-DIAG RESULTS	“U1000” and “U1001” is indicated in the past for most units.	Refer to LAN-82, "Malfunction Area Chart" .
CAN DIAG SUPPORT MNTR	Only on CAN DIAG SUPPORT MNTR (with PAST), “1 - 39” is indicated on “PAST” of “TRANSMIT DIAG” and the reception item.	

(Example)



INDEX FOR DTC

PFP:00004

DTC No. Index

NKS004FM

DTC	Self-diagnosis item (CONSULT-II indication)	DTC detection condition	Inspection
U1000	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more.	Refer to LAN-41, "HOW TO USE THIS SECTION" .
		When a control unit (except for ECM) is not transmitting or receiving CAN communication signal for 2 seconds or more.	
U1001	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission-related diagnosis) for 2 seconds or more.	
U1002	SYSTEM COMM	When a control unit is not transmitting or receiving CAN communication signal for 2 seconds or less.	Start the inspection. Refer to the applicable section of the indicated control unit.
U1010	CONTROL UNIT [CAN]	When an error is detected during the initial diagnosis for CAN controller of each control unit.	Replace the control unit indicating “U1010”.

HOW TO USE THIS SECTION

PFP:00008

Caution

NKS004FN

- This section describes information specific to a vehicle, sheets for trouble diagnosis, and inspection procedures.
- For trouble diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Procedure" .

Abbreviation List

NKS004FO

Abbreviations in CAN communication signal chart and the diagnosis sheet are as per the following list.

Abbreviation	Unit name	SELECT SYSTEM (CONSULT-II)	CAN DIAG SUPPORT MNTR (CONSULT-II)
4WD	AWD control unit	ALL MODE AWD/4WD	AWD/4WD
ABS	ABS actuator and electric unit (control unit)	ABS	VDC/TCS/ABS
ADP	Driver seat control unit	AUTO DRIVE POS.	–
AFS	AFS control unit	ADAPTIVE LIGHT	AFS
AV	NAVI control unit	MULTI AV	MULTI AV
			DISPLAY
	AV control unit		MULTI AV
			DISPLAY
BCM	BCM	BCM	BCM/SEC
DLC	Data link connector	–	–
ECM	ECM	ENGINE	ECM
ICC	ICC sensor integrated unit	ICC	ICC
			ICC/e4WD
I-KEY	Intelligent Key unit	INTELLIGENT KEY	I-KEY
IPDM-E	IPDM E/R	IPDM E/R	IPDM E/R
M&A	Unified meter and A/C amp.	METER A/C AMP	METER/M&A
PSB	Pre-crash seat belt control unit	PRECRASH SEATBELT	–
RAS	RAS control unit	RAS/HICAS	RAS C/U
STRG	Steering angle sensor	–	STRG
TCM	TCM	A/T	TCM
TPMS	Low tire pressure warning control unit	AIR PRESSURE MONITOR	TIRE-P
LANE	LDW camera unit	LDW	–

PRECAUTIONS

PFP:00001

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

NKS004HN

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

WARNING:

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

Precautions When Using CONSULT-II

NKS004HK

Use CONSULT-II CONVERTER when connecting CONSULT-II to data link connector.

CAUTION:

CAN communication does not function properly if CONSULT-II is used without connecting CONSULT-II CONVERTER.

Precautions for Trouble Diagnosis

NKS004HL

CAUTION:

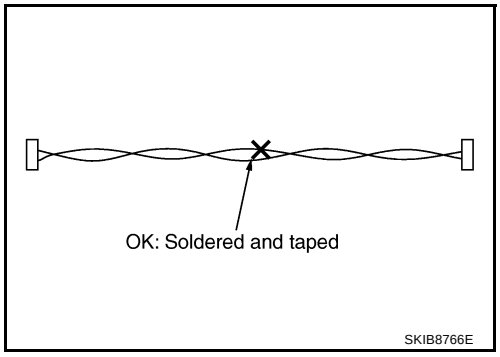
- **Never apply 7.0 V or more to the measurement terminal.**
- **Use a tester with open terminal voltage of 7.0 V or less.**
- **Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.**

Precautions for Harness Repair

NKS004HM

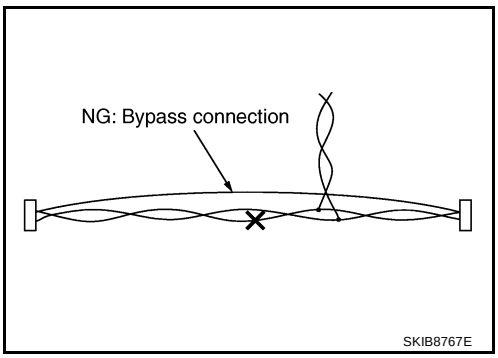
- Solder the repaired area and wrap tape around the soldered area.

  NOTE:
  A fray of twisted lines must be within 110 mm (4.33 in).



- Bypass connection is never allowed at the repaired area.

  NOTE:
  Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

TROUBLE DIAGNOSIS

PFP:00004

CAN Diagnostic Support Monitor

NKS004FT

Use “CAN DIAG SUPPORT MNTR” for detecting the root cause.

MONITOR ITEM LIST (CONSULT-II)

ECM

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
ENGINE	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	BCM/SEC	Signal receiving status from the BCM				
	ICC	Signal receiving status from the ICC sensor integrated unit				
	HVAC	Not used even though indicated				
	TCM	Signal receiving status from the TCM	OK	OK or 1 – 39*	UNKWN	0
	EPS	Not used even though indicated				
	IPDM E/R	Signal receiving status from the IPDM E/R	OK	OK or 1 – 39*	UNKWN	0
	e4WD	Not used even though indicated				
	AWD/4WD	Signal receiving status from the AWD control unit	OK	OK or 1 – 39*	UNKWN	0

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

AWD control unit

NOTE:

Replace the unit when “NG” is indicated on the “INITIAL DIAG”.

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal	Error
			PRSNT	
ALL MODE AWD/4WD	INITIAL DIAG	Status of CAN controller	OK	NG
	TRANSMIT DIAG	Signal transmission status		UNKWN
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)		
	ECM	Signal receiving status from the ECM		
	TCM	Not used even though indicated		
	METER/M&A	Signal receiving status from the unified meter and A/C amp.	OK	UNKWN

AFS control unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
ADAPTIVE LIGHT	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	TCM	Signal receiving status from the TCM				
	STRG	Signal receiving status from the steering angle sensor				
	IPDM E/R	Signal receiving status from the IPDM E/R				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

BCM

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
BCM	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	TCM	Not used even though indicated				
	MULTI AV	With navigation system: Signal receiving status from the NAVI control unit	OK	OK or 1 – 39*	UNKWN	0
		Without navigation system: Signal receiving status from the AV control unit				
	IPDM E/R	Signal receiving status from the IPDM E/R				
	TIRE-P	Signal receiving status from the low tire pressure warning control unit				
	I-KEY	Signal receiving status from the Intelligent Key unit				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

LDW camera unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
LDW	TRANSMIT DIAG	Not used even though indicated				
	ECM	Signal receiving status from the ECM	OK	OK or 1 – 39*	UNKWN	0
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	BCM/SEC	Signal receiving status from the BCM				
	TCM	Signal receiving status from the TCM				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

TCM

NOTE:

Replace the unit when “NG” is indicated on the “INITIAL DIAG”.

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal	Error
			PRSNT	
A/T	INITIAL DIAG	Status of CAN controller	OK	NG
	TRANSMIT DIAG	Signal transmission status		UNKWN
	ECM	Signal receiving status from the ECM		
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)		
	METER/M&A	Signal receiving status from the unified meter and A/C amp.		
	ICC/e4WD	Signal receiving status from the ICC sensor integrated unit		
	AWD/4WD	Signal receiving status from the AWD control unit		

NAVI control unit, AV control unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
MULTI AV	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	BCM/SEC	Signal receiving status from the BCM				
	HVAC	Not used even though indicated				
	IPDM E/R	Signal receiving status from the IPDM E/R	OK	OK or 1 – 39*	UNKWN	0
	TIRE-P	Signal receiving status from the low tire pressure warning control unit				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

Intelligent Key unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
INTELLIGENT KEY	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	BCM/SEC	Signal receiving status from the BCM				
	TCM	Signal receiving status from the TCM				
	IPDM E/R	Signal receiving status from the IPDM E/R				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

Unified meter and A/C amp.

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
METER A/C AMP	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	TCM	Signal receiving status from the TCM				
	BCM/SEC	Signal receiving status from the BCM				
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	IPDM E/R	Not used even though indicated				
	DISPLAY	With navigation system: Signal receiving status from the NAVI control unit	OK	OK or 1 – 39*	UNKWN	0
		Without navigation system: Signal receiving status from the AV control unit				
	I-KEY	Signal receiving status from the Intelligent Key unit				
	EPS	Not used even though indicated				
	AWD/4WD	Signal receiving status from the AWD control unit	OK	OK or 1 – 39*	UNKWN	0
	e4WD	Not used even though indicated				
	ICC	Signal receiving status from the ICC sensor integrated unit	OK	OK or 1 – 39*	UNKWN	0
	LANE KEEP	Not used even though indicated				
	TIRE-P					
	AFS	Signal receiving status from the AFS control unit	OK	OK or 1 – 39*	UNKWN	0

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

Low tire pressure warning control unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
AIR PRESSURE MONITOR	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

RAS control unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
RAS/HICAS	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	STRG	Signal receiving status from the steering angle sensor				

*: An error count is erased at 40 automatically and becomes OK indication. And the self-diagnosis result is erased, too.

Pre-crash seat belt control unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
PRECRASH SEATBELT	TRANSMIT DIAG	Not used even though indicated				
	ECM	Signal receiving status from the ECM	OK	OK or 1 – 39*	UNKWN	0
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	TCM	Signal receiving status from the TCM				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

Driver seat control unit

NOTE:

Replace the unit when “NG” is indicated on the “INITIAL DIAG”.

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal	Error
			PRSNT	
AUTO DRIVE POS.	INITIAL DIAG	Status of CAN controller	OK	NG
	TRANSMIT DIAG	Not used even though indicated		
	BCM/SEC	Signal receiving status from the BCM	OK	UNKWN
	METER/M&A	Signal receiving status from the unified meter and A/C amp.		
	TCM	Signal receiving status from the TCM		

ABS actuator and electric unit (control unit)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal	Error
			PRSNT	
ABS	INITIAL DIAG	Status of CAN controller	OK	NG[Caution]
	TRANSMIT DIAG	Signal transmission status		UNKWN
	ECM	Signal receiving status from the ECM		
	TCM	Signal receiving status from the TCM		
	METER/M&A	Not used even though indicated		
	STRG	Signal receiving status from the steering angle sensor	OK	UNKWN
	ICC	Signal receiving status from the ICC sensor integrated unit		
	AWD/4WD	Signal receiving status from the AWD control unit		
	RAS C/U	Signal receiving status from the RAS control unit		

CAUTION:

Never replace the unit even when "NG" is indicated on the "INITIAL DIAG" at this stage. Follow the trouble diagnosis procedures.

ICC sensor integrated unit

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
ICC	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	VDC/TCS/ABS	Signal receiving status from the ABS actuator and electric unit (control unit)				
	METER/M&A	Signal receiving status from the unified meter and A/C amp.				
	BCM/SEC	Signal receiving status from the BCM				
	TCM	Signal receiving status from the TCM				
	STRG	Not used even though indicated				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

IPDM E/R

0: Error at present, 1 – 39: Error in the past (Number means the number of times the ignition switch is turned OFF→ON)

SELECT SYSTEM	CAN DIAG SUPPORT MNTR	Description	Normal		Error	
			PRSNT	PAST	PRSNT	PAST
IPDM E/R	TRANSMIT DIAG	Signal transmission status	OK	OK or 1 – 39*	UNKWN	0
	ECM	Signal receiving status from the ECM				
	BCM/SEC	Signal receiving status from the BCM				

*: 39 or higher number is fixed at 39 until the self-diagnosis result is erased.

CAN System Specification Chart

NKS004FU

Determine CAN system type from the following specification chart. Then choose the correct diagnosis sheet.

NOTE:

Refer to LAN-19, "CHECK OF CAN SYSTEM TYPE (HOW TO USE CAN SYSTEM TYPE SPECIFICATION CHART)" for how to use CAN system specification chart.

Body type	Sedan										
Axle	2WD							AWD			
Engine	VQ35DE/VK45DE							VQ35DE			
Transmission	A/T										
Brake control	VDC										
Adaptive front-lighting system		×	×	×	×	×	×		×		×
Lane departure warning						×	×				×
Navigation system			×		×	×	×			×	×
Rear active steer				×	×		×				
ICC system						×	×				×
CAN system type	1	2	3	4	5	6	7	8	9	10	11
Diagnosis sheet	LAN-70	LAN-71	LAN-72	LAN-73	LAN-74	LAN-75	LAN-76	LAN-77	LAN-78	LAN-79	LAN-80
CAN communication signal chart	LAN-52, "TYPE 1/TYPE 2/TYPE 3/TYPE 4/TYPE 5/TYPE 6/TYPE 7"							LAN-55, "TYPE 8/TYPE 9/TYPE 10/TYPE 11"			

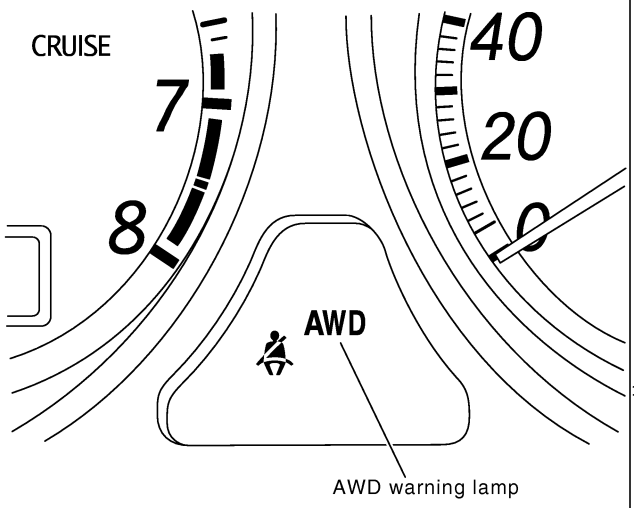
×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

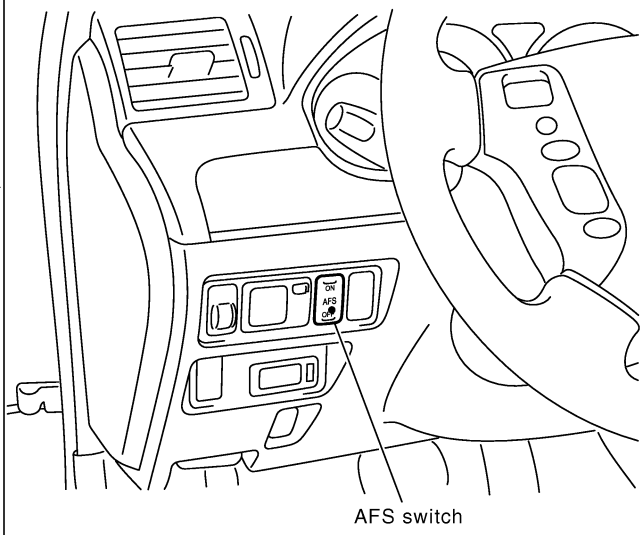
NOTE:

Check CAN system type from the vehicle shape and equipment.

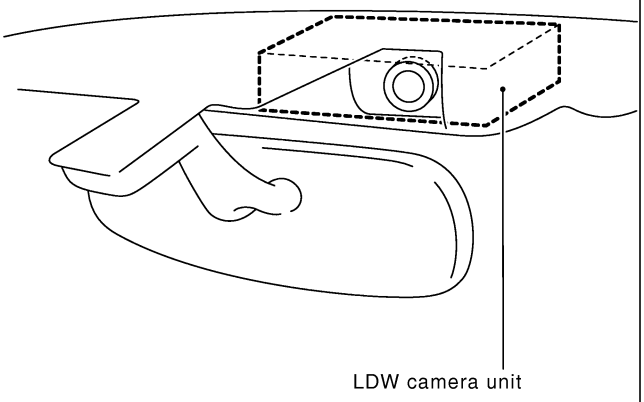
AWD models



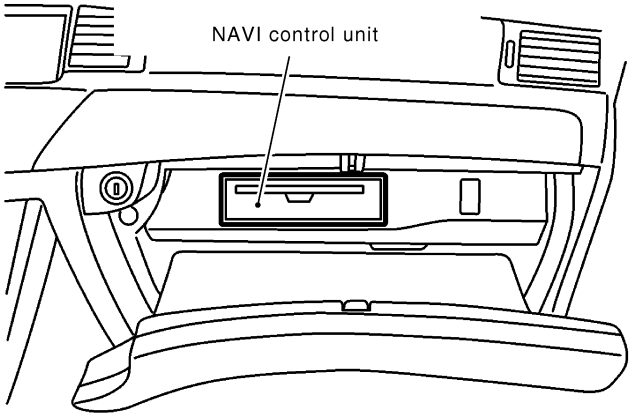
With adaptive front-lighting system



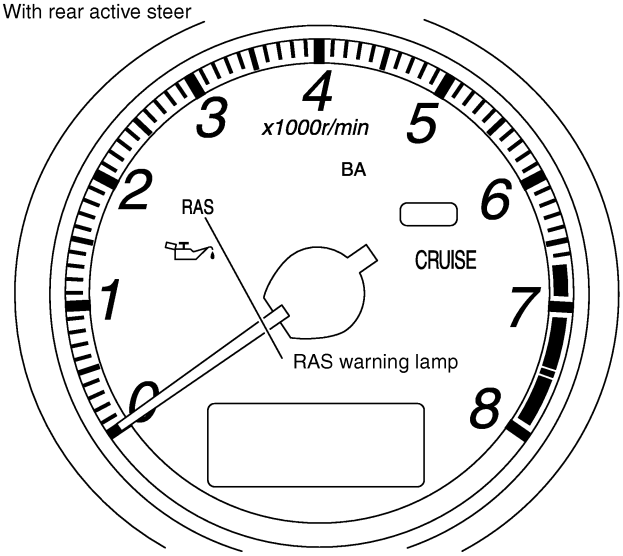
With lane departure warning



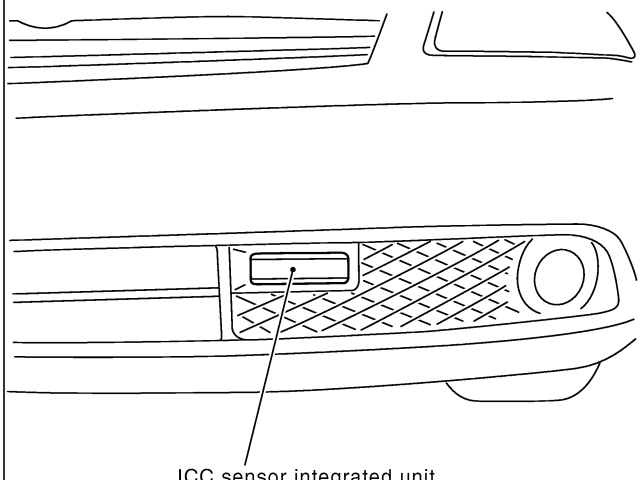
With navigation system



With rear active steer



With ICC system



PKID0330E

CAN Communication Signal Chart

NKS004FV

Refer to LAN-15, "How to Use CAN Communication Signal Chart" for how to use CAN communication signal chart.

TYPE 1/TYPE 2/TYPE 3/TYPE 4/TYPE 5/TYPE 6/TYPE 7

NOTE:
Refer to LAN-41, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive

Signals	ECM	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	RAS*3	PSB	ADP	ABS	ICC*4	IPDM-E
A/C compressor request signal	T															R
Accelerator pedal position signal	T				R									R	R	
ASCD CRUISE lamp signal	T							R								
ASCD OD cancel request signal	T				R											
ASCD operation signal	T				R											
ASCD SET lamp signal	T							R								
Battery voltage signal	T				R											
Closed throttle position signal	T				R										R	
Cooling fan speed request signal	T															R
Engine coolant temperature signal	T							R								
Engine speed signal	T	R			R			R			R			R	R	
Engine status signal	T		R			R	R									
Fuel consumption monitor signal	T					R		R								
ICC brake switch signal	T														R	
ICC prohibition signal	T														R	
ICC steering switch signal	T														R	
Malfunctioning indicator lamp signal	T							R								
Power generation command value signal	T															R
Stop lamp switch signal	T														R	
					R			T								
														T	R	
Wide open throttle position signal	T				R											
AFS OFF indicator signal		T						R								
A/C switch signal	R		T													
ACC signal			T				R						R			
Blower fan motor switch signal	R		T													
Buzzer output signal			T					R								
							T	R								
								R							T	
Day time running light request signal			T													R
Door lock/unlock status signal			T				R									
Door switch signal			T			R	R	R					R			R
Door unlock signal			T										R			
Front fog light request signal			T					R								R
Front wiper request signal			T												R	R
High beam request signal			T					R								R

Signals	ECM	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	RAS*3	PSB	ADP	ABS	ICC*4	IPDM-E
Ignition switch ON signal			T				R						R			
Ignition switch signal			T										R			R
Key ID signal			T										R			
Key switch signal			T										R			
Low beam request signal			T													R
Oil pressure switch signal			T					R								
			R													T
Position light request signal			T					R								R
Rear window defogger switch signal			T													R
Sleep wake up signal			T				R	R					R			R
Theft warning horn request signal			T													R
Trunk switch signal			T			R	R									
Turn indicator signal			T	R				R								
A/T CHECK indicator lamp signal					T			R								
A/T position indicator signal		R			T			R						R	R	
A/T self-diagnosis signal	R				T											
Current gear position signal					T									R	R	
Manual mode indicator signal					T			R							R	
N range signal					T		R								R	
Output shaft revolution signal	R			R	T										R	
P range signal					T		R						R	R	R	
R range signal					T							R	R		R	
Turbine revolution signal	R				T										R	
A/C switch/indicator signal						T		R								
						R		T								
System setting signal						T	R						R			
						R	T						T			
Door lock/unlock trunk open request signal			R				T									
Hazard and horn request signal			R				T									
Key warning signal							T	R								
Meter display signal							T	R								
								R							T	
Panic alarm request signal			R				T									
Power window open request signal			R				T									
A/C evaporator temperature signal	R							T								
Distance to empty signal						R		T								
Fuel level low warning signal						R		T								
Fuel level sensor signal	R							T								
Manual mode shift down signal					R			T								
Manual mode shift up signal					R			T								
Manual mode signal					R			T								
Not manual mode signal					R			T								
Parking brake switch signal			R					T								

Signals	ECM	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	RAS*3	PSB	ADP	ABS	ICC*4	IPDM-E
Seat belt buckle switch signal			R					T								
Target A/C evaporator temperature signal	R							T								
Vehicle speed signal	R	R	R		R	R	R	T				R	R		R	
				R			R	R		R	R			T	R	
Steering angle sensor signal		R							T		R			R		
Tire pressure data signal						R				T						
Tire pressure signal			R			R				T						
			T					R								
RAS signal											T			R		
A/T shift schedule change demand signal					R									T		
ABS malfunction signal														T	R	
ABS operation signal														T	R	
ABS warning lamp signal								R						T		
Brake pressure control signal														T	R	
Brake warning lamp signal								R						T		
Side G sensor signal					R									T		
SLIP indicator lamp signal								R						T		
TCS malfunction signal														T	R	
TCS operation signal														T	R	
VDC malfunction signal														T	R	
VDC OFF indicator lamp signal								R						T		
VDC OFF switch signal														T	R	
VDC operation signal														T	R	
Deceleration degree commandment value signal														R	T	
ICC OD cancel request signal					R										T	
ICC operation signal	R														T	
ICC warning lamp signal								R							T	
Front wiper stop position signal			R													T
High beam status signal	R															T
Hood switch signal			R													T
Low beam status signal	R	R														T
Rear window defogger control signal	R					R										T
Starter relay status signal							R									T

- *1: Models with adaptive front-lighting system
- *2: Models with lane departure warning
- *3: Models with rear active steer
- *4: Models with ICC system

TYPE 8/TYPE 9/TYPE 10/TYPE 11

NOTE:

Refer to LAN-41, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive

Signals	ECM	4WD	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	PSB	ADP	ABS	ICC*3	IPDM-E
A/C compressor request signal	T															R
Accelerator pedal position signal	T	R				R								R	R	
ASCD CRUISE lamp signal	T								R							
ASCD OD cancel request signal	T					R										
ASCD operation signal	T					R										
ASCD SET lamp signal	T								R							
Battery voltage signal	T					R										
Closed throttle position signal	T					R									R	
Cooling fan speed request signal	T															R
Engine coolant temperature signal	T								R							
Engine speed signal	T	R	R			R			R					R	R	
Engine status signal	T			R			R	R								
Fuel consumption monitor signal	T						R		R							
ICC brake switch signal	T														R	
ICC prohibition signal	T														R	
ICC steering switch signal	T														R	
Malfunctioning indicator lamp signal	T								R							
Power generation command value signal	T															R
Snow mode switch signal	T													R	R	
	R								T							
Stop lamp switch signal	T														R	
		R				R			T							
														T	R	
Wide open throttle position signal	T					R										
AWD signal		T												R		
AWD warning lamp signal		T							R							
AFS OFF indicator signal			T						R							
A/C switch signal	R			T												
ACC signal				T				R					R			
Blower fan motor switch signal	R			T												
Buzzer output signal				T					R							
								T	R							
									R						T	
Day time running light request signal				T												R
Door lock/unlock status signal				T				R								
Door switch signal				T			R	R	R				R			R
Door unlock signal				T									R			
Front fog light request signal				T					R							R
Front wiper request signal				T											R	R
High beam request signal				T					R							R

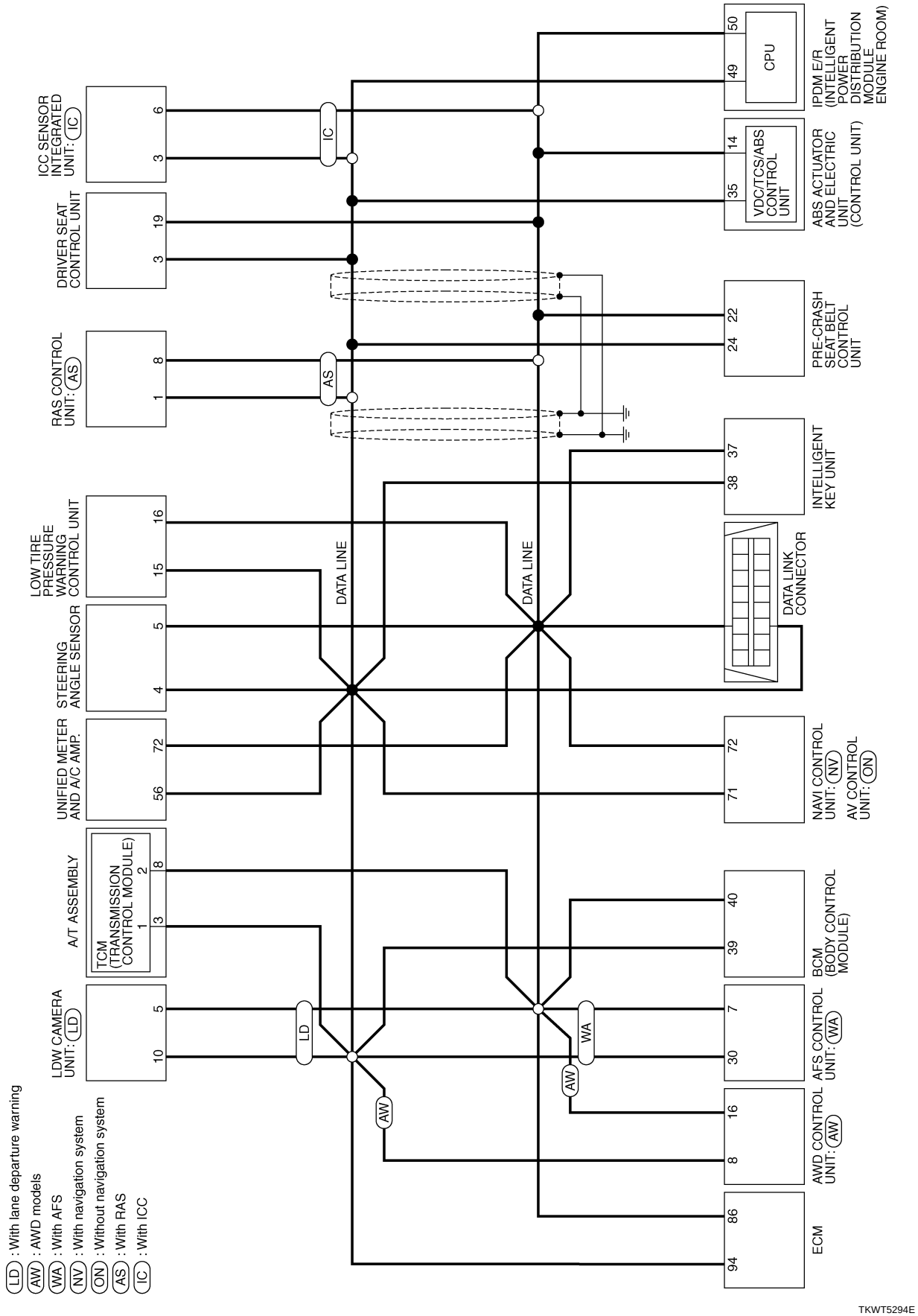
Signals	ECM	4WD	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	PSB	ADP	ABS	ICC*3	IPDM-E
Ignition switch ON signal				T				R					R			
Ignition switch signal				T									R			R
Key ID signal				T									R			
Key switch signal				T									R			
Low beam request signal				T												R
Oil pressure switch signal				T					R							
				R												T
Position light request signal				T					R							R
Rear window defogger switch signal				T												R
Sleep wake up signal				T				R	R				R			R
Theft warning horn request signal				T												R
Trunk switch signal				T			R	R								
Turn indicator signal				T	R				R							
A/T CHECK indicator lamp signal						T			R							
A/T position indicator signal			R			T			R					R	R	
A/T self-diagnosis signal	R					T										
Current gear position signal						T								R	R	
Manual mode indicator signal						T			R						R	
N range signal						T		R							R	
Output shaft revolution signal	R				R	T									R	
P range signal						T		R					R	R	R	
R range signal						T						R	R		R	
Turbine revolution signal	R					T									R	
A/C switch/indicator signal							T		R							
							R		T							
System setting signal							T	R					R			
							R	T					T			
Door lock/unlock trunk open request signal				R				T								
Hazard and horn request signal				R				T								
Key warning signal								T	R							
Meter display signal								T	R							
									R						T	
Panic alarm request signal				R				T								
Power window open request signal				R				T								
A/C evaporator temperature signal	R								T							
Distance to empty signal							R		T							
Fuel level low warning signal							R		T							
Fuel level sensor signal	R								T							
Manual mode shift down signal						R			T							
Manual mode shift up signal						R			T							
Manual mode signal						R			T							
Not manual mode signal						R			T							
Parking brake switch signal		R		R					T							

Signals	ECM	4WD	AFS*1	BCM	LANE*2	TCM	AV	I-KEY	M&A	STRG	TPMS	PSB	ADP	ABS	ICC*3	IPDM-E
Seat belt buckle switch signal				R					T							
Target A/C evaporator temperature signal	R								T							
Vehicle speed signal	R		R	R		R	R	R	T			R	R		R	
		R			R			R	R		R			T	R	
Steering angle sensor signal			R							T				R		
Tire pressure data signal							R				T					
Tire pressure signal				R			R				T					
				T					R							
A/T shift schedule change demand signal						R								T		
ABS malfunction signal														T	R	
ABS operation signal														T	R	
ABS warning lamp signal									R					T		
Brake pressure control signal														T	R	
Brake warning lamp signal									R					T		
Side G sensor signal						R								T		
SLIP indicator lamp signal									R					T		
TCS malfunction signal														T	R	
TCS operation signal														T	R	
VDC malfunction signal														T	R	
VDC OFF indicator lamp signal									R					T		
VDC OFF switch signal														T	R	
VDC operation signal														T	R	
Deceleration degree commandment value signal														R	T	
ICC OD cancel request signal						R									T	
ICC operation signal	R														T	
ICC warning lamp signal									R						T	
Front wiper stop position signal				R												T
High beam status signal	R															T
Hood switch signal				R												T
Low beam status signal	R		R													T
Rear window defogger control signal	R						R									T
Starter relay status signal								R								T

- *1: Models with adaptive front-lighting system
- *2: Models with lane departure warning
- *3: Models with ICC system

Schematic

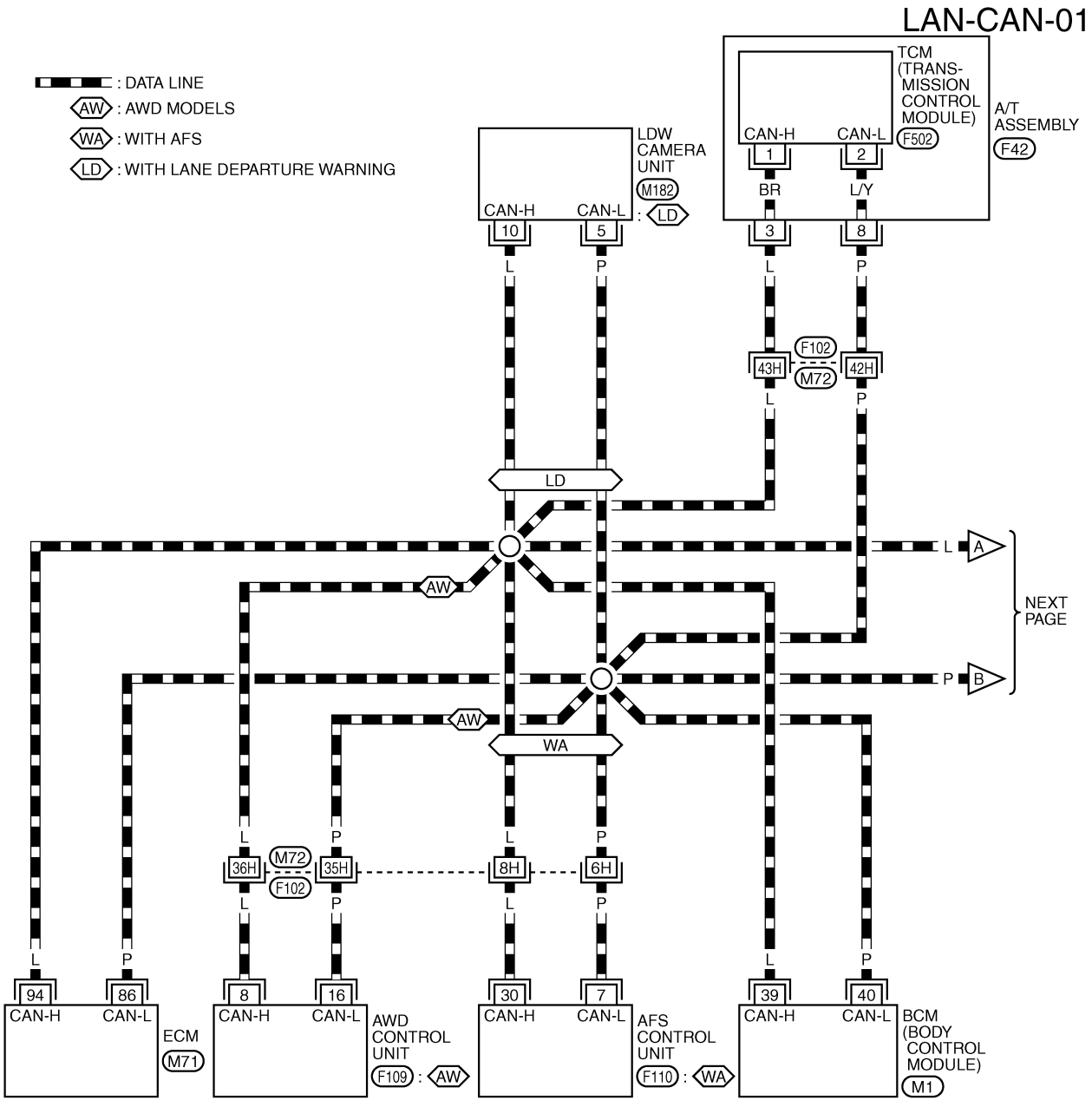
NKS004FW

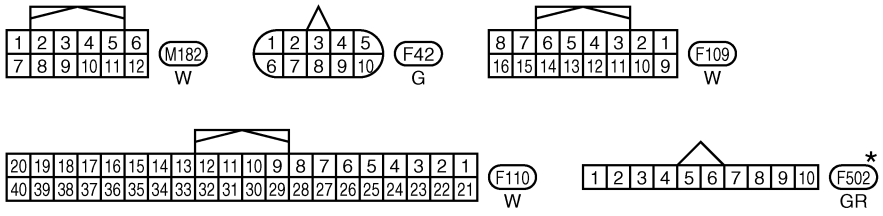


TKWT5294E

Wiring Diagram — CAN —

NKS004FX



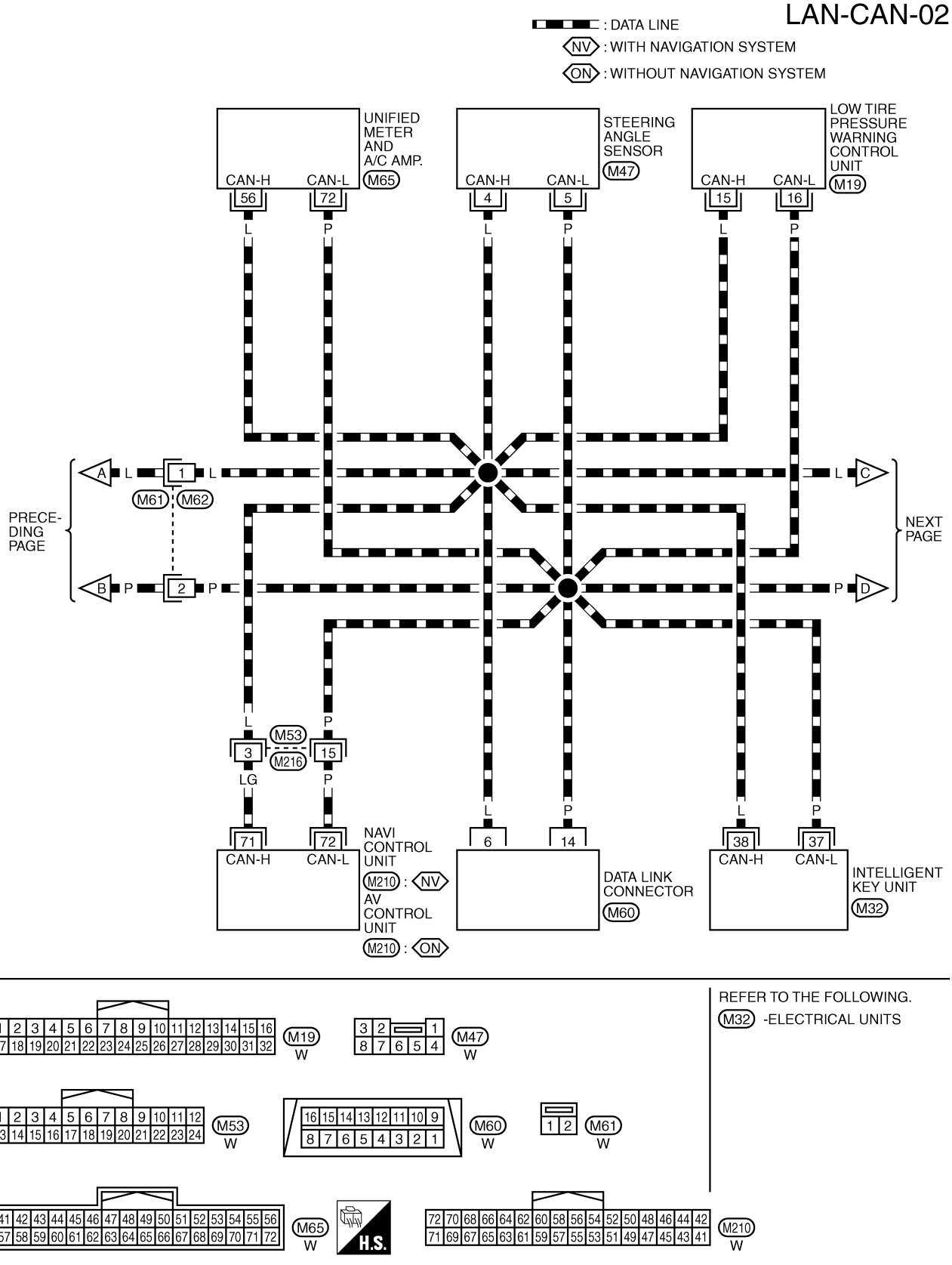


*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

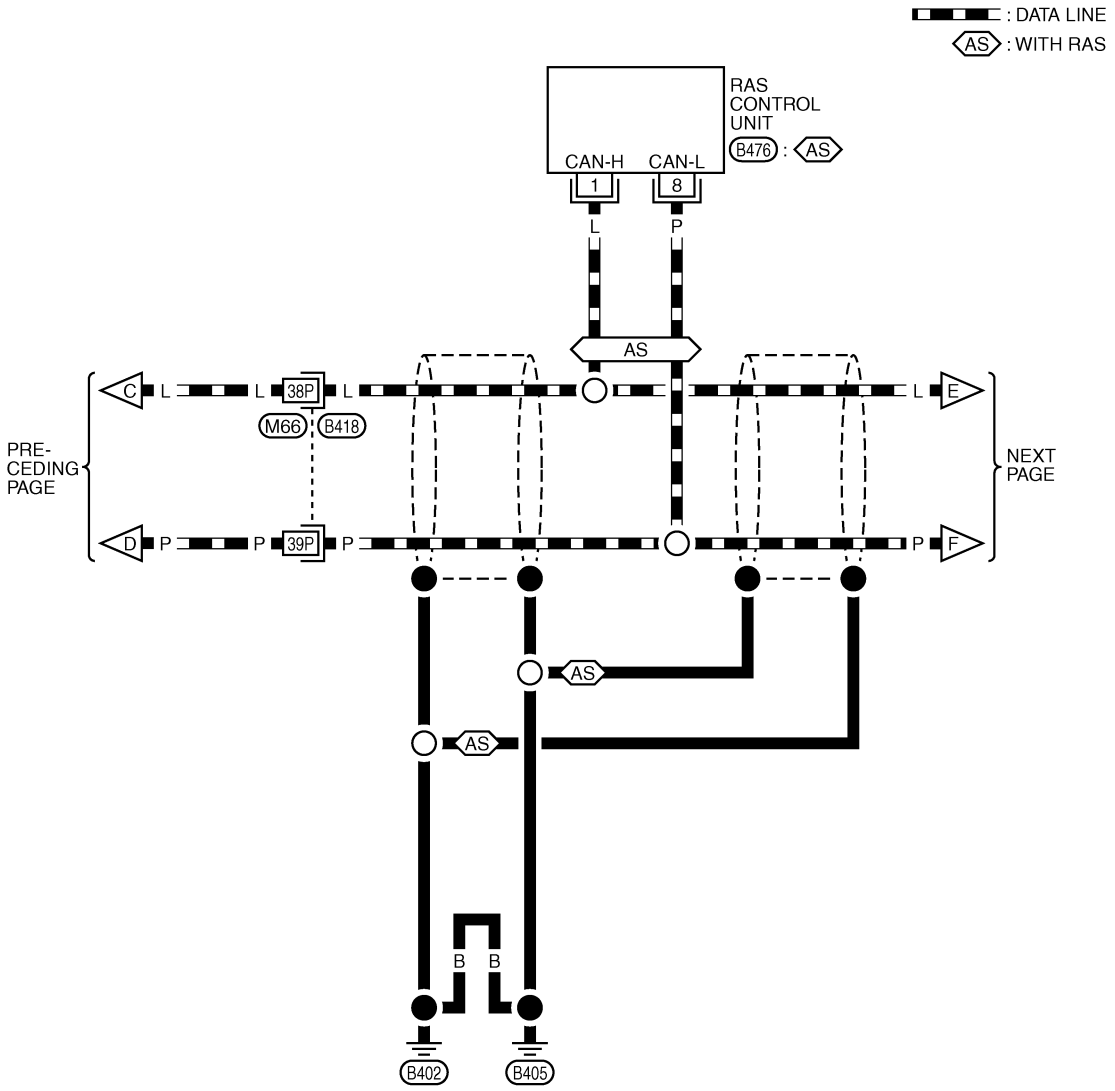
REFER TO THE FOLLOWING.
F102 -SUPER MULTIPLE JUNCTION (SMJ)
M1 , M71 -ELECTRICAL UNITS

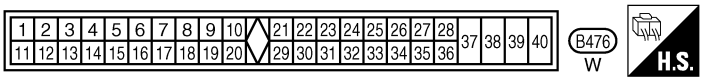
TKWT5295E

LAN-CAN-02



TKWT5296E

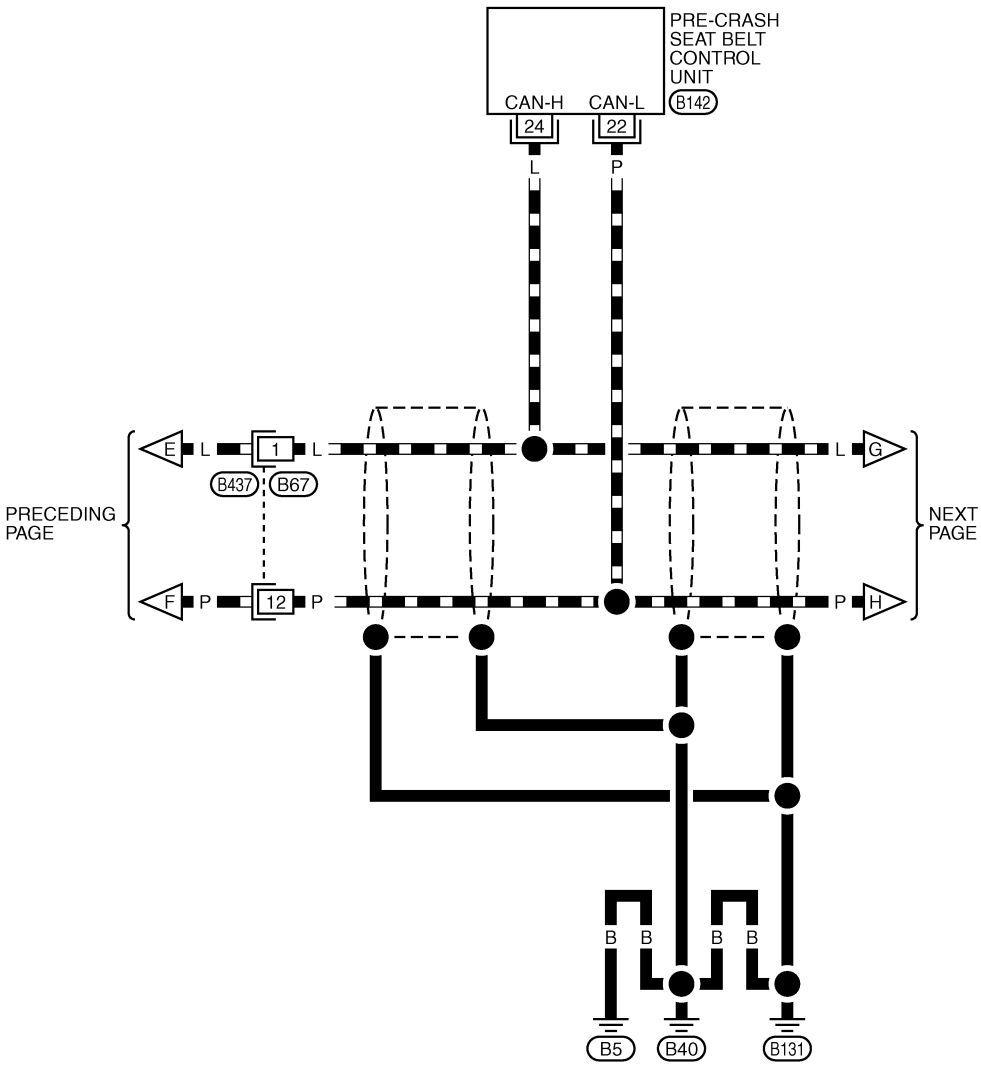


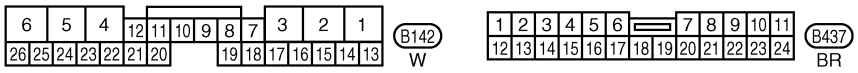


REFER TO THE FOLLOWING.
B418 -SUPER MULTIPLE JUNCTION (SMJ)

TKWT5297E

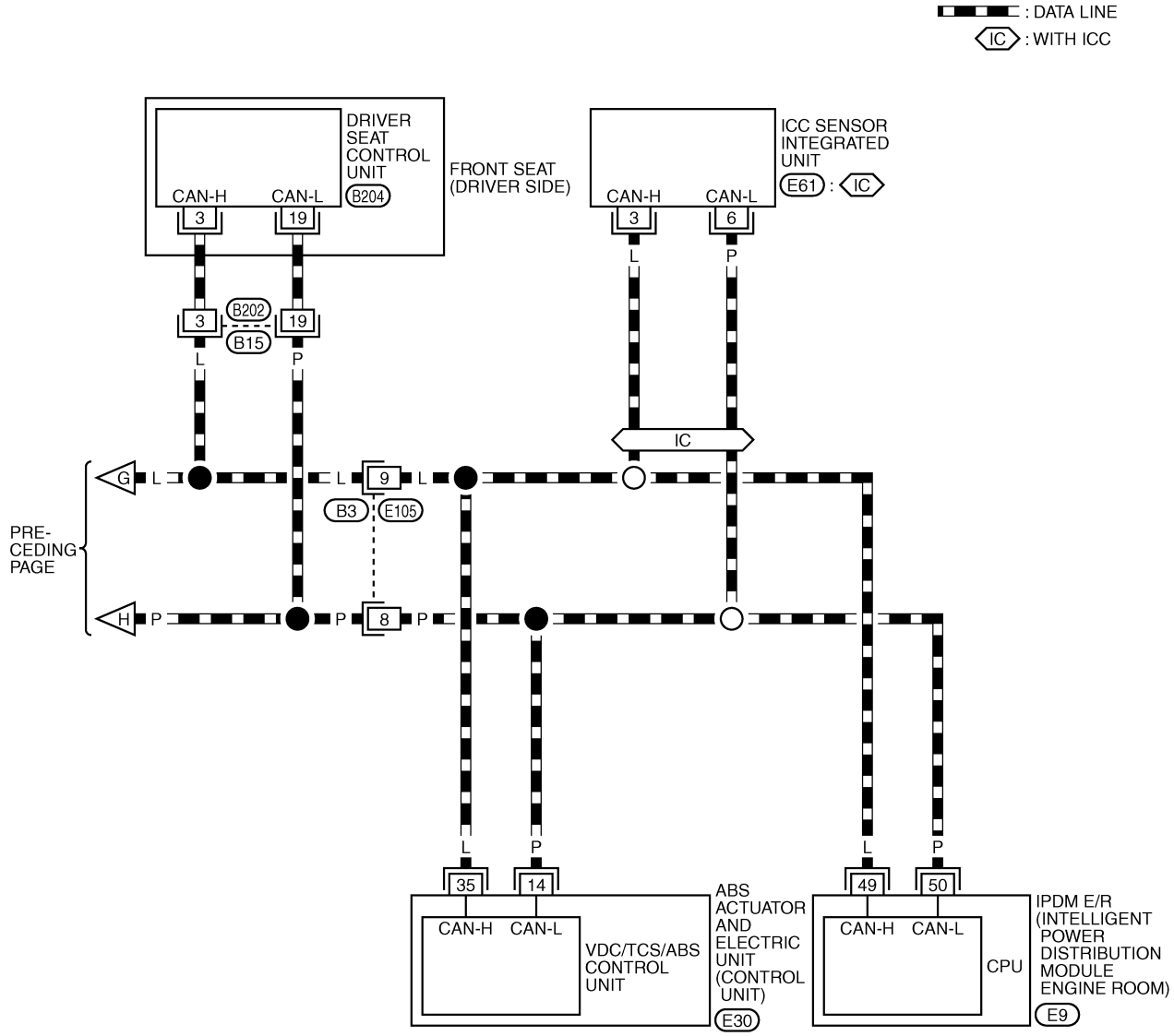
LAN-CAN-04

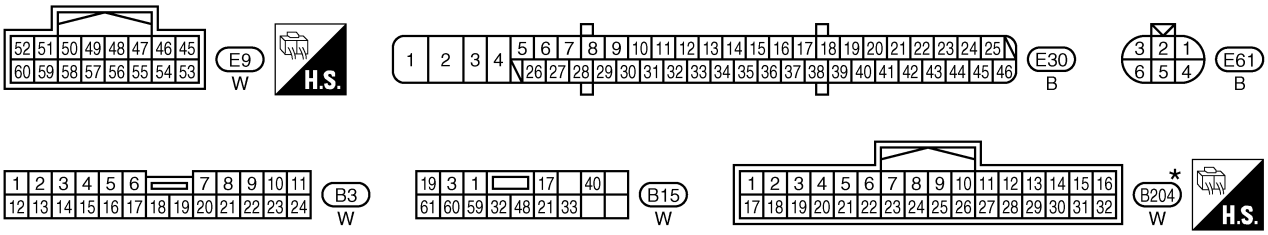




TKWT5298E

LAN-CAN-05





*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TKWT5299E

Interview Sheet

NKS004FY

CAN Communication System Diagnosis Interview Sheet

Date received:

Type: VIN No.:

Model:

First registration: Mileage:

CAN system type:

Symptom (Results from interview with customer)

Condition at inspection

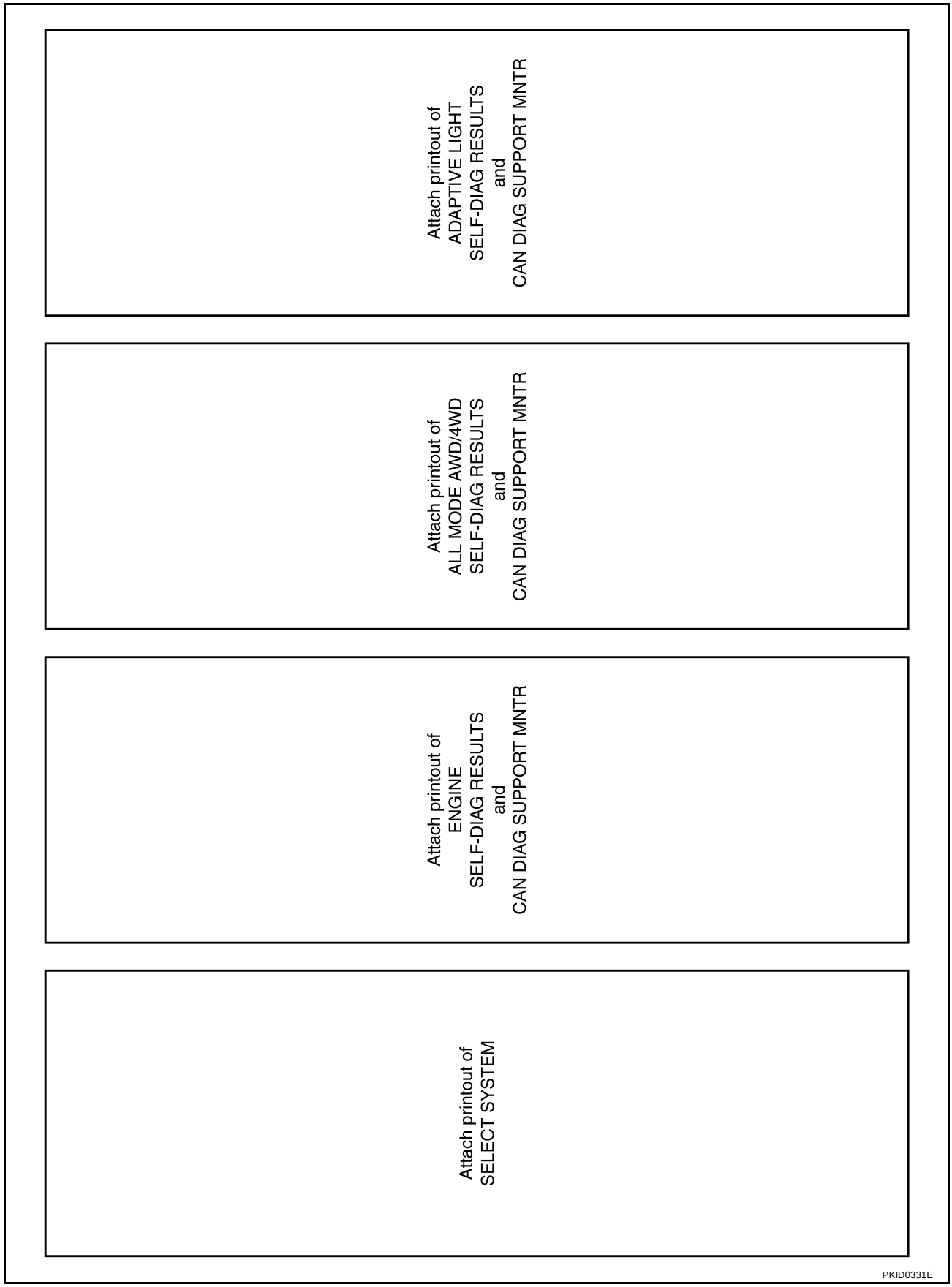
Error symptom : Present / Past

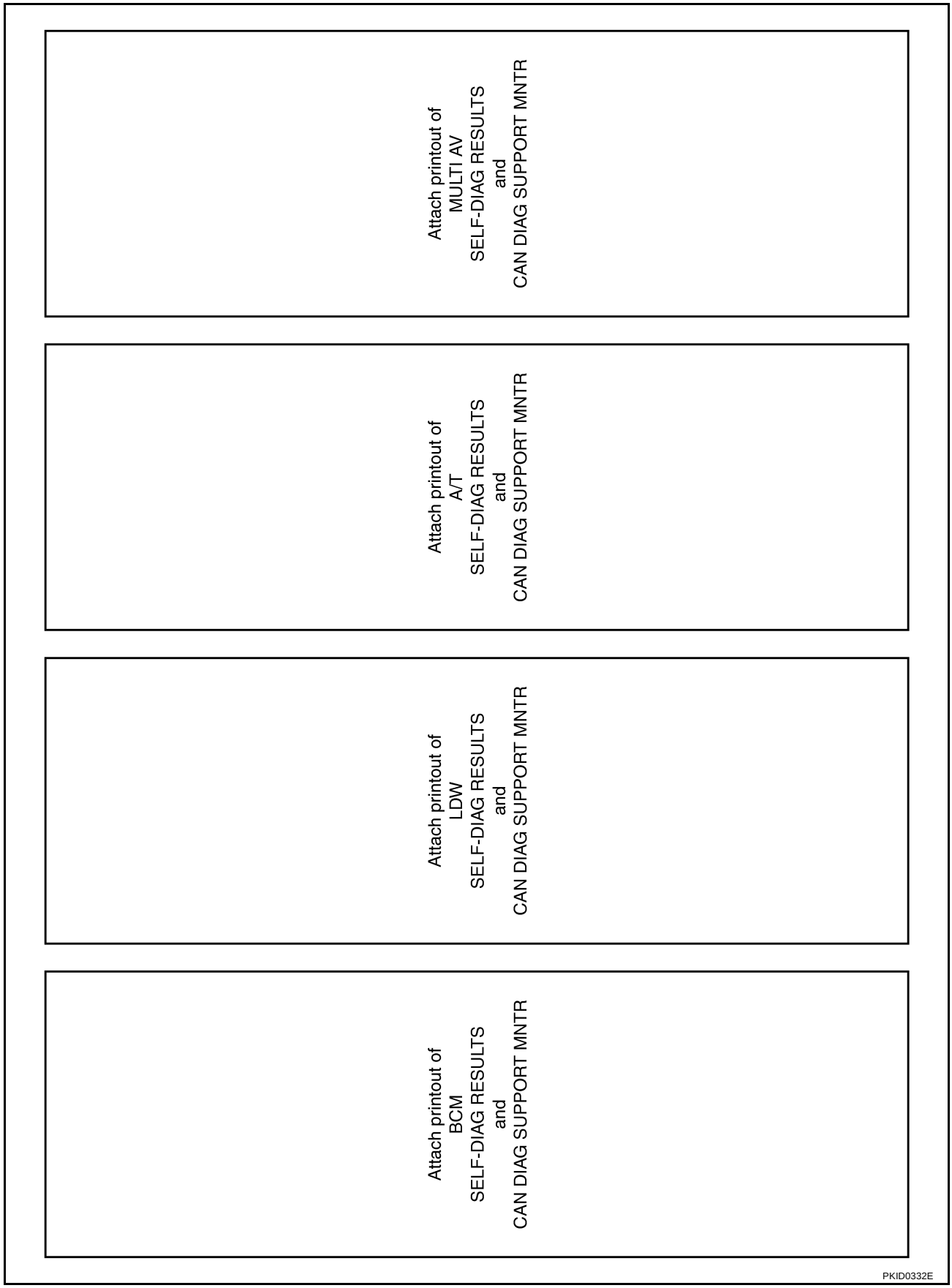
SKIB8898E

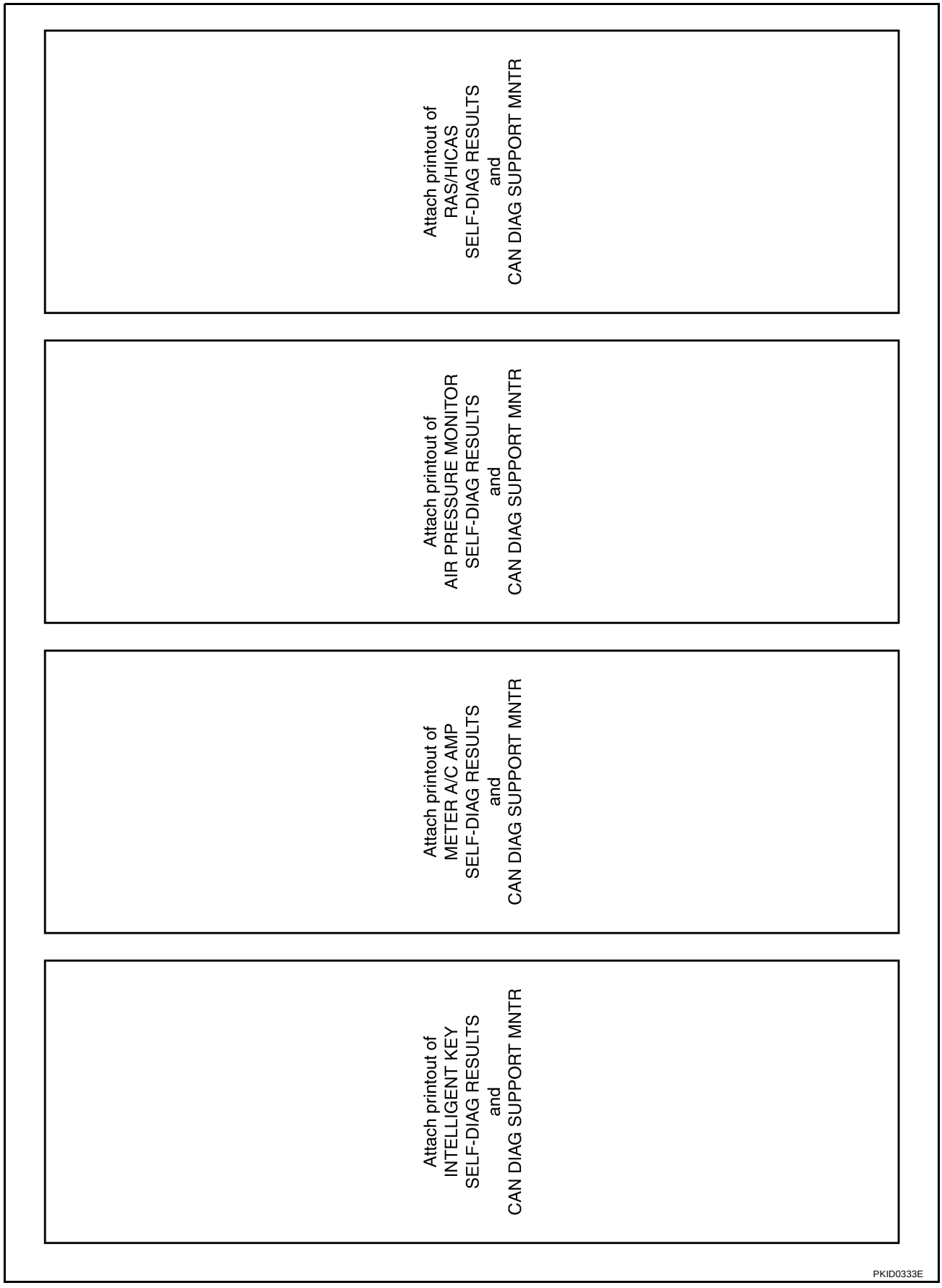
Data Sheet

NKS004FZ

CONSULT-II DATA ATTACHMENT SHEET




Attach printout of
MULTI AV
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
A/T
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
LDW
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
BCM
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
PKID0332E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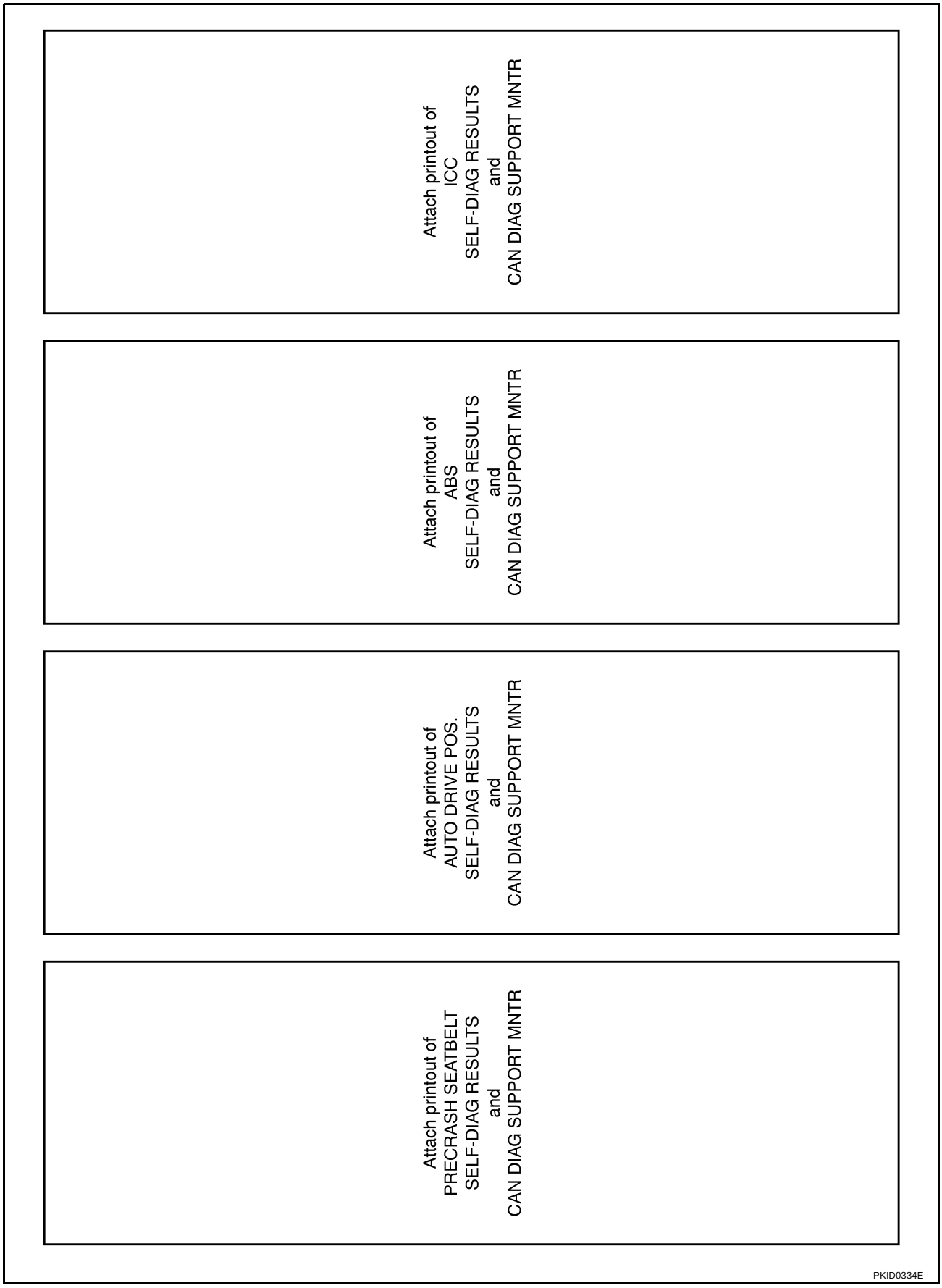
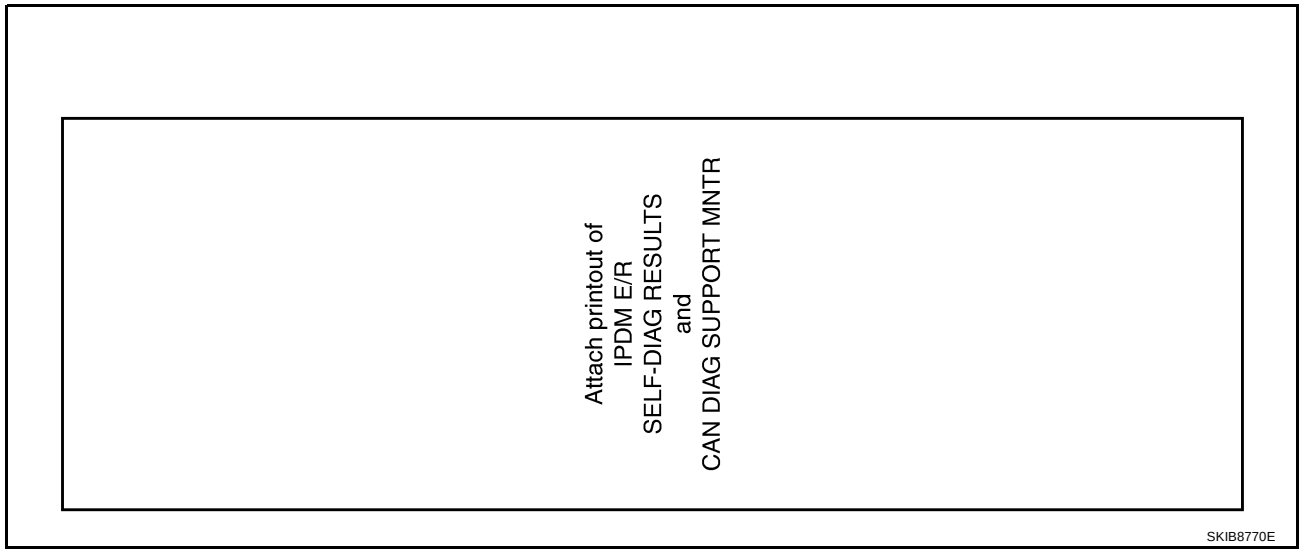
RAS/HICAS
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
AIR PRESSURE MONITOR
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
METER A/C AMP
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
INTELLIGENT KEY
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
PKID0333E

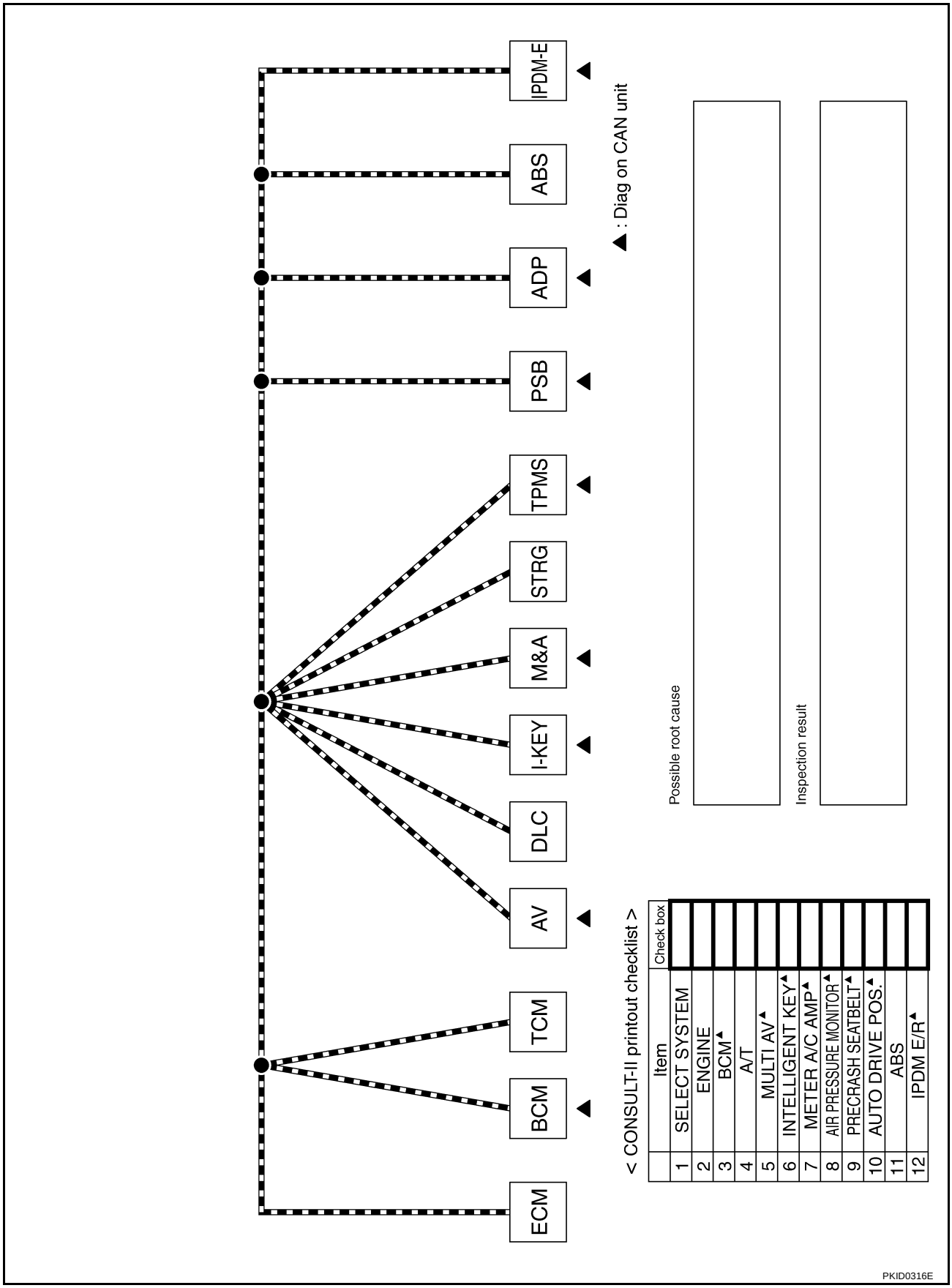

Attach printout of
ICC
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
ABS
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
AUTO DRIVE POS.
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
Attach printout of
PRECRASH SEATBELT
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
PKID0334E


Attach printout of
IPDM E/R
SELF-DIAG RESULTS
and
CAN DIAG SUPPORT MNTR
SKIB8770E

CAN System (Type 1)

NKS004G0

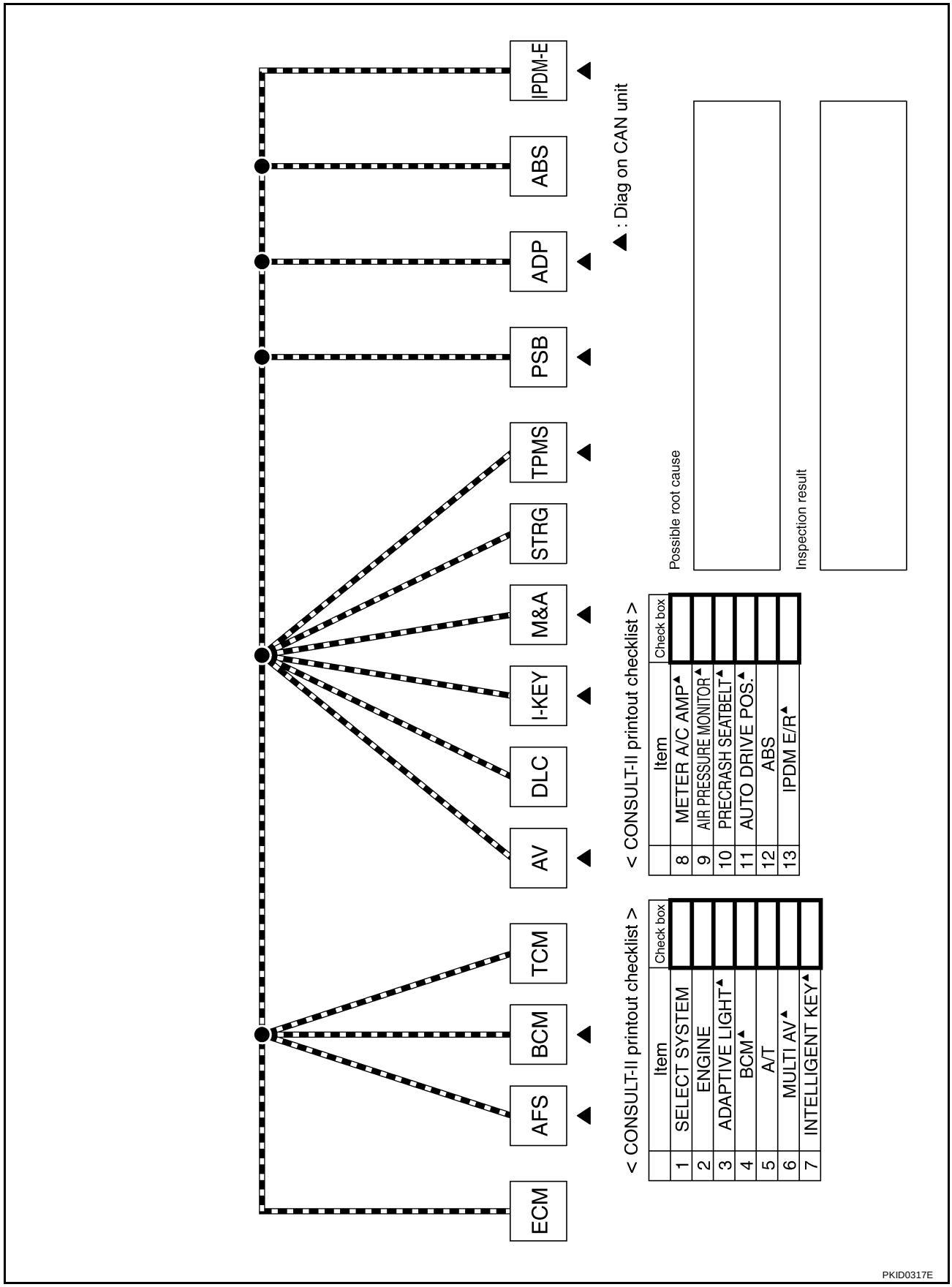
DIAGNOSIS SHEET



CAN System (Type 2)

NKS004G1

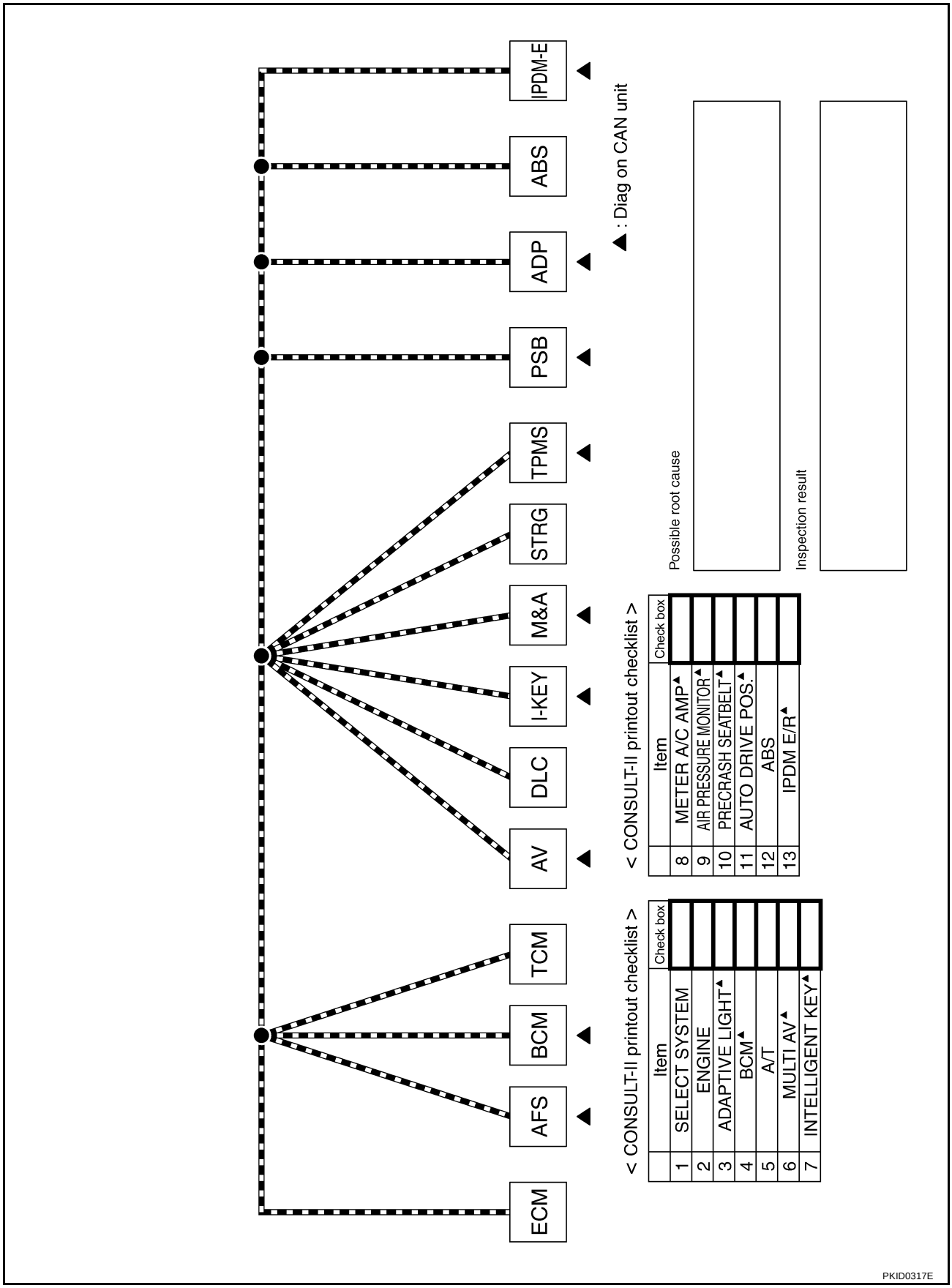
DIAGNOSIS SHEET



CAN System (Type 3)

NKS004G2

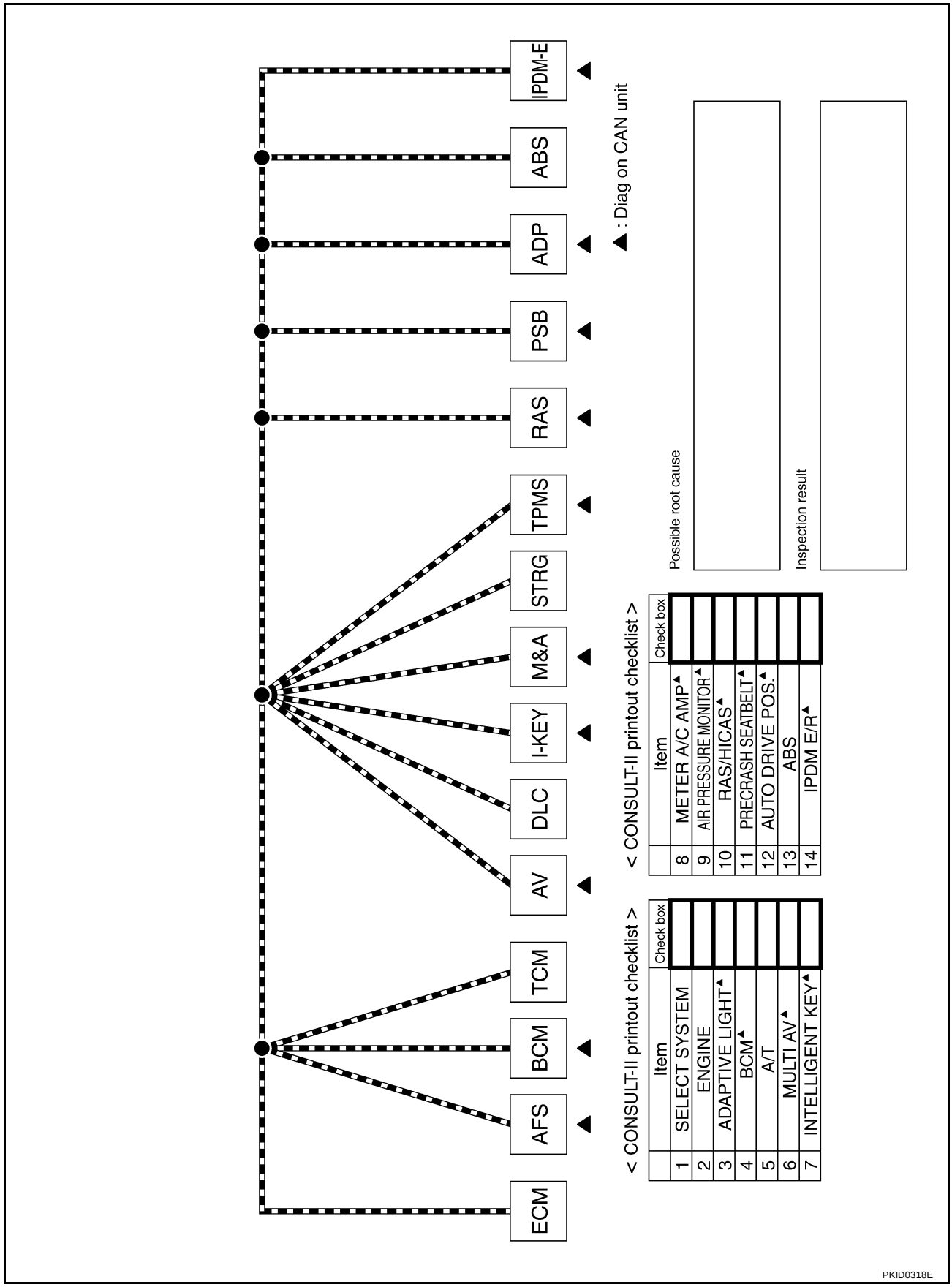
DIAGNOSIS SHEET



CAN System (Type 4)

NKS004G3

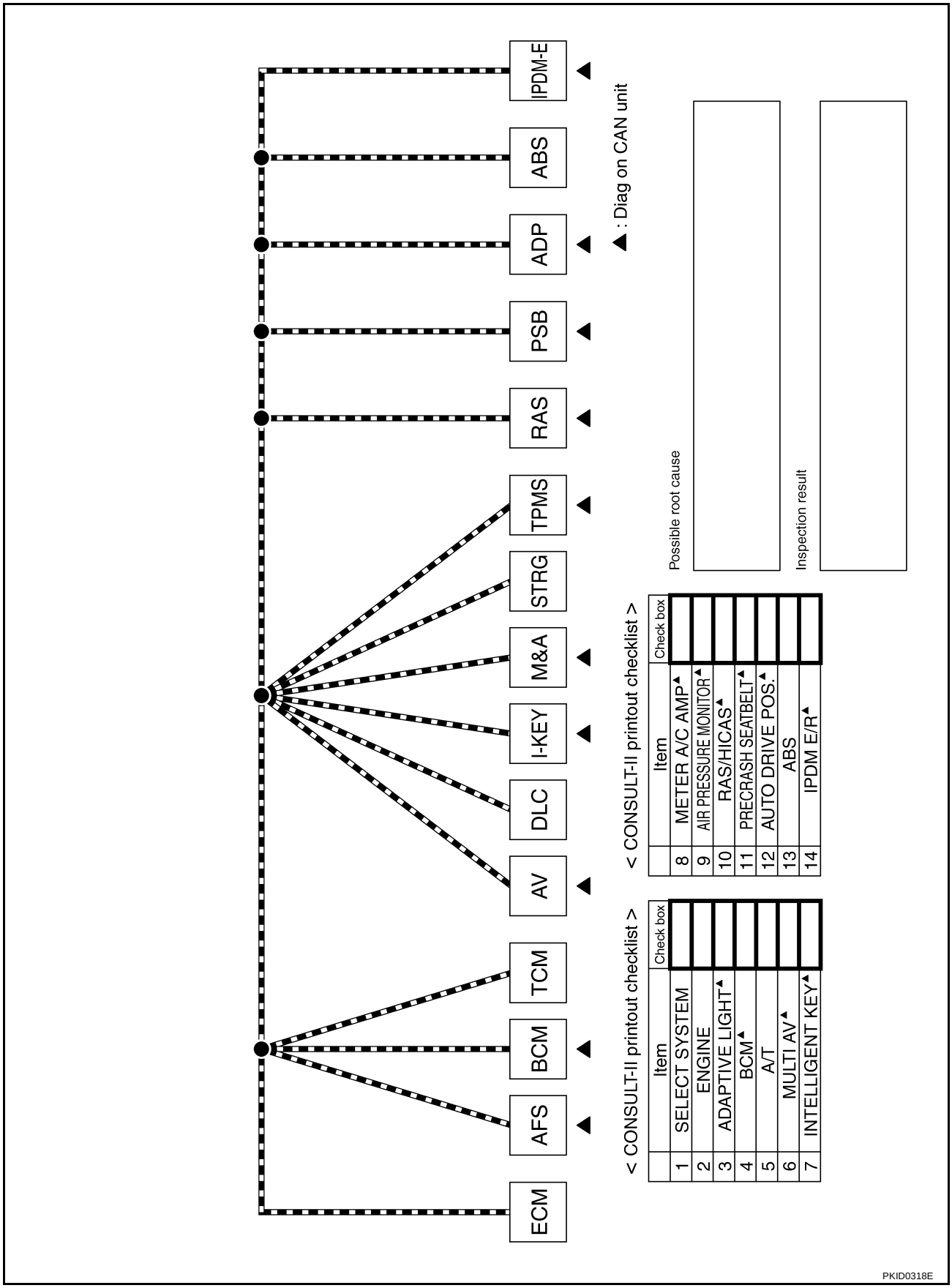
DIAGNOSIS SHEET



CAN System (Type 5)

NKS004GQ

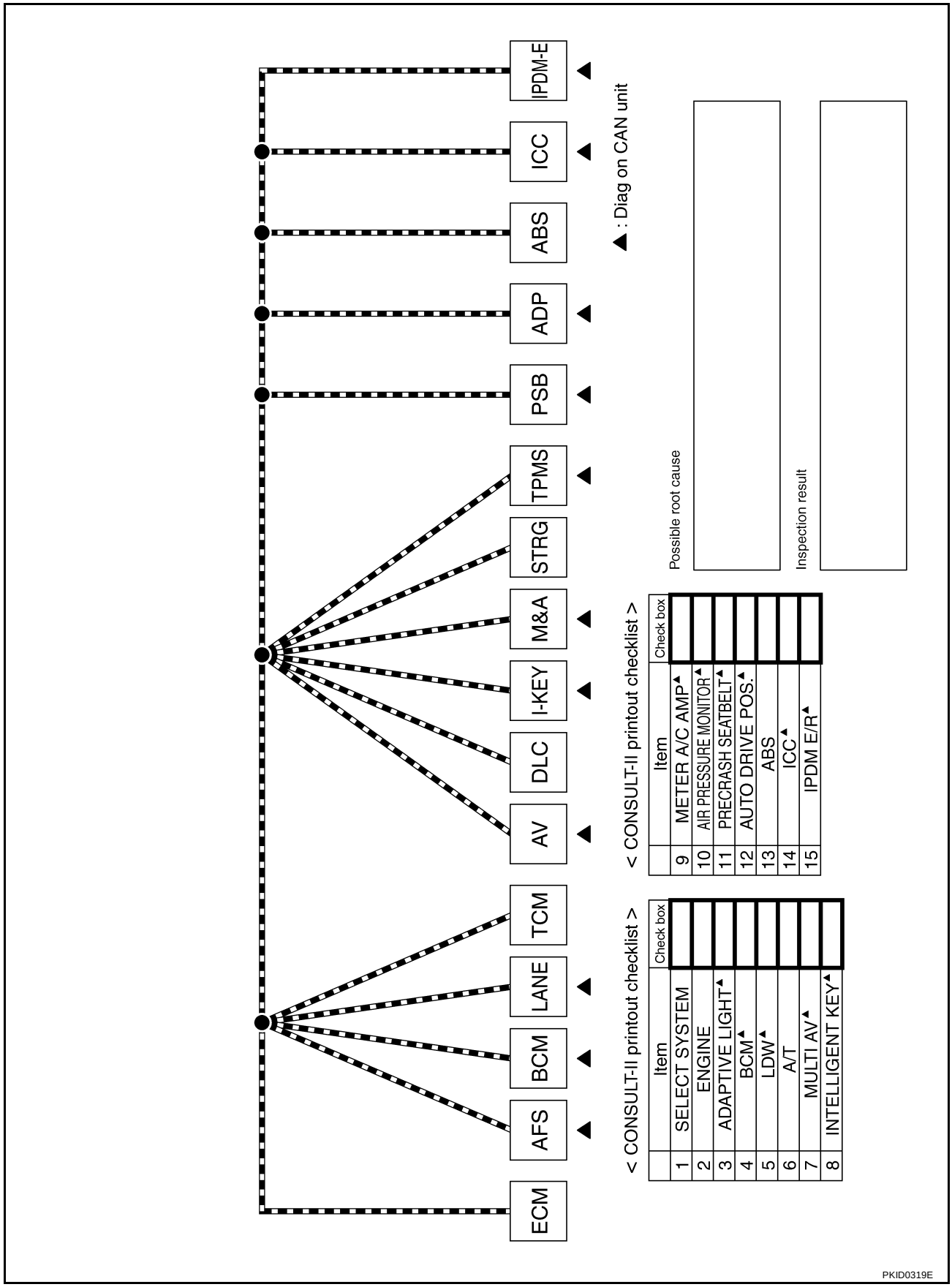
DIAGNOSIS SHEET



CAN System (Type 6)

NKS004GR

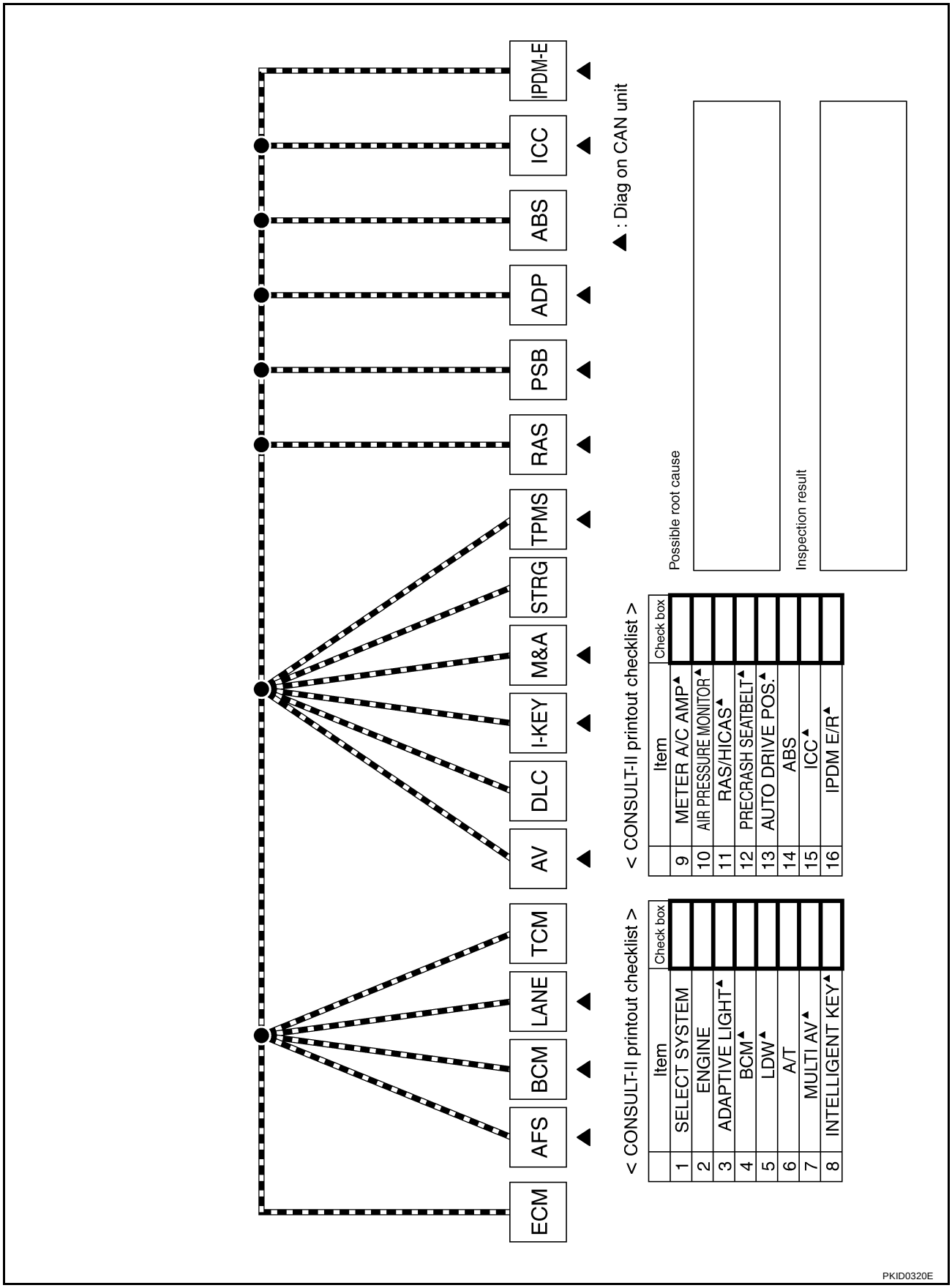
DIAGNOSIS SHEET



CAN System (Type 7)

NKS004GS

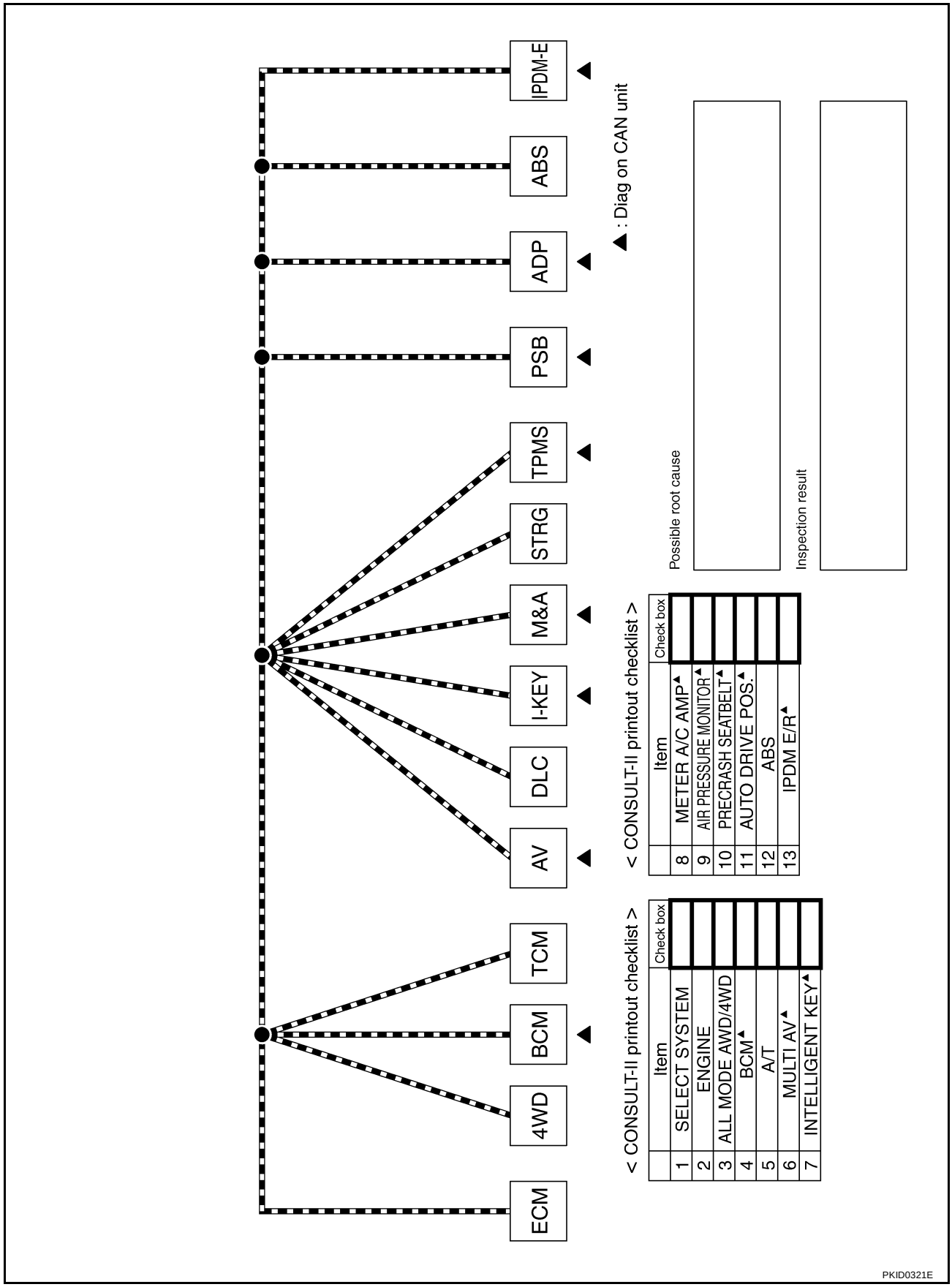
DIAGNOSIS SHEET



CAN System (Type 8)

NKS004GT

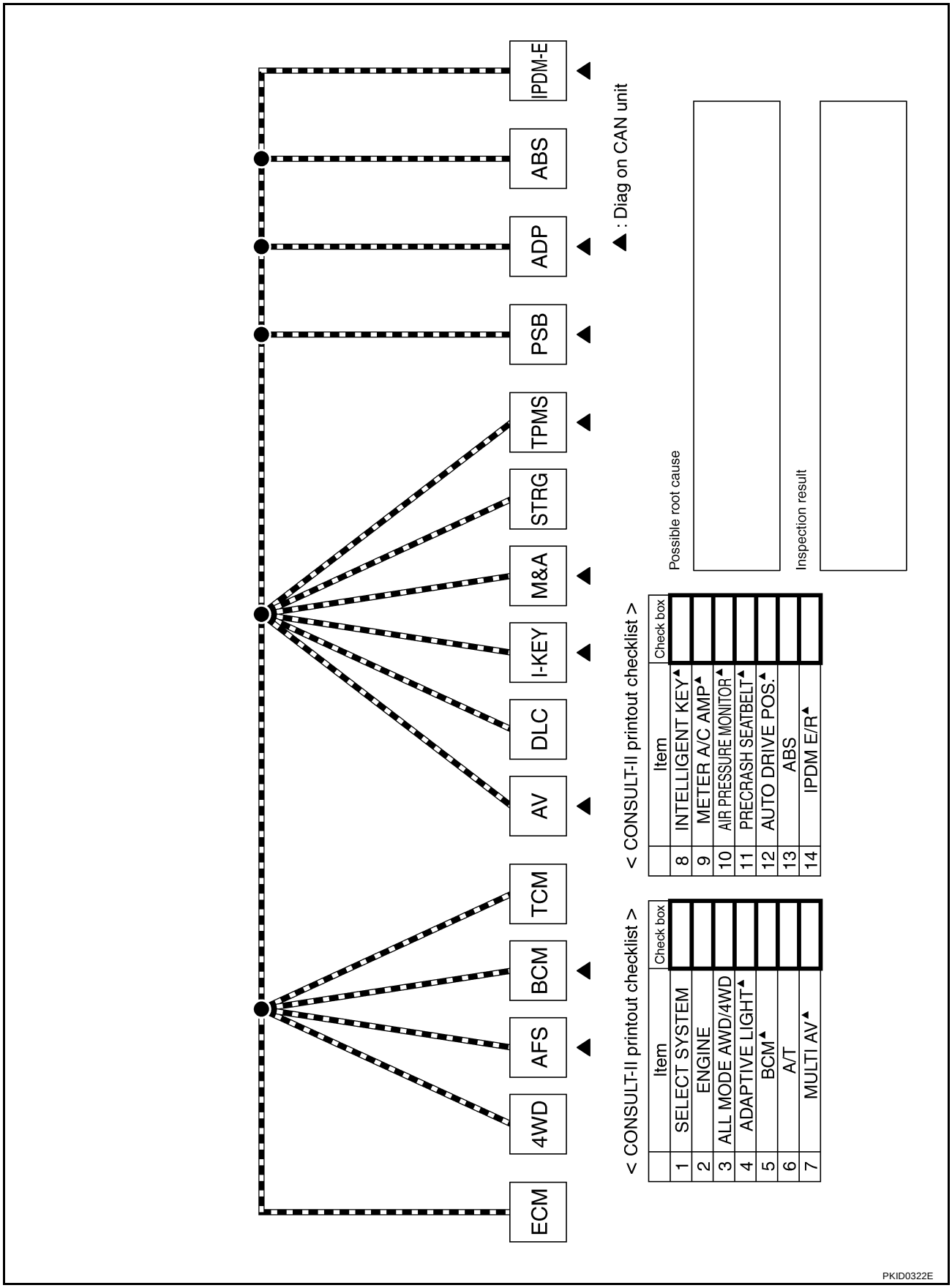
DIAGNOSIS SHEET



CAN System (Type 9)

NKS004GU

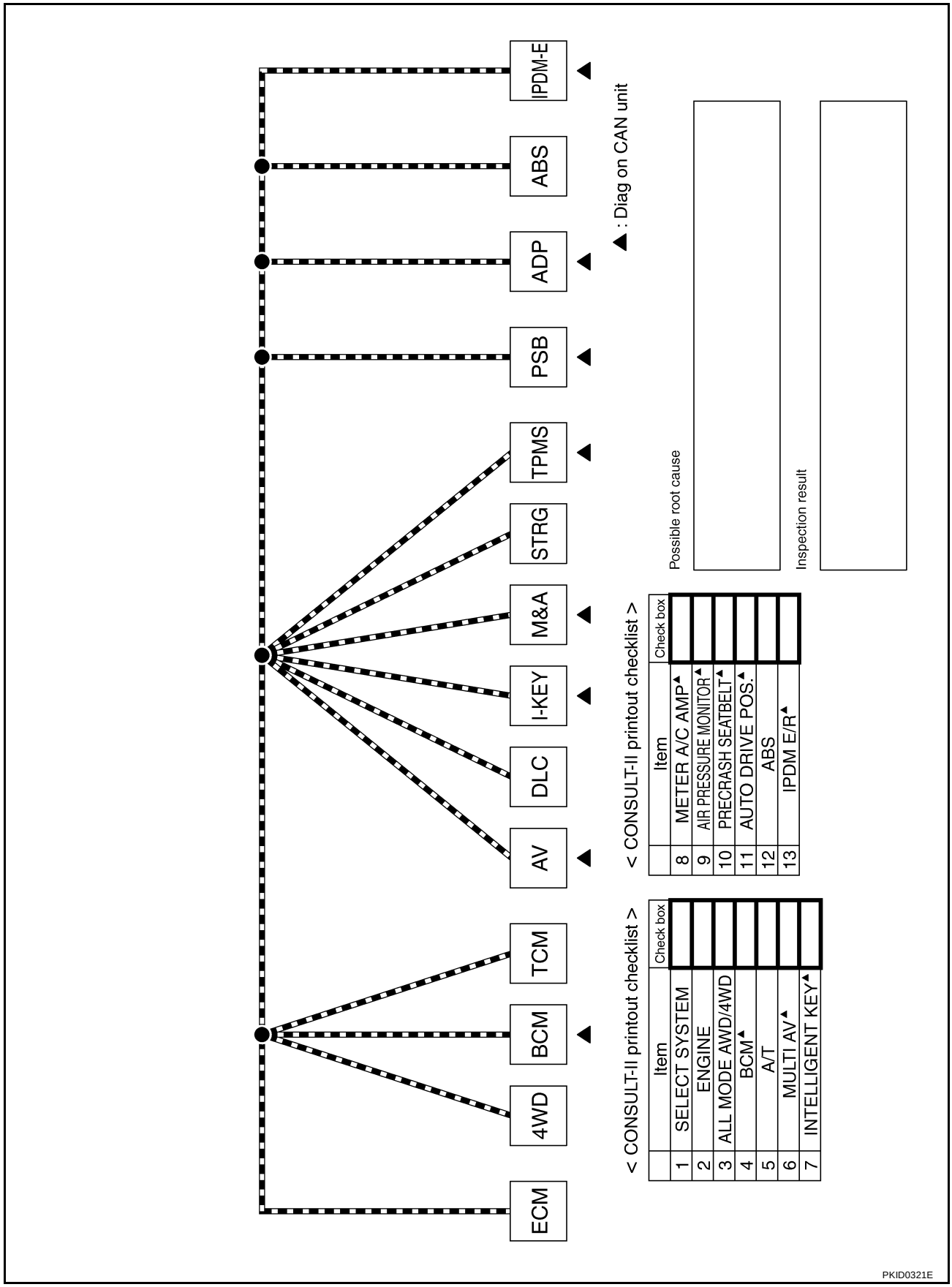
DIAGNOSIS SHEET



CAN System (Type 10)

NKS004GV

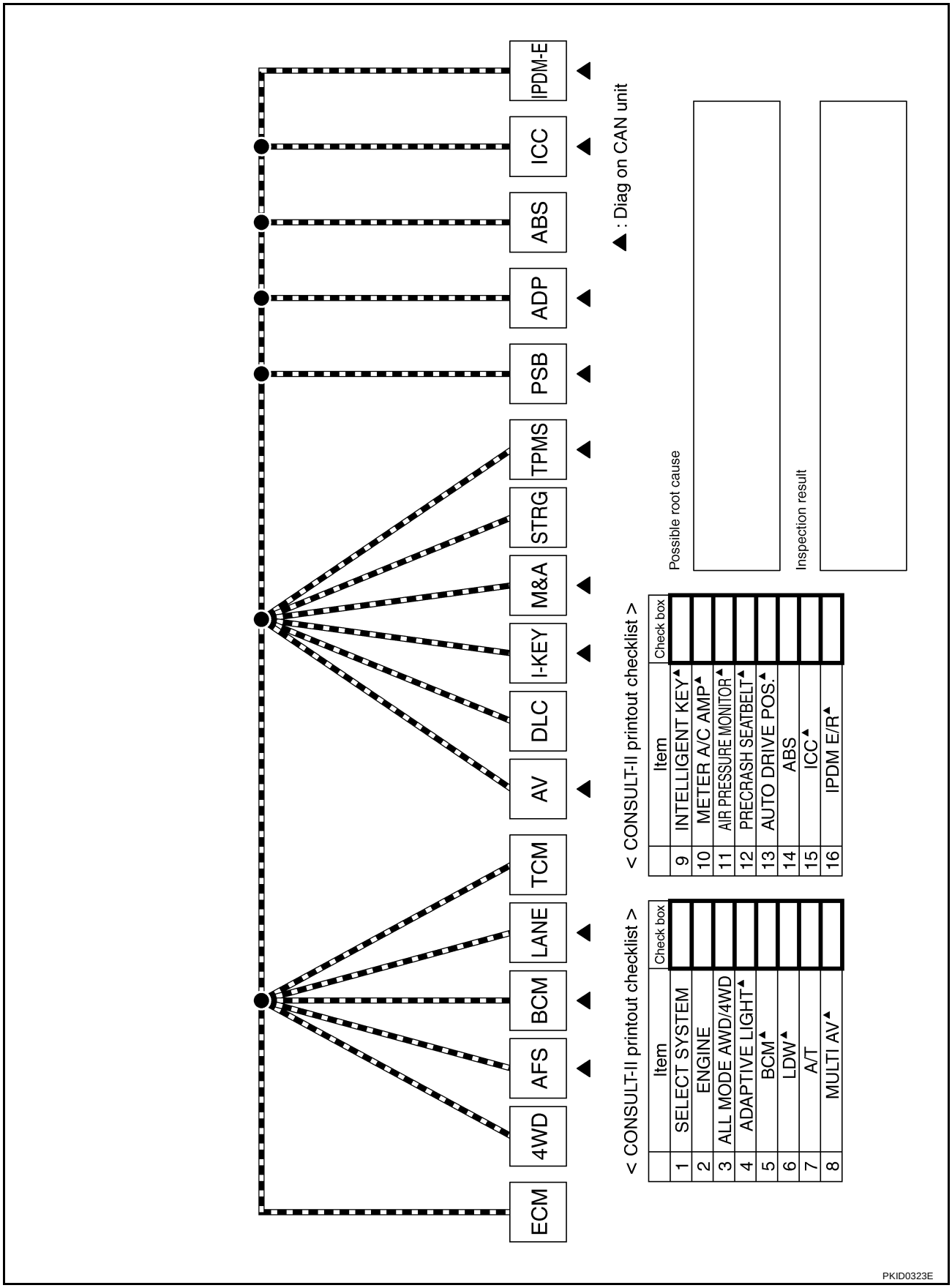
DIAGNOSIS SHEET



CAN System (Type 11)

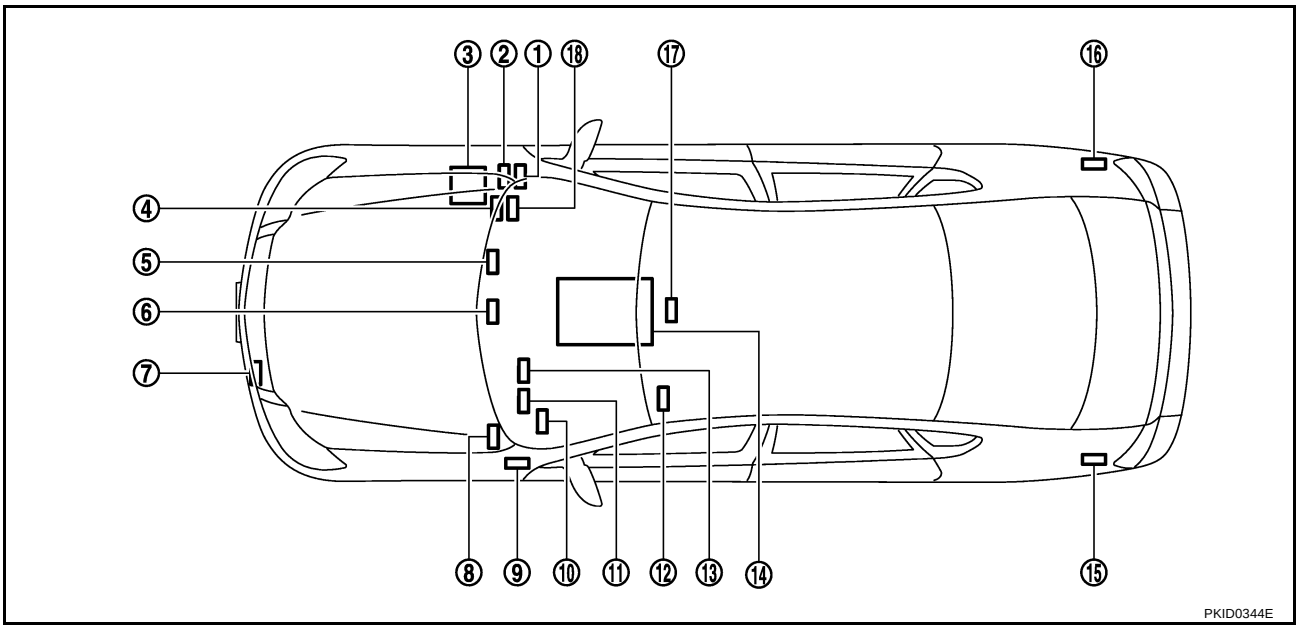
NKS004GW

DIAGNOSIS SHEET



Component Parts Location

NKS004G4



1. AWD control unit F109	2. AFS control unit F110	3. IPDM E/R E9
4. BCM M1	5. NAVI control unit M210: With navigation system AV control unit M210: Without navigation system	6. Unified meter and A/C amp. M65
7. ICC sensor integrated unit E61	8. ABS actuator and electric unit (control unit) E30	9. Intelligent Key unit M32
10. Data link connector M60	11. Low tire pressure warning control unit M19	12. Driver seat control unit B204
13. Steering angle sensor M47	14. TCM F42	15. Pre-crash seat belt control unit B142
16. RAS control unit B476	17. LDW camera unit M182	18. ECM M71

Harness Layout

NKS004G5

Refer to PG-62, "Harness Layout" .

Malfunction Area Chart

NKS004G6

MAIN LINE

Malfunction Area	Reference
Main line between TCM and data link connector	LAN-83, "Main Line Between TCM and Data Link Connector"
Main line between data link connector and pre-crash seat belt control unit	LAN-84, "Main Line Between Data Link Connector and Pre-crash Seat Belt Control Unit"
Main line between data link connector and RAS control unit	LAN-85, "Main Line Between Data Link Connector and RAS Control Unit"
Main line between RAS control unit and pre-crash seat belt control unit	LAN-86, "Main Line Between RAS Control Unit and Pre-crash Seat Belt Control Unit"
Main line between pre-crash seat belt control unit and driver seat control unit	LAN-87, "Main Line Between Pre-crash Seat Belt Control Unit and Driver Seat Control Unit"
Main line between driver seat control unit and ABS actuator and electric unit (control unit)	LAN-88, "Main Line Between Driver Seat Control Unit and ABS Actuator and Electric Unit (Control Unit)"
Main line between ABS actuator and electric unit (control unit) and ICC sensor integrated unit	LAN-89, "Main Line Between ABS Actuator and Electric Unit (Control Unit) and ICC Sensor Integrated Unit"

BRANCH LINE

Malfunction Area	Reference
ECM branch line circuit	LAN-89, "ECM Branch Line Circuit"
AWD control unit branch line circuit	LAN-90, "AWD Control Unit Branch Line Circuit"
AFS control unit branch line circuit	LAN-91, "AFS Control Unit Branch Line Circuit"
BCM branch line circuit	LAN-91, "BCM Branch Line Circuit"
LDW camera unit branch line circuit	LAN-92, "LDW Camera Unit Branch Line Circuit"
TCM branch line circuit	LAN-93, "TCM Branch Line Circuit"
NAVI control unit branch line circuit	LAN-93, "NAVI Control Unit Branch Line Circuit"
AV control unit branch line circuit	LAN-94, "AV Control Unit Branch Line Circuit"
Data link connector branch line circuit	LAN-95, "Data Link Connector Branch Line Circuit"
Intelligent Key unit branch line circuit	LAN-95, "Intelligent Key Unit Branch Line Circuit"
Unified meter and A/C amp. branch line circuit	LAN-96, "Unified Meter and A/C Amp. Branch Line Circuit"
Steering angle sensor branch line circuit	LAN-97, "Steering Angle Sensor Branch Line Circuit"
Low tire pressure warning control unit branch line circuit	LAN-97, "Low Tire Pressure Warning Control Unit Branch Line Circuit"
RAS control unit branch line circuit	LAN-98, "RAS Control Unit Branch Line Circuit"
Pre-crash seat belt control unit branch line circuit	LAN-99, "Pre-Crash Seat Belt Control Unit Branch Line Circuit"
Driver seat control unit branch line circuit	LAN-99, "Driver Seat Control Unit Branch Line Circuit"
ABS actuator and electric unit (control unit) branch line circuit	LAN-100, "ABS Actuator and Electric Unit (Control Unit) Branch Line Circuit"
ICC sensor integrated unit branch line circuit	LAN-101, "ICC Sensor Integrated Unit Branch Line Circuit"
IPDM E/R branch line circuit	LAN-101, "IPDM E/R Branch Line Circuit"

SHORT CIRCUIT

Malfunction Area	Reference
CAN communication circuit	LAN-102, "CAN Communication Circuit"

Main Line Between TCM and Data Link Connector

NKS004G7

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

– Harness connector M61
– Harness connector M62

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

– Harness connectors F102 and M72
– Harness connectors M61 and M62

2. Check the continuity between harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M72	43H	M61	1	Yes
	42H		2	Yes

OK or NG

OK >> GO TO 3.
NG >> Repair the main line between the harness connector M72 and M61.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M62	1	M60	6	Yes
	2		14	Yes

OK or NG

OK >> ● Present error: Check the following items again.
– Decision of CAN system type.
– Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
– Procedure for detecting root cause.
● Past error: Error was detected in the main line between the TCM and the data link connector.

NG >> Repair the main line between the harness connector M62 and the data link connector.

Main Line Between Data Link Connector and Pre-crash Seat Belt Control Unit

NKS004GY

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- Harness connector M66
- Harness connector B418
- Harness connector B437
- Harness connector B67

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M66 and B418.
2. Check the continuity between the data link connector and the harness connector.

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M60	6	M66	38P	Yes
	14		39P	Yes

OK or NG

OK >> GO TO 3.
NG >> Repair the main line between the data link connector and the harness connector M66.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B437 and B67.
2. Check the continuity between harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B418	38P	B437	1	Yes
	39P		12	Yes

OK or NG

OK >> GO TO 4.
NG >> Replace the body No. 2 harness.

4. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of pre-crash seat belt control unit.
2. Check the continuity between the harness connector and the pre-crash seat belt control unit harness connector.

Harness connector		Pre-crash seat belt control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B67	1	B142	24	Yes
	12		22	Yes

OK or NG

OK >> ● Present error: Check the following items again.
- Decision of CAN system type.
- Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

● Past error: Error was detected in the main line between the data link connector and the pre-crash seat belt control unit.

NG >> Replace the body harness.

Main Line Between Data Link Connector and RAS Control Unit

NKS004GX

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- Harness connector M66
- Harness connector B418

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M66 and B418.
2. Check the continuity between the data link connector and the harness connector.

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M60	6	M66	38P	Yes
	14		39P	Yes

OK or NG

OK >> GO TO 3.
NG >> Repair the main line between the data link connector and the harness connector M66.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of RAS control unit.
2. Check the continuity between the harness connector and the RAS control unit harness connector.

Harness connector		RAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B418	38P	B476	1	Yes
	39P		8	Yes

OK or NG

OK >> ● Present error: Check the following items again.
- Decision of CAN system type.
- Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.
- ● Past error: Error was detected in the main line between the data link connector and the RAS control unit.

NG >> Replace the body No. 2 harness.

Main Line Between RAS Control Unit and Pre-crash Seat Belt Control Unit

NKS004GZ

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- Harness connector B437
- Harness connector B67

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of RAS control unit and the harness connectors B437 and B67.
2. Check the continuity between the RAS control unit harness connector and the harness connector.

RAS control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B476	1	B437	1	Yes
	8		12	Yes

OK or NG

OK >> GO TO 3.
NG >> Replace the body No. 2 harness.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of pre-crash seat belt control unit.
2. Check the continuity between the harness connector and the pre-crash seat belt control unit harness connector.

Harness connector		Pre-crash seat belt control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B67	1	B142	24	Yes
	12		22	Yes

OK or NG

OK >>
- Present error: Check the following items again.
  - Decision of CAN system type.
  - Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
  - Procedure for detecting root cause.
- Past error: Error was detected in the main line between the RAS control unit and the pre-crash seat belt control unit.

NG >> Replace the body harness.

Main Line Between Pre-crash Seat Belt Control Unit and Driver Seat Control Unit

NKS004G8

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM harness connector
- Pre-crash seat belt control unit harness connector
- Harness connector B15 and B202

4. Check continuity between the pre-crash seat belt control unit harness connector and the harness connector.

Pre-crash seat belt control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B142	24	B15	3	Yes
	22		19	Yes

OK or NG

OK >>
- Present error: Check the following items again.
  - Decision of CAN system type.
  - Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
  - Procedure for detecting root cause.
- Past error: Error was detected in the main line between the pre-crash seat belt control unit and the driver seat control unit.

NG >> Replace the body harness.

Main Line Between Driver Seat Control Unit and ABS Actuator and Electric Unit (Control Unit)

NKS004G9

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

– Harness connector B3
– Harness connector E105

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

– Harness connectors B202 and B15
– Harness connectors B3 and E105

2. Check the continuity between harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B15	3	B3	9	Yes
	19		8	Yes

OK or NG

OK >> GO TO 3.
NG >> Replace the body harness.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the continuity between the harness connector and the ABS actuator and electric unit (control unit) harness connector.

Harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E105	9	E30	35	Yes
	8		14	Yes

OK or NG

OK >> ● Present error: Check the following items again.
– Decision of CAN system type.
– Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
– Procedure for detecting root cause.
● Past error: Error was detected in the main line between the driver seat control unit and the ABS actuator and electric unit (control unit).

NG >> Repair the main line between the harness connector E105 and the ABS actuator and electric unit (control unit).

Main Line Between ABS Actuator and Electric Unit (Control Unit) and ICC Sensor Integrated Unit

NKS004H0

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ABS actuator and electric unit (control unit) harness connector
- ICC sensor integrated unit harness connector
- IPDM E/R harness connector
4. Check continuity between the ABS actuator and electric unit (control unit) harness connector and the ICC sensor integrated unit harness connector.

ABS actuator and electric unit (control unit) harness connector		ICC sensor integrated unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E30	35	E61	3	Yes
	14		6	Yes

OK or NG

OK >> ● Present error: Check the following items again.
- Decision of CAN system type.
- Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

● Past error: Error was detected in the main line between the ABS actuator and electric unit (control unit) and the ICC sensor integrated unit.

NG >> Repair the main line between the ABS actuator and electric unit (control unit) and the ICC sensor integrated unit.

ECM Branch Line Circuit

NKS004GA

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M71	94	86	Approx. 108 – 132

OK or NG

OK >> GO TO 3.
NG >> Repair the ECM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-154, "POWER SUPPLY AND GROUND CIRCUIT" (VQ engine), EC-858, "POWER SUPPLY AND GROUND CIRCUIT" (VK engine).

OK or NG

OK >> ● Present error: Replace the ECM. Refer to EC-85, "Procedure After Replacing ECM" (VQ engine), EC-787, "Procedure After Replacing ECM" (VK engine).
● Past error: Error was detected in the ECM branch line.

NG >> Repair the power supply and the ground circuit.

AWD Control Unit Branch Line Circuit

NKS004GL

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

– AWD control unit connector
– Harness connector F102
– Harness connector M72

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F109	8	16	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the AWD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to TF-16, "Circuit Diagram" .

OK or NG

OK >> ● Present error: Replace the AWD control unit. Refer to TF-39, "Removal and Installation" .
● Past error: Error was detected in the AWD control unit branch line.

NG >> Repair the power supply and the ground circuit.

AFS Control Unit Branch Line Circuit

NKS004H1

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- AFS control unit connector
- Harness connector F102
- Harness connector M72

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AFS control unit.
2. Check the resistance between the AFS control unit harness connector terminals.

AFS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F110	30	7	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the AFS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AFS control unit. Refer to LT-142, "Schematic" .

OK or NG

OK >>
- Present error: Replace the AFS control unit. Refer to LT-192, "Removal and Installation of AFS Control Unit" .
- Past error: Error was detected in the AFS control unit branch line.

NG >> Repair the power supply and the ground circuit.

BCM Branch Line Circuit

NKS004GD

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M1	39	40	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the BCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-14, "Check BCM Power Supply and Ground Circuit" .

OK or NG

OK >> ● Present error: Replace the BCM. Refer to BCS-15, "Removal and Installation of BCM" .
● Past error: Error was detected in the BCM branch line.
NG >> Repair the power supply and the ground circuit.

LDW Camera Unit Branch Line Circuit

NKS004H2

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the LDW camera unit for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of LDW camera unit.
2. Check the resistance between the LDW camera unit harness connector terminals.

LDW camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M182	10	5	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the LDW camera unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the LDW camera unit. Refer to DI-93, "Power Supply and Ground Circuit Inspection" .

OK or NG

OK >> ● Present error: Replace the LDW camera unit. Refer to DI-100, "Removal and Installation for LDW Camera Unit" .
● Past error: Error was detected in the LDW camera unit branch line.
NG >> Repair the power supply and the ground circuit.

TCM Branch Line Circuit

NKS004GK

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- A/T assembly connector
- Harness connector F102
- Harness connector M72

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F42	3	8	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to AT-180, "MAIN POWER SUPPLY AND GROUND CIRCUIT" .

OK or NG

OK >> ● Present error: Replace the control valve with TCM.
● Past error: Error was detected in the TCM branch line.
NG >> Repair the power supply and the ground circuit.

NAVI Control Unit Branch Line Circuit

NKS004GI

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- NAVI control unit connector
- Harness connector M216
- Harness connector M53

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	71	72	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply, ignition signal and the ground circuit of the NAVI control unit. Refer to AV-171, "Schematic — BOSE Surround Audio 5.1ch System —" .

OK or NG

OK >>
- Present error: Replace the NAVI control unit. Refer to AV-282, "AV (NAVI) Control Unit" .
- Past error: Error was detected in the NAVI control unit branch line.

NG >> Repair the power supply and the ground circuit.

AV Control Unit Branch Line Circuit

NKS004HO

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- AV control unit connector
- Harness connector M216
- Harness connector M53

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	71	72	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the AV control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply, ignition signal and the ground circuit of the AV control unit. Refer to AV-42, "Schematic — BOSE Surround Audio 5.1ch System —" .

OK or NG

OK >> ● Present error: Replace the AV control unit. Refer to AV-131, "AV (NAVI) Control Unit" .
● Past error: Error was detected in the AV control unit branch line.

NG >> Repair the power supply and the ground circuit.

Data Link Connector Branch Line Circuit

NKS004GE

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M60	6	14	Approx. 54 – 66

OK or NG

OK >> ● Present error: Check the following items again.
– Decision of CAN system type.
– Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
– Procedure for detecting root cause.
● Past error: Error was detected in the data link connector branch line circuit.

NG >> Repair the data link connector branch line.

Intelligent Key Unit Branch Line Circuit

NKS004GF

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key unit for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M32	38	37	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to BL-91, "Check Power Supply and Ground Circuit" .

OK or NG

OK >>
- Present error: Replace the Intelligent Key unit. Refer to BL-123, "Removal and Installation of Intelligent Key Unit" .
- Past error: Error was detected in the Intelligent Key unit branch line.

NG >> Repair the power supply and the ground circuit.

Unified Meter and A/C Amp. Branch Line Circuit

NKS004GG

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the unified meter and A/C amp. for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of unified meter and A/C amp.
2. Check the resistance between the unified meter and A/C amp. harness connector terminals.

Unified meter and A/C amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	56	72	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the unified meter and A/C amp. branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the unified meter and A/C amp. Refer to DI-34, "Power Supply and Ground Circuit Inspection" .

OK or NG

OK >>
- Present error: Replace the unified meter and A/C amp. Refer to DI-38, "Removal and Installation of Unified Meter and A/C Amp." .
- Past error: Error was detected in the unified meter and A/C amp. branch line.

NG >> Repair the power supply and the ground circuit.

Steering Angle Sensor Branch Line Circuit

NKS004GH

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M47	4	5	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the steering angle sensor branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-14, "Schematic" (Models with VDC), LT-142, "Schematic" (Models with AFS).

OK or NG

OK >> ● Present error: Replace the steering angle sensor. Refer to BRC-60, "Removal and Installation" .
● Past error: Error was detected in the steering angle sensor branch line.
NG >> Repair the power supply and the ground circuit.

Low Tire Pressure Warning Control Unit Branch Line Circuit

NKS004H3

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	15	16	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the low tire pressure warning control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-13, "Schematic" .

OK or NG

OK >> ● Present error: Replace the low tire pressure warning control unit. Refer to WT-40, "Low Tire Pressure Warning Control Unit" .
● Past error: Error was detected in the low tire pressure warning control unit branch line.
NG >> Repair the power supply and the ground circuit.

RAS Control Unit Branch Line Circuit

NKS004H4

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of RAS control unit.
2. Check the resistance between the RAS control unit harness connector terminals.

RAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B476	1	8	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Replace the body No. 2 harness.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the RAS control unit. Refer to STC-20, "Schematic" .

OK or NG

OK >> ● Present error: Replace the RAS control unit.
● Past error: Error was detected in the RAS control unit branch line.
NG >> Repair the power supply and the ground circuit.

Pre-Crash Seat Belt Control Unit Branch Line Circuit

NKS004H5

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the pre-crash seat belt control unit for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of pre-crash seat belt control unit.
2. Check the resistance between the pre-crash seat belt control unit harness connector terminals.

Pre-crash seat belt control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B142	24	22	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Replace the body harness.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the pre-crash seat belt control unit. Refer to SB-6, "Schematic" .

OK or NG

OK >>
- Present error: Replace the pre-crash seat belt control unit. Refer to SB-28, "Removal and Installation of Pre-Crash Seat Belt Control Unit" .
- Past error: Error was detected in the pre-crash seat belt control unit branch line.

NG >> Repair the power supply and the ground circuit.

Driver Seat Control Unit Branch Line Circuit

NKS004GB

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

- Driver seat control unit connector
- Harness connector B202
- Harness connector B15

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B204	3	19	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Replace the body harness.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to SE-17, "Schematic" .

OK or NG

OK >>
- Present error: Replace the driver seat control unit.
- Past error: Error was detected in the driver seat control unit branch line.

NG >> Repair the power supply and the ground circuit.

ABS Actuator and Electric Unit (Control Unit) Branch Line Circuit

NKS004GM

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E30	35	14	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the ABS actuator and electric unit (control unit) branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-14, "Schematic" .

OK or NG

OK >>
- Present error: Replace the ABS actuator and electric unit (control unit). Refer to BRC-57, "Removal and Installation" .
- Past error: Error was detected in the ABS actuator and electric unit (control unit) branch line.

NG >> Repair the power supply and the ground circuit.

ICC Sensor Integrated Unit Branch Line Circuit

NKS004H6

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ICC sensor integrated unit for damage, bend and loose connection (unit side and connector side).

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ICC sensor integrated unit.
2. Check the resistance between the ICC sensor integrated unit harness connector terminals.

ICC sensor integrated unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E61	3	6	Approx. 54 – 66

OK or NG

OK >> GO TO 3.
NG >> Repair the ICC sensor integrated unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ICC sensor integrated unit. Refer to ACS-22, "Schematic" .

OK or NG

OK >> ● Present error: Replace the ICC sensor integrated unit. Refer to ACS-70, "ICC Sensor Integrated Unit" .
● Past error: Error was detected in the ICC sensor integrated unit branch line.
NG >> Repair the power supply and the ground circuit.

IPDM E/R Branch Line Circuit

NKS004GN

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E9	49	50	Approx. 108 – 132

OK or NG

OK >> GO TO 3.
NG >> Repair the IPDM E/R branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PG-29, "Check IPDM E/R Power Supply and Ground Circuit" .

OK or NG

OK >>
- Present error: Replace the IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .
- Past error: Error was detected in the IPDM E/R branch line.

NG >> Repair the power supply and the ground circuit.

CAN Communication Circuit

NKS004GO

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M60	6	14	No

OK or NG

OK >> GO TO 3.
NG >> Check the harness and repair the root cause.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M60	6		No
	14		No

OK or NG

OK >> GO TO 4.
NG >> Check the harness and repair the root cause.

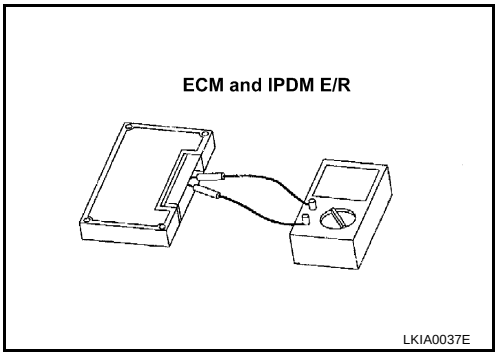
4. CHECK ECM AND IPDM E/R TERMINATION CIRCUIT

1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
94	86	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.

IPDM E/R		Resistance (Ω)
Terminal No.		
49	50	Approx. 108 – 132



OK or NG

OK >> GO TO 5.
NG >> Replace the ECM or the IPDM E/R.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

   NOTE:
   ECM and IPDM E/R have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results of interview with customer)” are reproduced.

   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace unit whose connector was disconnected.