

SECTION

LAN

LAN SYSTEM

A

B

C

CONTENTS

E

|                                                                                                          |    |  |
|----------------------------------------------------------------------------------------------------------|----|--|
| CAN FUNDAMENTAL                                                                                          |    |  |
| PRECAUTION .....                                                                                         | 3  |  |
| PRECAUTIONS .....                                                                                        | 3  |  |
| Precaution for Trouble Diagnosis .....                                                                   | 3  |  |
| Precaution for Harness Repair .....                                                                      | 3  |  |
| SYSTEM DESCRIPTION .....                                                                                 | 4  |  |
| CAN COMMUNICATION SYSTEM .....                                                                           | 4  |  |
| System Description .....                                                                                 | 4  |  |
| System Diagram .....                                                                                     | 4  |  |
| CAN Communication Control Circuit .....                                                                  | 5  |  |
| DIAG ON CAN .....                                                                                        | 6  |  |
| Description .....                                                                                        | 6  |  |
| System Diagram .....                                                                                     | 6  |  |
| TROUBLE DIAGNOSIS .....                                                                                  | 7  |  |
| Condition of Error Detection .....                                                                       | 7  |  |
| Symptom When Error Occurs in CAN Communi-<br>cation System .....                                         | 7  |  |
| Self-Diagnosis .....                                                                                     | 10 |  |
| CAN Diagnostic Support Monitor .....                                                                     | 10 |  |
| BASIC INSPECTION .....                                                                                   | 13 |  |
| DIAGNOSIS AND REPAIR WORKFLOW .....                                                                      | 13 |  |
| Information Needed for Trouble Diagnosis .....                                                           | 13 |  |
| How to Use CAN Communication Signal Chart .....                                                          | 13 |  |
| Trouble Diagnosis Flow Chart .....                                                                       | 14 |  |
| Trouble Diagnosis Procedure .....                                                                        | 14 |  |
| CAN                                                                                                      |    |  |
| HOW TO USE THIS MANUAL .....                                                                             | 36 |  |
| HOW TO USE THIS SECTION .....                                                                            | 36 |  |
| Caution .....                                                                                            | 36 |  |
| Abbreviation List .....                                                                                  | 36 |  |
| PRECAUTION .....                                                                                         | 37 |  |
| PRECAUTIONS .....                                                                                        | 37 |  |
| Precaution for Supplemental Restraint System<br>(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-<br>SIONER" ..... | 37 |  |
| Precautions for Trouble Diagnosis .....                                                                  | 37 |  |
| Precautions for Harness Repair .....                                                                     | 37 |  |
| BASIC INSPECTION .....                                                                                   | 39 |  |
| DIAGNOSIS AND REPAIR WORKFLOW .....                                                                      | 39 |  |
| Interview Sheet .....                                                                                    | 39 |  |
| Diagnosis Sheet (CAN Type 1) .....                                                                       | 40 |  |
| Diagnosis Sheet (CAN Type 2) .....                                                                       | 41 |  |
| Diagnosis Sheet (CAN Type 3) .....                                                                       | 42 |  |
| Diagnosis Sheet (CAN Type 4) .....                                                                       | 43 |  |
| Diagnosis Sheet (CAN Type 5) .....                                                                       | 44 |  |
| SYSTEM DESCRIPTION .....                                                                                 | 45 |  |
| CAN COMMUNICATION SYSTEM .....                                                                           | 45 |  |
| CAN System Specification Chart .....                                                                     | 45 |  |
| CAN Communication Signal Chart .....                                                                     | 45 |  |
| TROUBLE DIAGNOSIS .....                                                                                  | 48 |  |
| CAN Diagnostic Support Monitor .....                                                                     | 48 |  |
| DTC Index .....                                                                                          | 52 |  |
| WIRING DIAGRAM .....                                                                                     | 53 |  |
| CAN SYSTEM .....                                                                                         | 53 |  |
| Wiring Diagram .....                                                                                     | 53 |  |
| DTC/CIRCUIT DIAGNOSIS .....                                                                              | 59 |  |
| CAN COMMUNICATION SYSTEM .....                                                                           | 59 |  |
| Component Parts Location .....                                                                           | 59 |  |
| MALFUNCTION AREA CHART .....                                                                             | 60 |  |
| Main Line .....                                                                                          | 60 |  |
| Branch Line .....                                                                                        | 60 |  |
| Short Circuit .....                                                                                      | 60 |  |

F

G

H

I

J

K

L

LAN

N

O

P

|                                                     |           |                                          |           |
|-----------------------------------------------------|-----------|------------------------------------------|-----------|
| <b>MAIN LINE BETWEEN TCM AND HVAC CIRCUIT</b> ..... | <b>61</b> | <b>A-BAG BRANCH LINE CIRCUIT</b> .....   | <b>70</b> |
| Diagnosis Procedure .....                           | 61        | Diagnosis Procedure .....                | 70        |
| <b>MAIN LINE BETWEEN HVAC AND DLC CIRCUIT</b> ..... | <b>63</b> | <b>BCM BRANCH LINE CIRCUIT</b> .....     | <b>71</b> |
| Diagnosis Procedure .....                           | 63        | Diagnosis Procedure .....                | 71        |
| <b>MAIN LINE BETWEEN DLC AND ABS CIRCUIT</b> .....  | <b>64</b> | <b>DIFF BRANCH LINE CIRCUIT</b> .....    | <b>72</b> |
| Diagnosis Procedure .....                           | 64        | Diagnosis Procedure .....                | 72        |
| <b>ECM BRANCH LINE CIRCUIT</b> .....                | <b>65</b> | <b>DLC BRANCH LINE CIRCUIT</b> .....     | <b>73</b> |
| Diagnosis Procedure .....                           | 65        | Diagnosis Procedure .....                | 73        |
| <b>TCM BRANCH LINE CIRCUIT</b> .....                | <b>66</b> | <b>M&amp;A BRANCH LINE CIRCUIT</b> ..... | <b>74</b> |
| Diagnosis Procedure .....                           | 66        | Diagnosis Procedure .....                | 74        |
| <b>HVAC BRANCH LINE CIRCUIT</b> .....               | <b>67</b> | <b>STRG BRANCH LINE CIRCUIT</b> .....    | <b>75</b> |
| Diagnosis Procedure .....                           | 67        | Diagnosis Procedure .....                | 75        |
| <b>AV BRANCH LINE CIRCUIT</b> .....                 | <b>68</b> | <b>ABS BRANCH LINE CIRCUIT</b> .....     | <b>76</b> |
| Diagnosis Procedure .....                           | 68        | Diagnosis Procedure .....                | 76        |
| <b>4WD BRANCH LINE CIRCUIT</b> .....                | <b>69</b> | <b>IPDM-E BRANCH LINE CIRCUIT</b> .....  | <b>77</b> |
| Diagnosis Procedure .....                           | 69        | Diagnosis Procedure .....                | 77        |
|                                                     |           | <b>CAN COMMUNICATION CIRCUIT</b> .....   | <b>78</b> |
|                                                     |           | Diagnosis Procedure .....                | 78        |

## PRECAUTION

### PRECAUTIONS

#### Precaution for Trouble Diagnosis

INFOID:0000000011071006

#### 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.

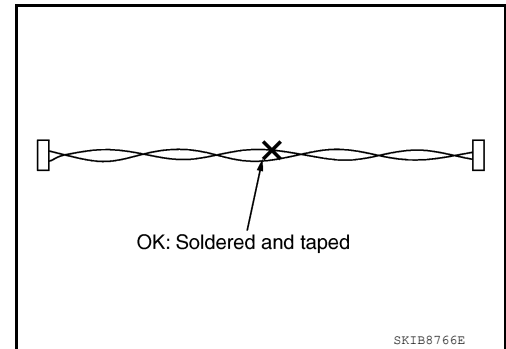
#### Precaution for Harness Repair

INFOID:0000000011071007

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

#### NOTE:

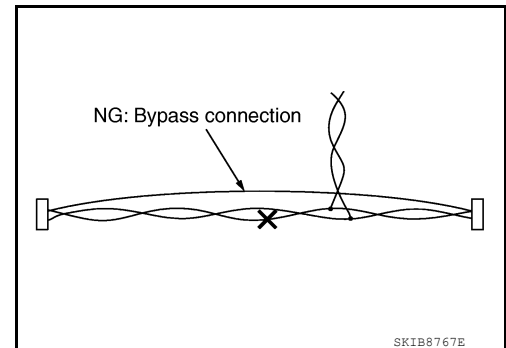
A fray of twisted lines must be within 110 mm (4.33 in).



- 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.

LAN

## SYSTEM DESCRIPTION

### CAN COMMUNICATION SYSTEM

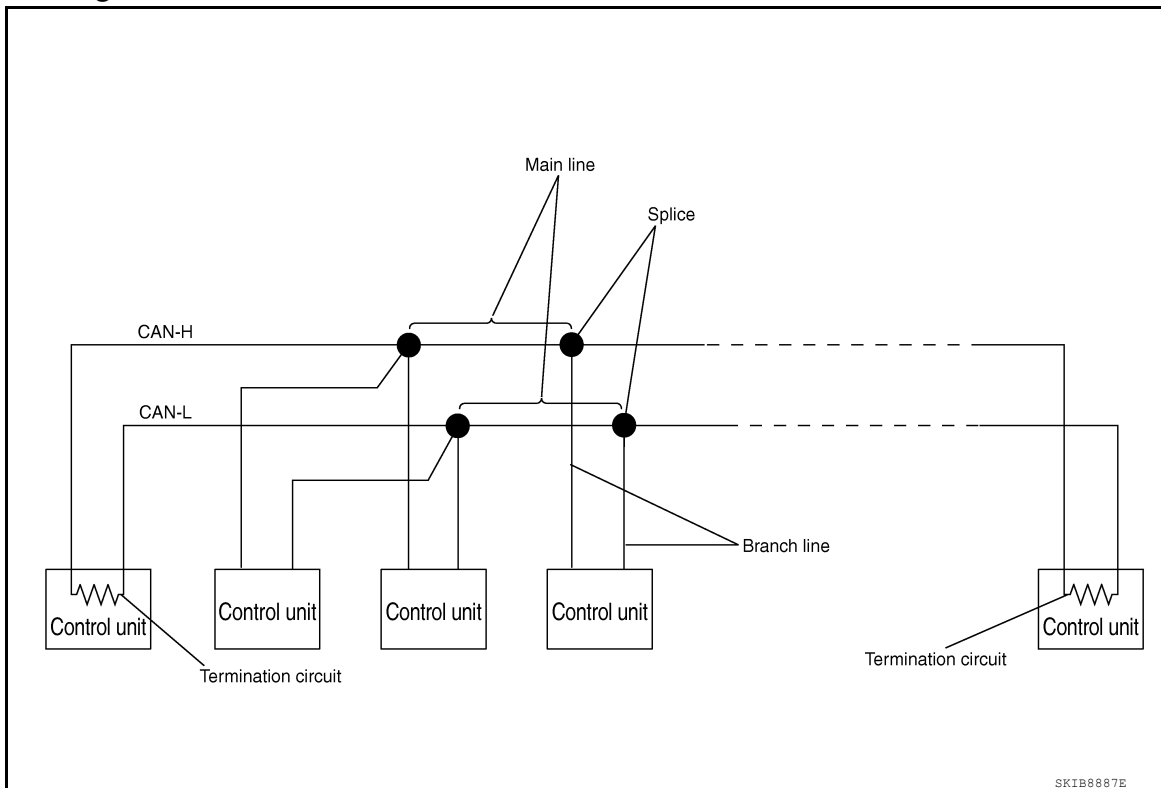
#### System Description

INFOID:0000000011071008

- 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

INFOID:0000000011071009

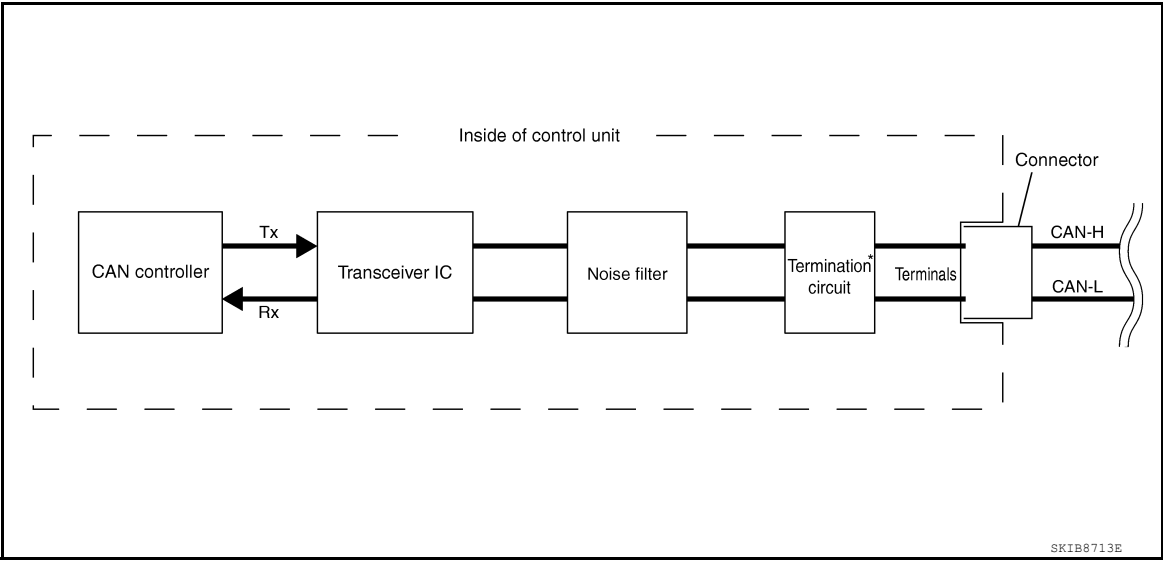


Each control unit passes an electric current to the termination circuits when transmitting CAN communication signal. The termination circuits produce an electrical potential difference between CAN-H and CAN-L. CAN communication system transmits and receives CAN communication signals by the potential 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 <a href="#">LAN-5, "CAN Communication Control Circuit"</a> . |

CAN Communication Control Circuit

INFOID:0000000011071010



| 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*<br>(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

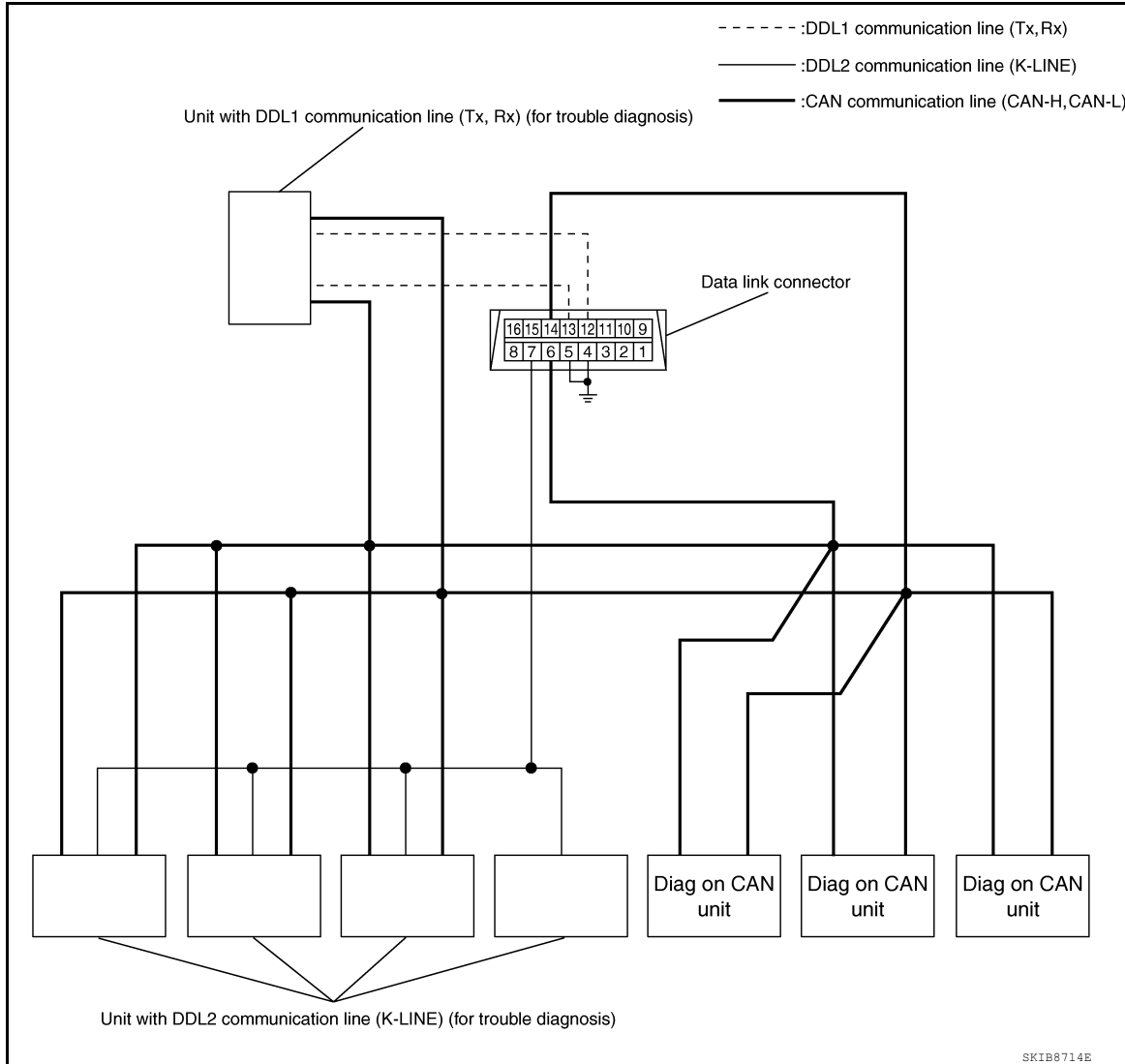
### Description

INFOID:0000000011071011

“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

INFOID:0000000011071012



| Name        | Harness        | Description                                                                  |
|-------------|----------------|------------------------------------------------------------------------------|
| DDL1        | Tx<br>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<br>CAN-L | It is used for trouble diagnosis and control.                                |

## TROUBLE DIAGNOSIS

## Condition of Error Detection

INFOID:0000000011071013

DTC (e.g. U1000 and U1001) of CAN communication is indicated on SELF-DIAG RESULTS on CONSULT if a 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 DTC OF CAN COMMUNICATION IS INDICATED EVEN THOUGH CAN COMMUNICATION SYSTEM IS NORMAL

- 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.

**CAUTION:**

**CAN communication system is normal if DTC of CAN communication is indicated on SELF-DIAG RESULTS of CONSULT under the above conditions. Erase the memory of the self-diagnosis of each unit.**

## Symptom When Error Occurs in CAN Communication System

INFOID:0000000011071014

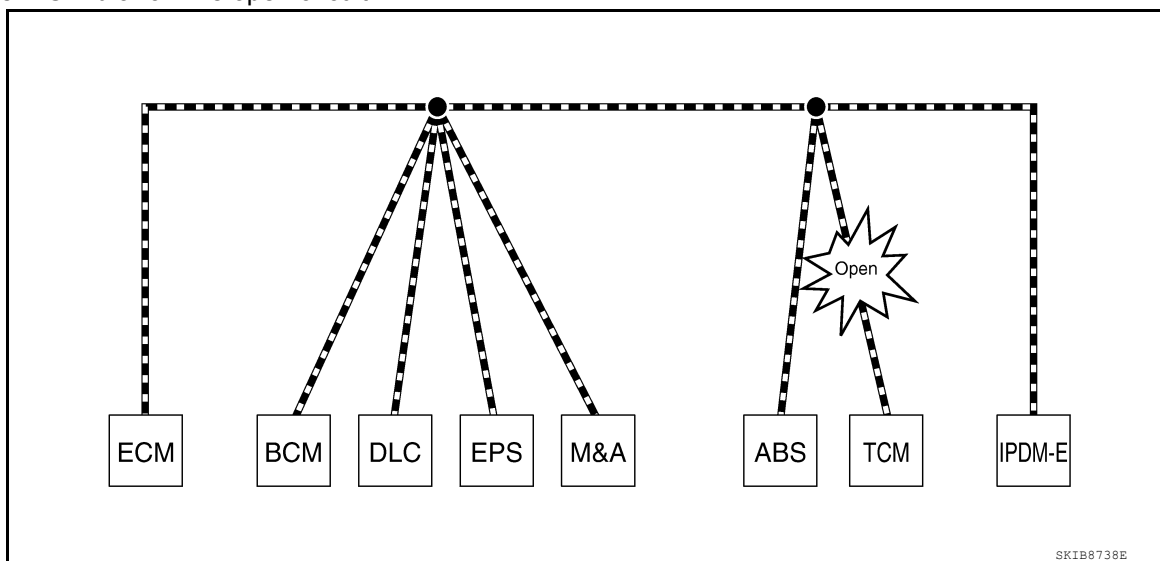
In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

## ERROR EXAMPLE

**NOTE:**

- Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.
- Refer to [LAN-36, "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.                              |

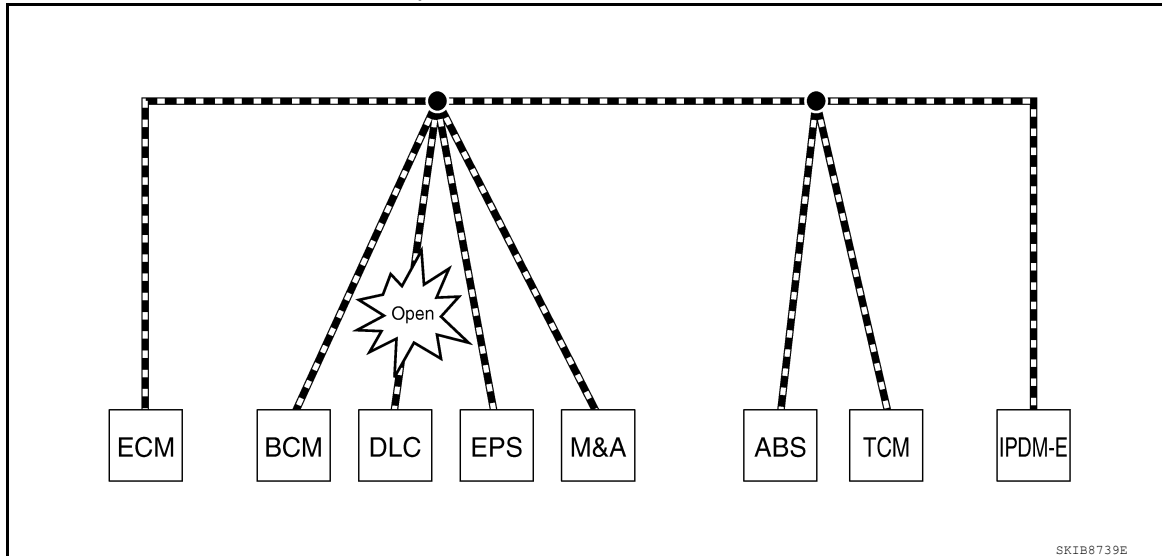
# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

| Unit name                                     | Symptom                                                                                                                                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| EPS control unit                              | Normal operation.                                                                                                                         |
| Combination meter                             | <ul style="list-style-type: none"> <li>Shift position indicator and OD OFF indicator turn OFF.</li> <li>Warning lamps turn ON.</li> </ul> |
| 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, "system" displayed on the CONSULT "ALL DTC" 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.

|                                              | "System" on the "ALL DTC" (CONSULT)      | 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. |

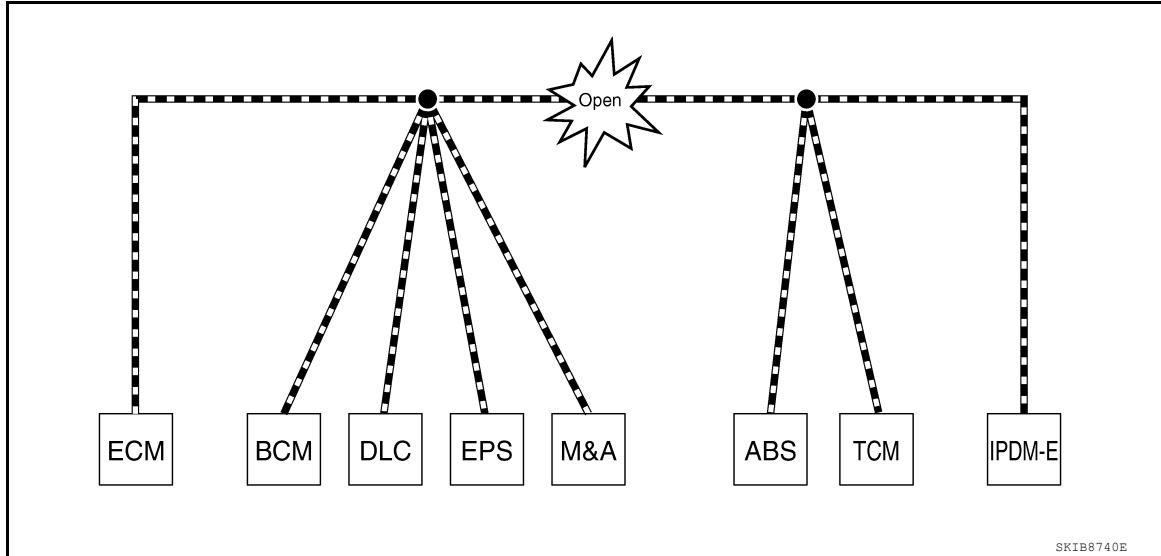


# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

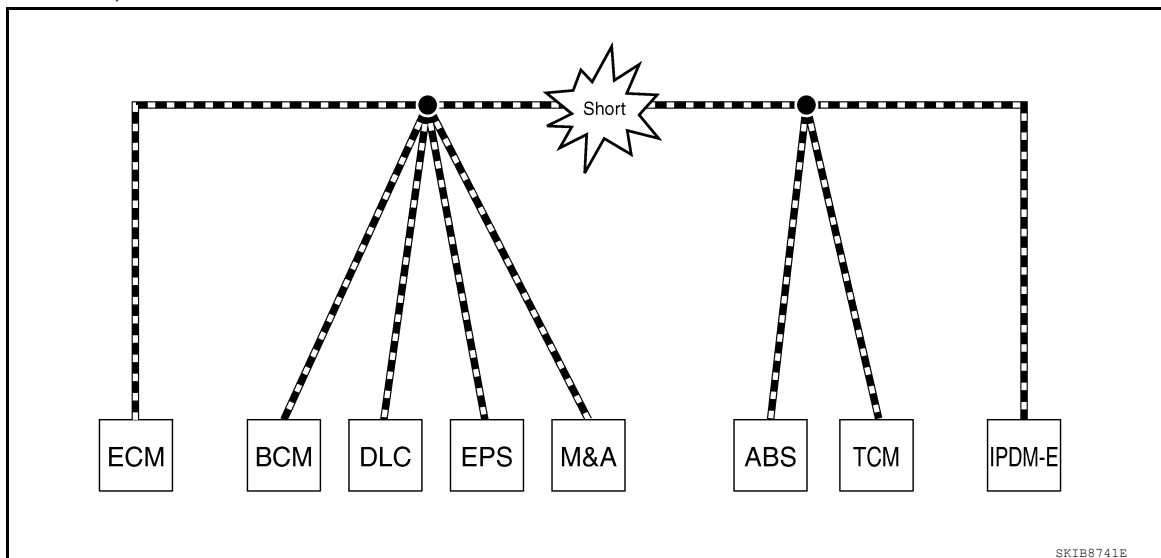
[CAN FUNDAMENTAL]

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                                           | <ul style="list-style-type: none"> <li>Reverse warning chime does not sound.</li> <li>The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.</li> </ul> |
| EPS control unit                              | The steering effort increases.                                                                                                                                                                                                |
| Combination meter                             | <ul style="list-style-type: none"> <li>The shift position indicator and OD OFF indicator turn OFF.</li> <li>The speedometer is inoperative.</li> <li>The odo/trip meter stops.</li> </ul>                                     |
| ABS actuator and electric unit (control unit) | Normal operation.                                                                                                                                                                                                             |
| TCM                                           | No impact on operation.                                                                                                                                                                                                       |
| IPDM E/R                                      | When the ignition switch is ON, <ul style="list-style-type: none"> <li>The headlamps (Lo) turn ON.</li> <li>The cooling fan continues to rotate.</li> </ul>                                                                   |

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



# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

| Unit name                                     | Symptom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ECM                                           | <ul style="list-style-type: none"> <li>Engine torque limiting is affected, and shift harshness increases.</li> <li>Engine speed drops.</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |
| BCM                                           | <ul style="list-style-type: none"> <li>Reverse warning chime does not sound.</li> <li>The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.</li> <li>The room lamp does not turn ON.</li> <li>The engine does not start (if an error or malfunction occurs while turning the ignition switch OFF.)</li> <li>The steering lock does not release (if an error or malfunction occurs while turning the ignition switch OFF.)</li> </ul> |
| EPS control unit                              | The steering effort increases.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Combination meter                             | <ul style="list-style-type: none"> <li>The tachometer and the speedometer do not move.</li> <li>Warning lamps turn ON.</li> <li>Indicator lamps do not turn ON.</li> </ul>                                                                                                                                                                                                                                                                                                                                  |
| ABS actuator and electric unit (control unit) | Normal operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| TCM                                           | No impact on operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| IPDM E/R                                      | When the ignition switch is ON, <ul style="list-style-type: none"> <li>The headlamps (Lo) turn ON.</li> <li>The cooling fan continues to rotate.</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |

## Self-Diagnosis

INFOID:0000000011071015

If communication signals cannot be transmitted or received among units communicating via CAN communication line, CAN communication-related DTC is displayed on the CONSULT "Self Diagnostic Result" screen.

### NOTE:

The following table shows examples of CAN communication-related DTC. For other DTC, refer to the applicable sections.

| DTC   | Self-diagnosis item<br>(CONSULT indication) | DTC detection condition                                                                                                               |                                                                                                                               | Inspection/Action                                                                    |
|-------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| U1000 | CAN COMM CIRCUIT                            | ECM                                                                                                                                   | When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more. | Start the inspection. Refer to the applicable section of the indicated control unit. |
|       |                                             | Except for ECM                                                                                                                        | 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.                                  |                                                                                                                               |                                                                                      |
| 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

INFOID:0000000011071016

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

### MONITOR ITEM (CONSULT)

# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

Example: CAN DIAG SUPPORT MNTR indication

| Without PAST  |         |      | With PAST     |               |      |
|---------------|---------|------|---------------|---------------|------|
| BCM           |         |      | ENGINE        |               |      |
| MONITOR ITEM  | PRESENT | PAST | MONITOR ITEM  | PRESENT       | PAST |
| INITIAL DIAG  | OK      | -    | TRANSMIT DIAG | OK            | OK   |
| TRANSMIT DIAG | OK      | -    | VDC/TCS/ABS   | OK            | OK   |
| ECM           | OK      | -    | METER/M&A     | OK            | OK   |
| IPDM E/R      | OK      | -    | BCM/SEC       | OK            | OK   |
| METER/M&A     | OK      | -    | ICC/ADAS      | Not diagnosed | -    |
| I-KEY         | UNKWN   | -    | HVAC          | Not diagnosed | -    |
|               |         |      | TCM           | OK            | OK   |
|               |         |      | MULTI AV      | Not diagnosed | -    |
|               |         |      | EPS           | Not diagnosed | -    |
|               |         |      | IPDM E/R      | OK            | OK   |
|               |         |      | e4WD          | Not diagnosed | -    |
|               |         |      | AWD/4WD       | OK            | OK   |

JSMIA0812GB

Without PAST

| Item                                       | PRESENT | 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<br>(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                                       | PRESENT       | 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<br>(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.                                                                                                      |
|                                            | Not diagnosed | –      | 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 is not available.)

# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

Example: Vehicle Display

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

## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

#### Information Needed for Trouble Diagnosis

INFOID:0000000011071017

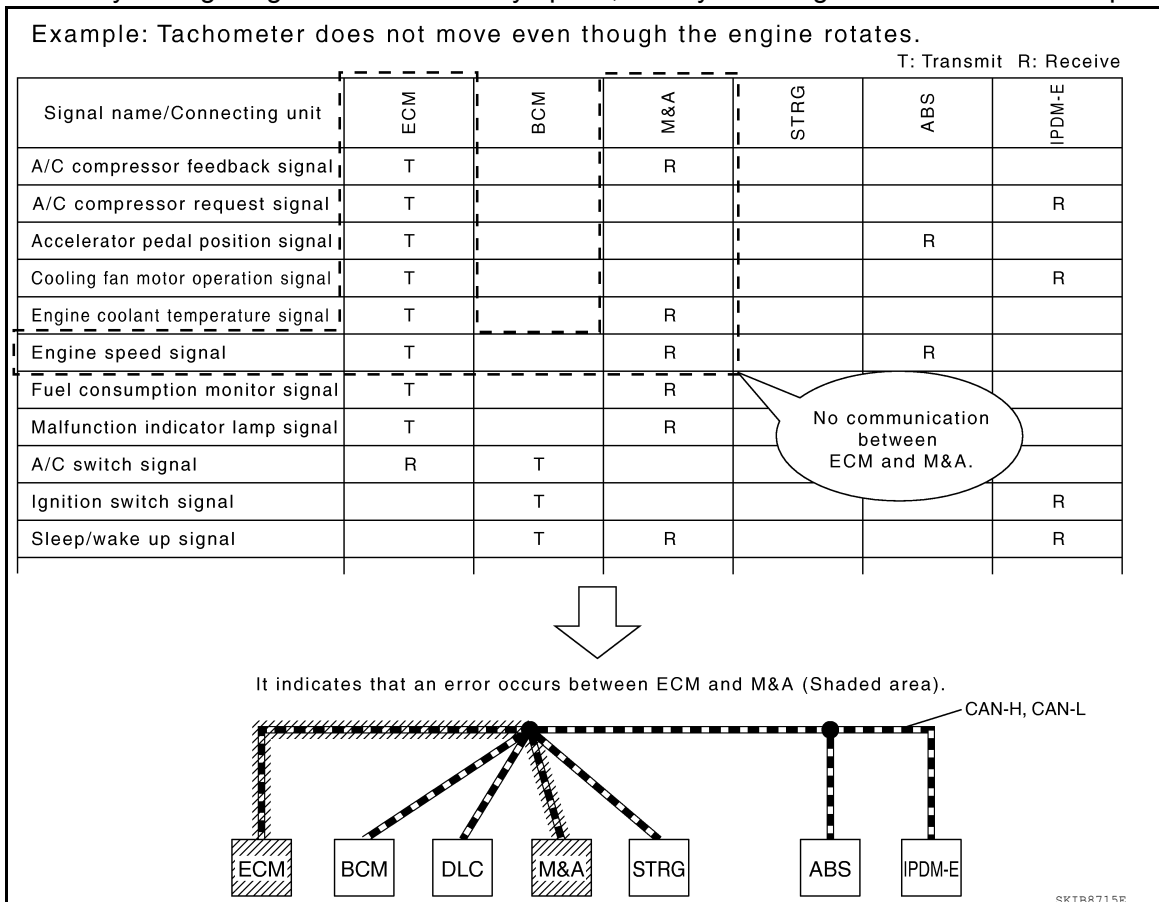
CAN communication system performs trouble diagnosis with the following tools.

| Tool                            | Usage                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interview sheet                 | For filling in vehicle information and interview with customer.                                                                                                                                                    |
| Data sheet                      | For copying on-board diagnosis data.                                                                                                                                                                               |
| Diagnosis sheet                 | For detecting the root cause. (Diagnosis sheet includes system diagram for every CAN system type)                                                                                                                  |
| SELF-DIAG RESULTS (CONSULT)     | For checking the condition of control units and the status of CAN communication.                                                                                                                                   |
| CAN DIAG SUPPORT MNTR (CONSULT) |                                                                                                                                                                                                                    |
| 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

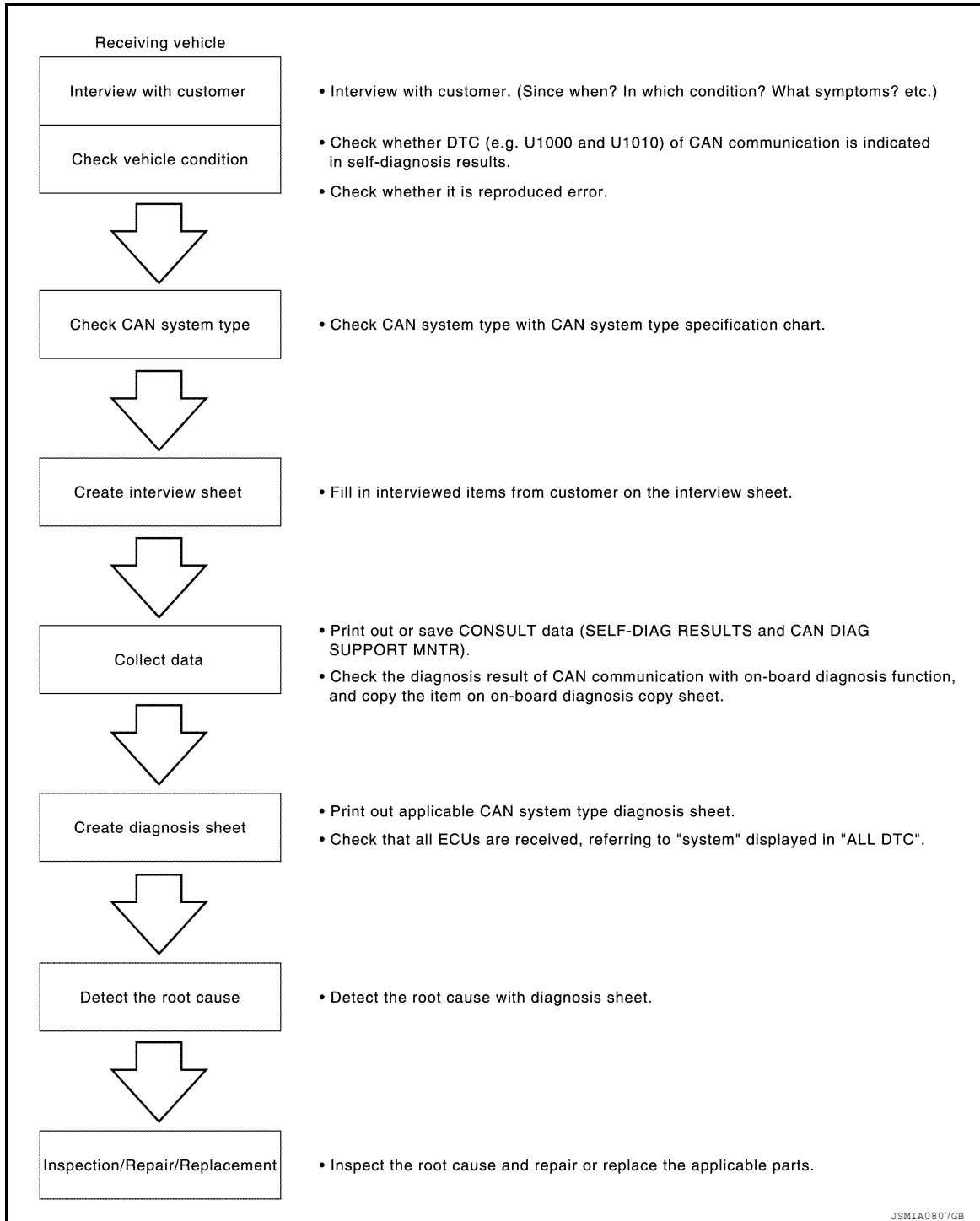
INFOID:0000000011071018

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.



## Trouble Diagnosis Flow Chart

INFOID:0000000011071019



## Trouble Diagnosis Procedure

INFOID:0000000011071020

### 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

# DIAGNOSIS AND REPAIR WORKFLOW

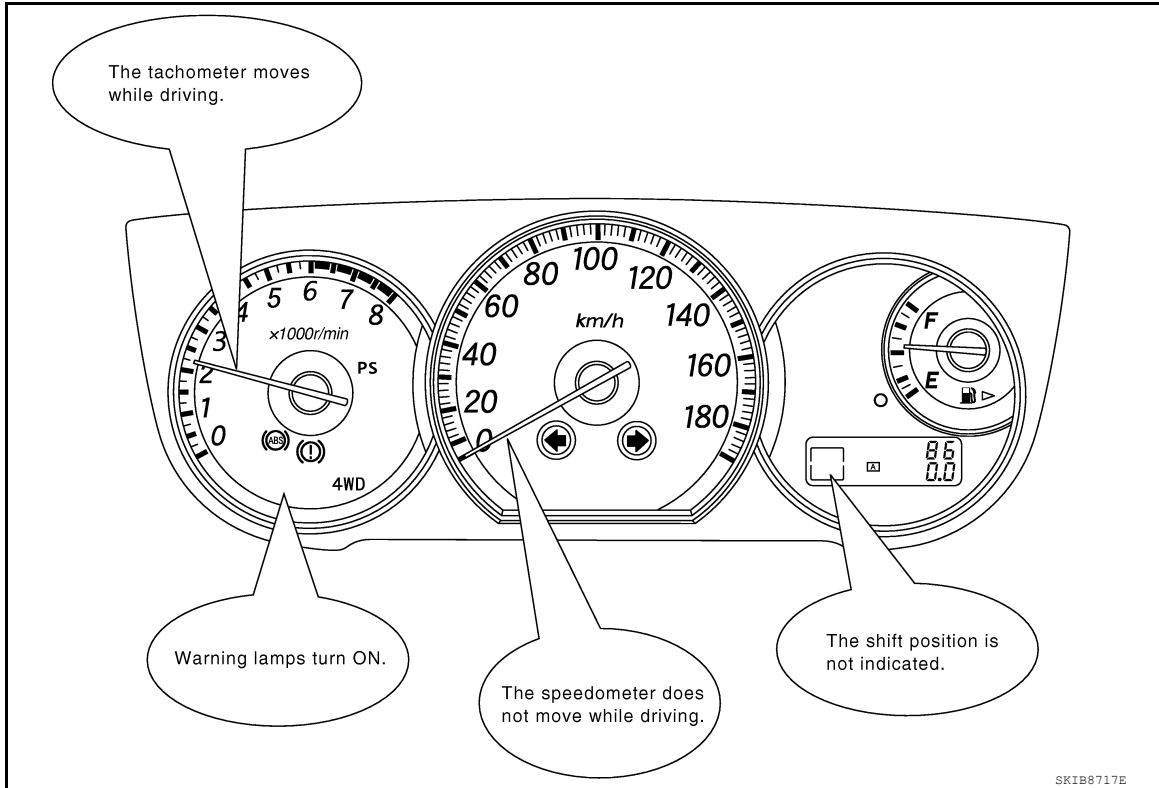
## < BASIC INSPECTION >

[CAN FUNDAMENTAL]

- 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 DTC of CAN communication is indicated on “SELF-DIAG RESULTS” by CONSULT.

### NOTE:

Root cause cannot be detected using the procedure in this section if DTC of CAN communication 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 “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:

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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. (○ shows an example of CAN system type.)

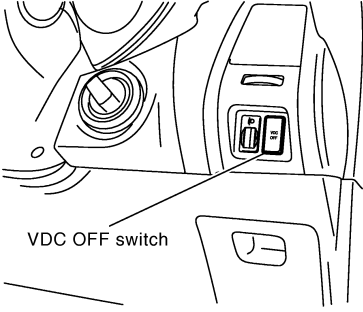
**CAN System Specification Chart**  
Determine CAN system type from the following specification chart. Then choose the correct diagnosis sheet.

|                                |                        |         |                        |         |                        |         |
|--------------------------------|------------------------|---------|------------------------|---------|------------------------|---------|
| Body type                      | Wagon                  |         |                        |         |                        |         |
| Axle                           | 2WD                    |         |                        | AWD     |                        |         |
| Engine                         | QR25DE                 |         | VQ35DE                 |         |                        |         |
| Transmission                   | A/T                    |         | CVT                    |         |                        |         |
| Brake control                  | ABS                    |         |                        | VDC     |                        |         |
| Intelligent Key system         |                        | X       |                        | X       |                        | X       |
| 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" |         |

X : Applicable

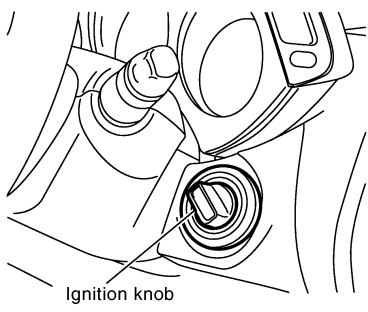
**VEHICLE EQUIPMENT IDENTIFICATION INFORMATION**  
**NOTE:**  
Check CAN system type from the vehicle shape and equipment.

With VDC



VDC OFF switch

With Intelligent Key system



Ignition knob

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". ]

SK1B8888E

CAN System Type Specification Chart (Style B)

**NOTE:**



**[CAN FUNDAMENTAL]**

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

SKIB8889E

## 2015 Xterra

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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: 621         |
| CAN system type: Type 19                                                                                                                                                                                                                                                                                                                                                                                                                |                      |
| Symptom (Results from interview with customer)                                                                                                                                                                                                                                                                                                                                                                                          |                      |
| <ul style="list-style-type: none"><li>• Headlamps suddenly turn ON while driving the vehicle.</li><li>• The engine does not restart after stopping the vehicle and turning the ignition switch OFF.</li><li>• The cooling fan continues rotating while turning the ignition switch ON.</li></ul>                                                                                                                                        |                      |
| Condition at inspection                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |
| Error Symptom: Present / Past                                                                                                                                                                                                                                                                                                                                                                                                           |                      |
| <p>The engine does not start.</p> <p>While turning the ignition switch ON,</p> <ul style="list-style-type: none"><li>• The headlamps (Lo) turn ON, and the cooling fan continues rotating.</li><li>• The interior lamp does not turn ON.</li></ul> <p>On CONSULT screen,</p> <ul style="list-style-type: none"><li>• IPDM E/R is not indicated on SELECT SYSTEM.</li><li>• ENGINE: U1001</li><li>• BCM, ADAPTIVE LIGHT: U1000</li></ul> |                      |

JSMIA0823GB

## COLLECT DATA

Collect CONSULT Data

Print out or save the following CONSULT data.

- SELF-DIAG RESULTS
- CAN DIAG SUPPORT MNTR

**NOTE:**

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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

(Example)

The diagram illustrates two diagnostic screens. The left screen, labeled 'CAN DIAG SUPPRT MNTR', displays a list of vehicle systems with their status (OK or Not Diagnosed). The right screen, labeled 'SELF-DIAG RESULTS', shows a detailed view of the diagnostic results for various systems, including ENGINE, ABS, METER/MA, BCM, AIR BAG, TRANSMISSION, and EPS. It also includes a 'Print' button and a 'Save' button.

**CAN DIAG SUPPRT MNTR**

**SELF-DIAG RESULTS**

JSMIA0810GB

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:**

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

For some models, CAN communication diagnosis result is received from the vehicle monitor. (CONSULT 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<br>(Diagnosis item)      | Vehicle monitor  |               | Indication item<br>(Diagnosis item)                                | Vehicle monitor  |               |
|------------------------------------------|------------------|---------------|--------------------------------------------------------------------|------------------|---------------|
|                                          | Result indicated | Error counter |                                                                    | Result indicated | Error counter |
| CAN_COMM<br>(Initial diagnosis)          | OK               | 0             | CAN_CIRC_5<br>(Receive diagnosis of Unified meter<br>and A/C amp.) | OK               | 0             |
| CAN_CIRC_1<br>(Transmit diagnosis)       | OK               | 0             | CAN_CIRC_6                                                         | Not available    |               |
| CAN_CIRC_2<br>(Receive diagnosis of BCM) | UNKWN            | 12            | CAN_CIRC_7<br>(Receive diagnosis of IPDM E/R)                      | OK               | 0             |
| CAN_CIRC_3<br>(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 Collected Data

Check that all ECUs are received, referring to “system” displayed in “ALL DTC.”

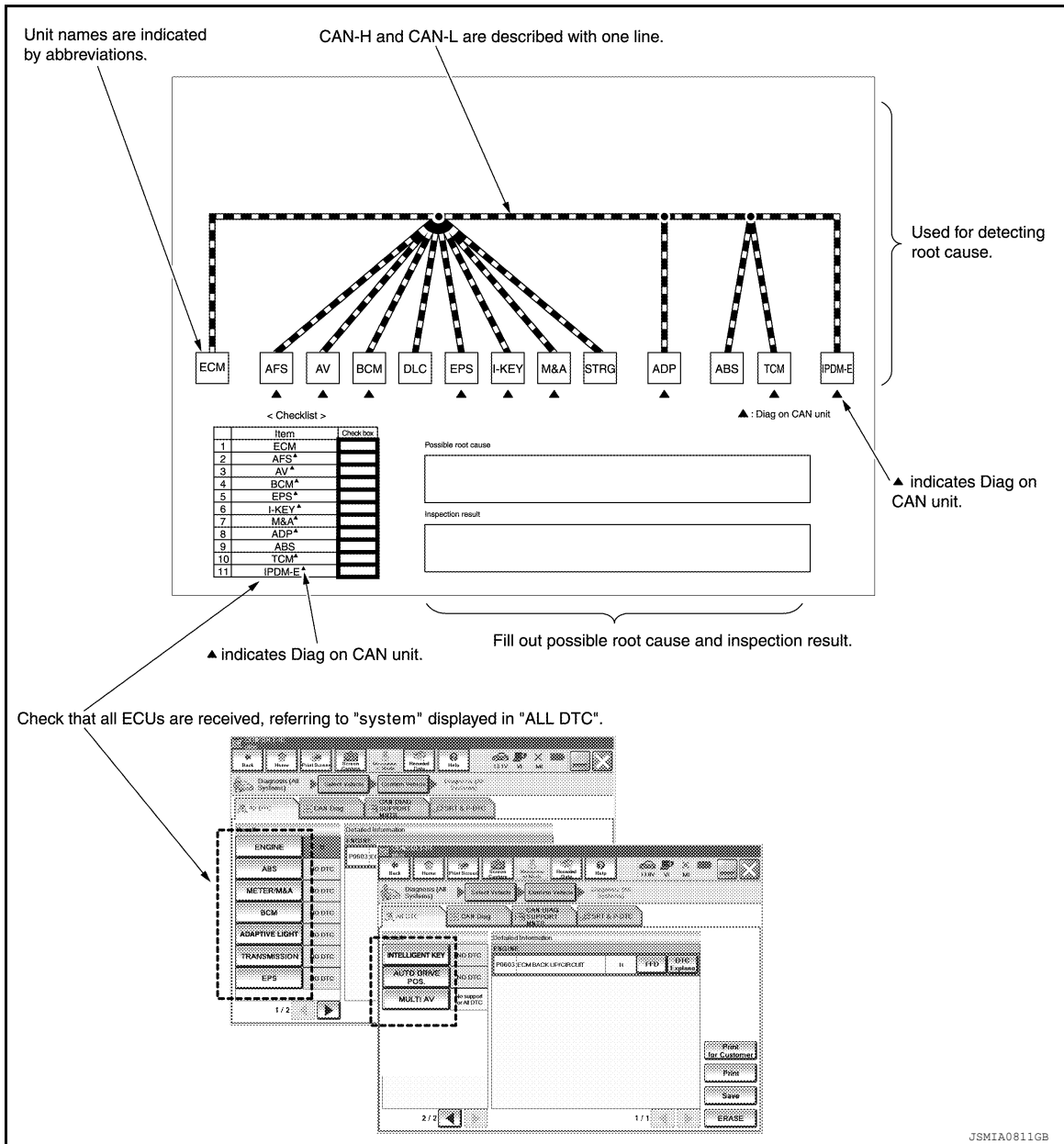
### NOTE:

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

For abbreviations, refer to [LAN-36. "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 "Present Error — Short Circuit —", "Past Error — Short Circuit —".

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

- "Present Error — Open Circuit —"
- "Present Error — Short Circuit —"
- "Past Error — Open Circuit —"
- "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 —

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

Identify the error circuit using information from the “CAN DIAG SUPPORT MNTR”

1. Check the items indicated in “ALL DTC”. Draw a line on the diagnosis sheet to indicate the error circuit.

**NOTE:**

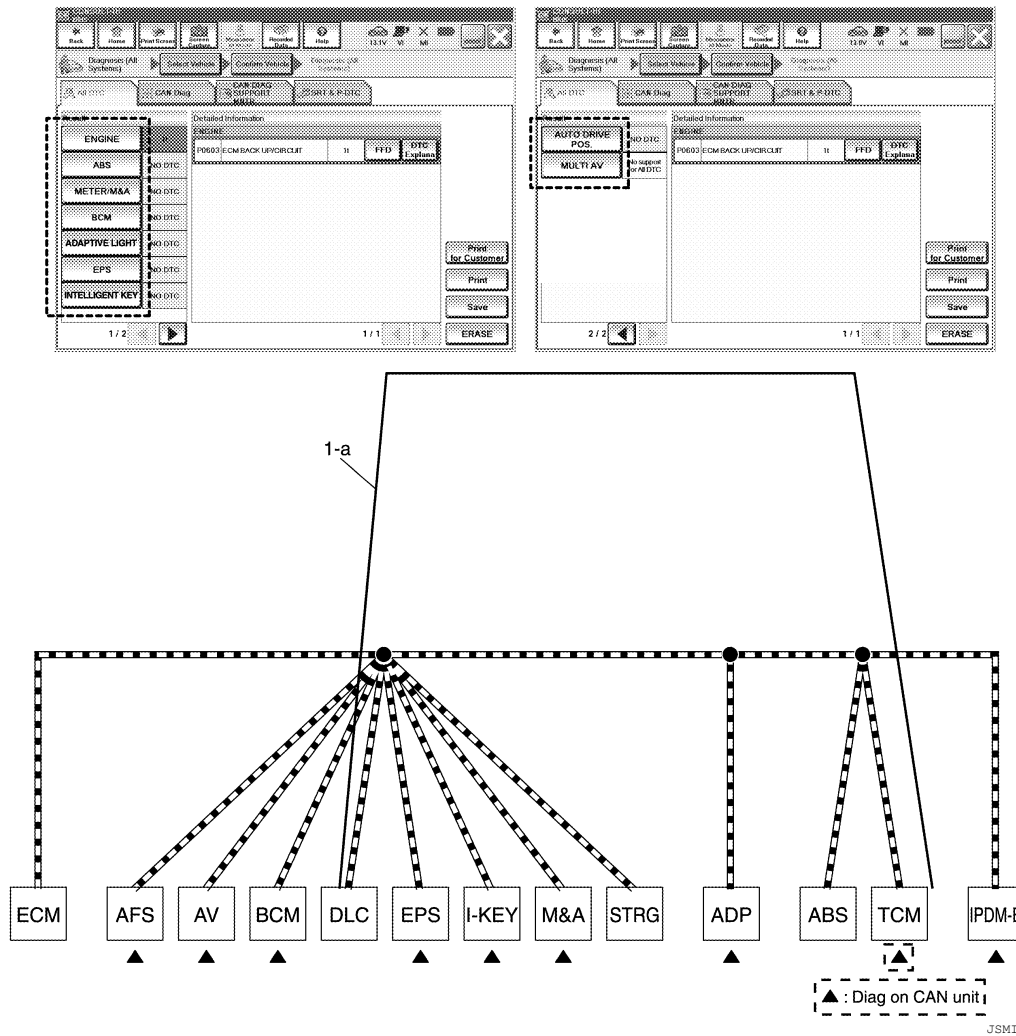
CAN communication line has no error if units other than Diag on CAN units are not indicated. An error may be on the power supply of the control unit, DDL1 line or DDL2 line.

- a. “TCM” which is Diag on CAN unit, is not indicated on “ALL DTC.” 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 below).

**NOTE:**

- Diag on CAN units are not indicated on the “ALL DTC” 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, "Description"](#).

(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 below).

**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.

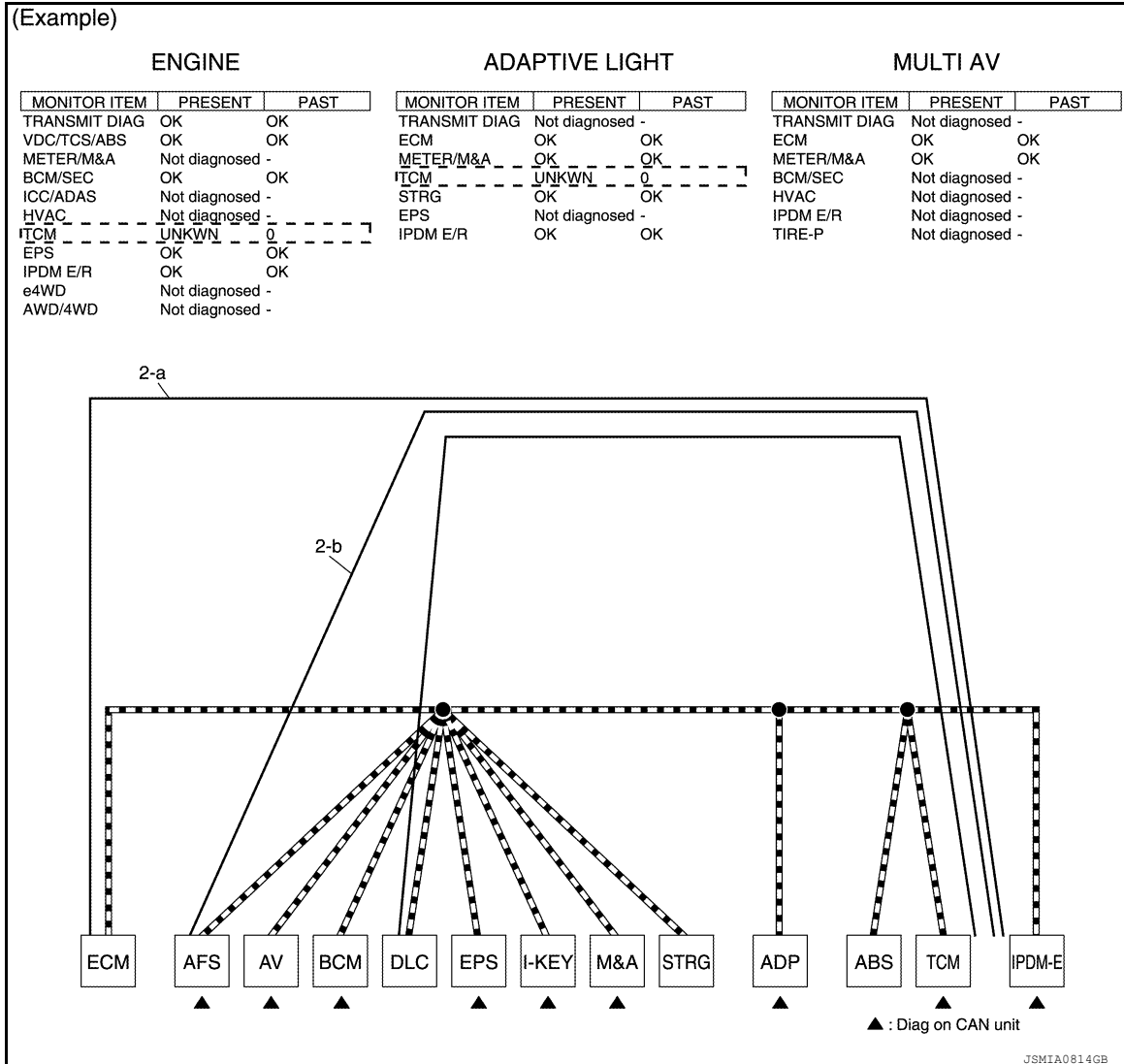
- b. Reception item of “ADAPTIVE LIGHT”: On “TCM”, “UNKWN” is indicated. This means AFS cannot receive the signal from TCM. Draw a line to indicate an error between AFS and TCM (line 2-b in the figure below).

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- 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.



- 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 below).
- 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:**

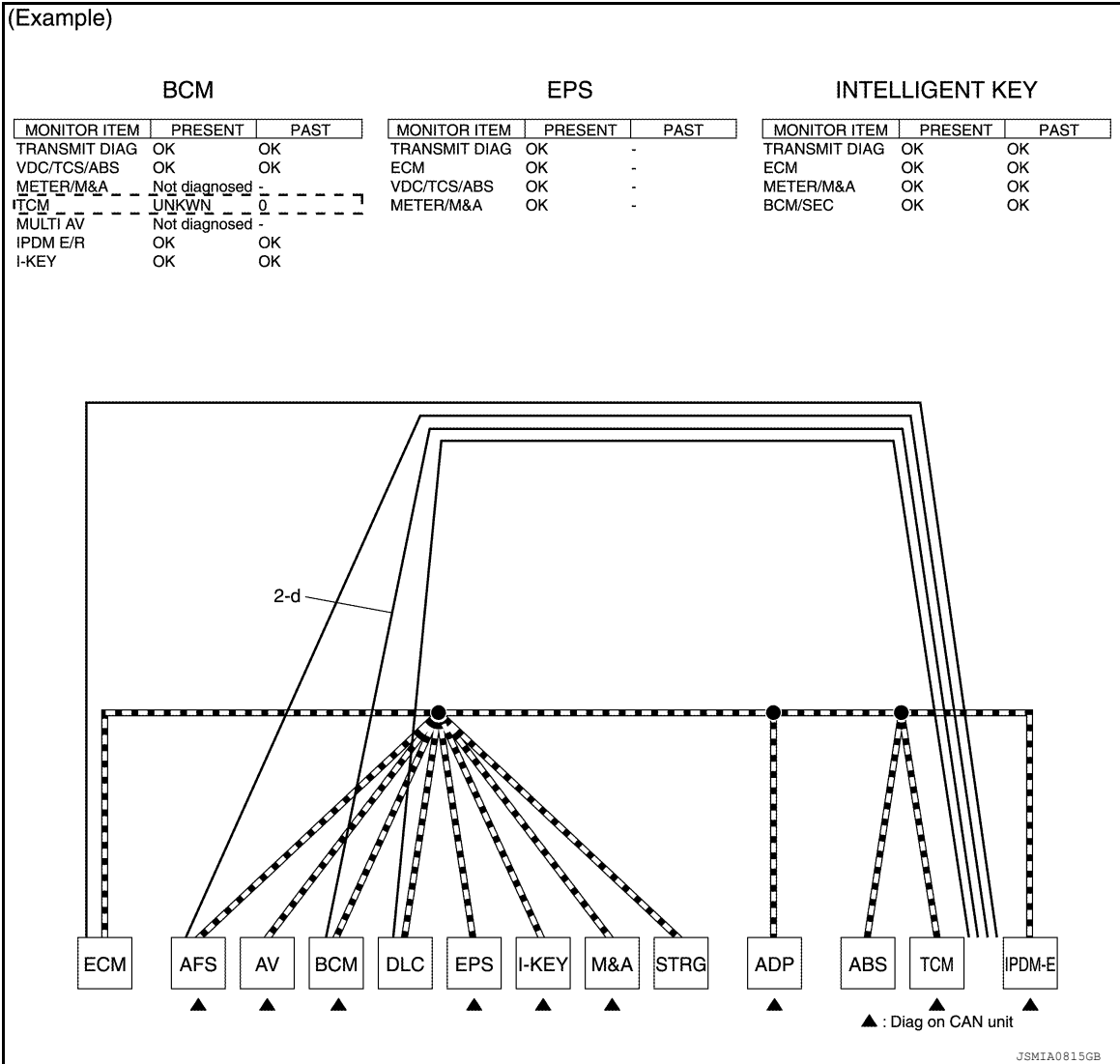
LAN

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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-48](#), “CAN Diagnostic Support Monitor”.



- Reception item of “METER/M&A”: 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 below).
- 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 below).

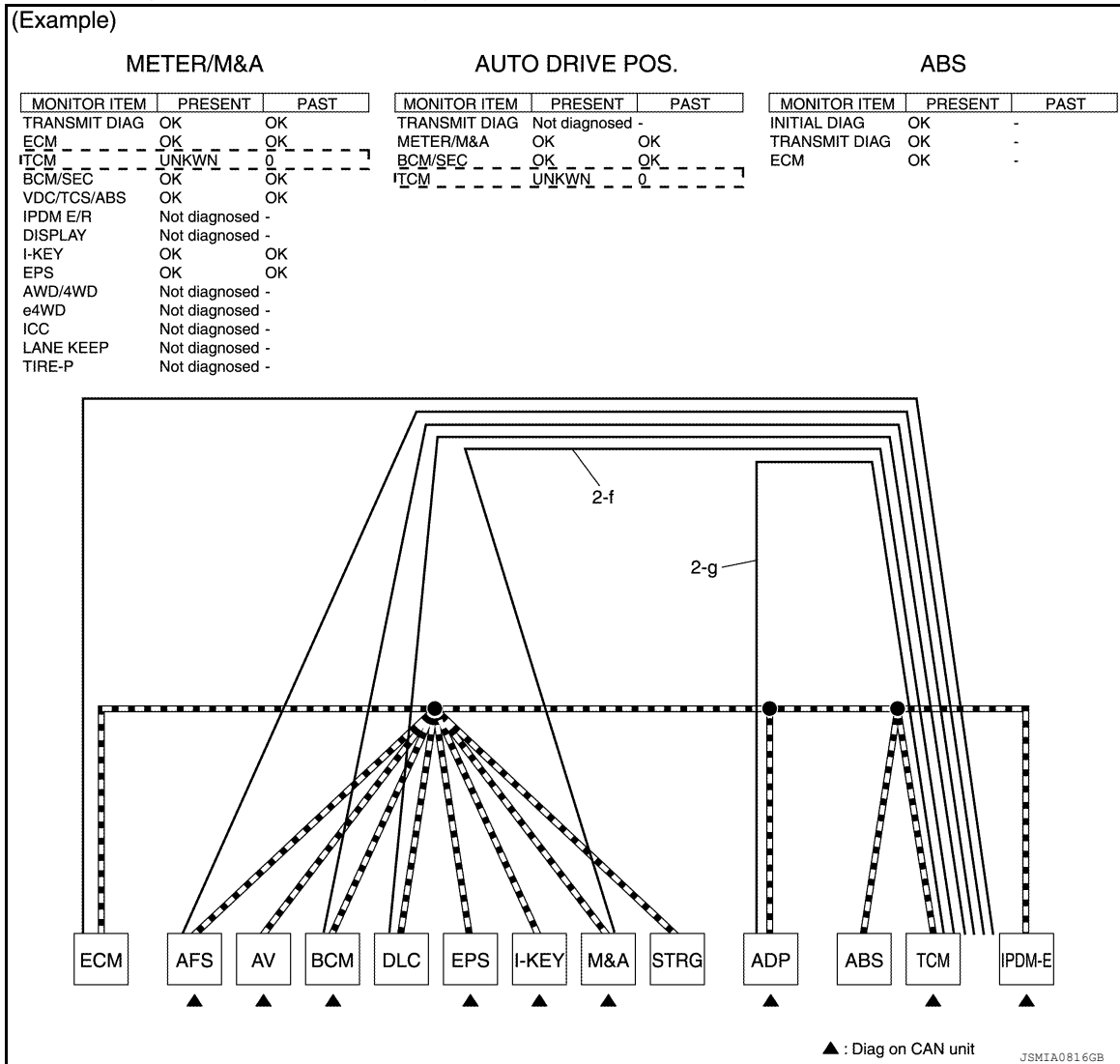


# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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



- 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 below).
- b. Place a check mark on the known good lines to establish the error circuit.

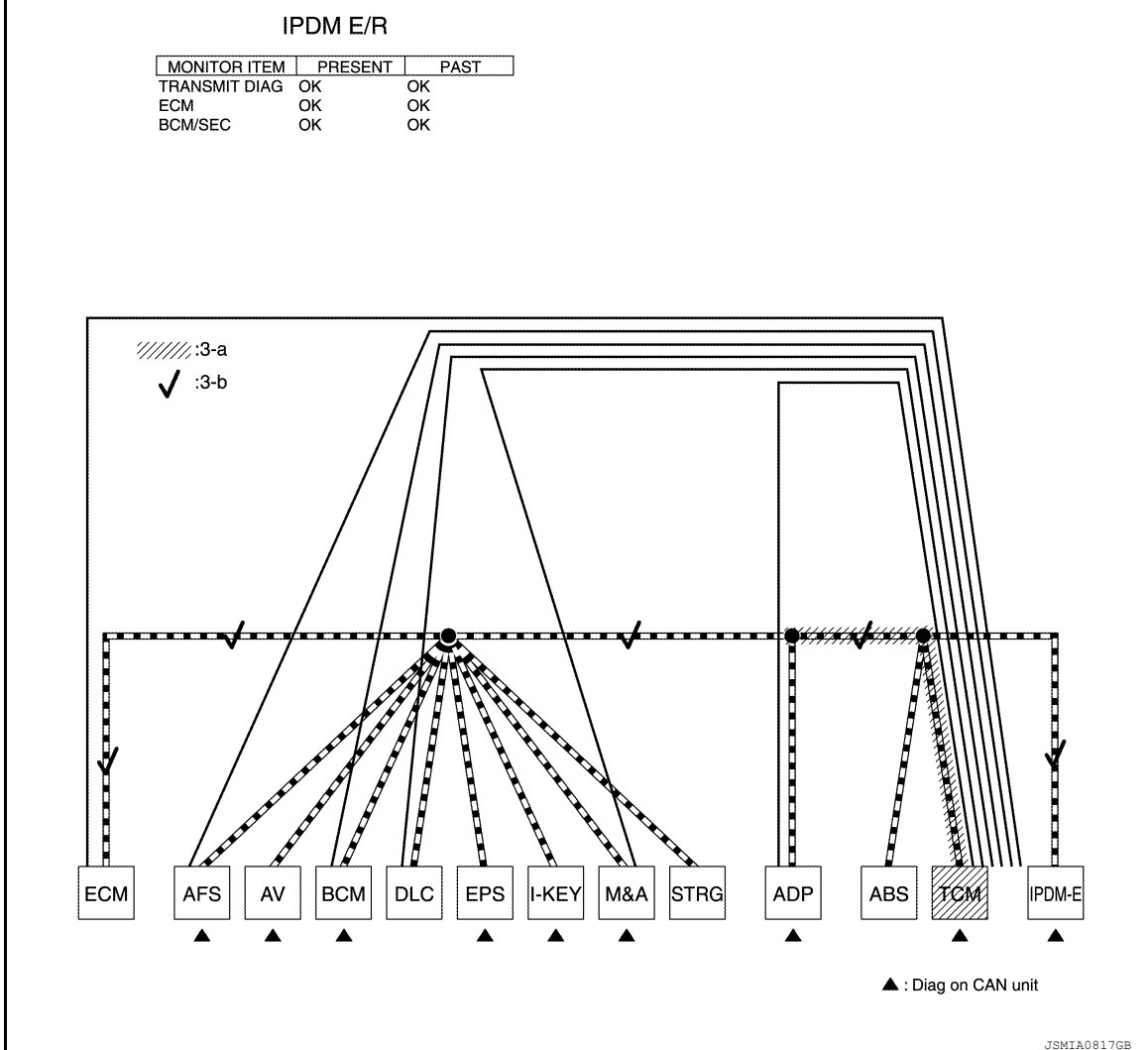
# DIAGNOSIS AND REPAIR WORKFLOW

## < BASIC INSPECTION >

## [CAN FUNDAMENTAL]

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 below).

(Example)



- Through the above procedure, the error is detected in the TCM branch line (shaded in the figure below).

### NOTE:

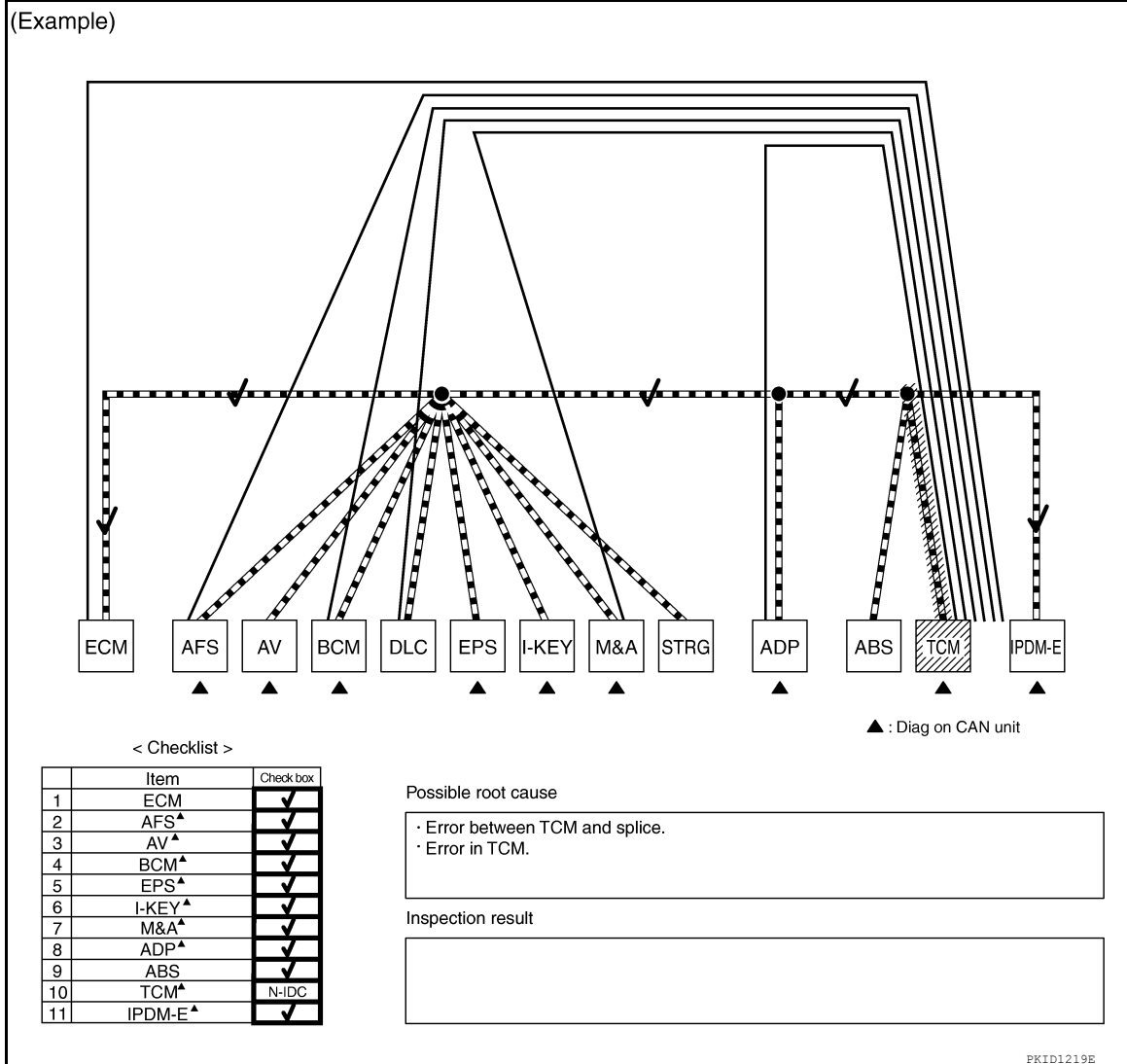
For abbreviations, refer to [LAN-36. "Abbreviation List"](#).

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- Perform the inspection for the detected error circuit. For the inspection procedure, refer to “MALFUNCTION AREA CHART”.



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)        | Indication                                                           |
|-----------------------|----------------------------------------------------------------------|
| SELF-DIAG RESULTS     | 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

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- Refer to "MALFUNCTION AREA CHART".

(Example)

All Diag on CAN units are not indicated.

| ENGINE        |               |      |
|---------------|---------------|------|
| MONITOR ITEM  | PRESENT       | PAST |
| TRANSMIT DIAG | UNKWN         | 0    |
| VDC/TCS/ABS   | UNKWN         | 0    |
| METER/M&A     | Not diagnosed | -    |
| BCM/SEC       | UNKWN         | 0    |
| ICC/ADAS      | Not diagnosed | -    |
| HVAC          | Not diagnosed | -    |
| TCM           | UNKWN         | 0    |
| EPS           | UNKWN         | 0    |
| IPDM E/R      | UNKWN         | 0    |
| e4WD          | Not diagnosed | -    |
| AWD/4WD       | Not diagnosed | -    |

| ABS           |         |      |
|---------------|---------|------|
| MONITOR ITEM  | PRESENT | PAST |
| INITIAL DIAG  | NG      | -    |
| TRANSMIT DIAG | UNKWN   | -    |
| ECM           | UNKWN   | -    |

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

JSMIA0818GB

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.

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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

The screenshot shows the CONSULT-III Plus interface. At the top, there are navigation buttons: Back, Home, Print Screen, Screen Capture, Measurement Mode, Recorded Data, and Help. Below these are vehicle status indicators: 13.1V, VI, MI, and a battery icon. The main menu includes 'Diagnosis (All Systems)', 'Select Vehicle', 'Confirm Vehicle', and 'Diagnosis (All Systems)'. The 'CAN DIAG SUPPORT MNTR' option is selected. The results are displayed in a table with columns for 'Result', 'Detailed Information', and 'FFD DTC Explana'. The table lists various systems: ENGINE, ABS, METER/M&A, BCM, ADAPTIVE LIGHT, TRANSMISSION, and EPS. Each system has a 'Result' value and a 'Detailed Information' section. The 'Result' column shows values like '1t', '3', 'NO DTC', and 'PAST'. The 'Detailed Information' column shows 'U1001 CAN COMM CIRCUIT' for ENGINE, 'U1000 CAN COMM CIRCUIT' for ABS, METER/M&A, TRANSMISSION, and EPS. The 'FFD DTC Explana' column has buttons for 'FFD' and 'DTC Explana'. At the bottom right, there are buttons for 'Print for Customer', 'Print', 'Save', and 'ERASE'. The bottom left shows '1 / 2' and navigation arrows. The bottom right shows '1 / 1' and navigation arrows. The text 'JSMIA0819GB' is visible at the bottom right of the screen.

| Result         | Detailed Information | FFD DTC Explana                             |
|----------------|----------------------|---------------------------------------------|
| ENGINE         | 1t                   | U1001 CAN COMM CIRCUIT 1t FFD DTC Explana   |
| ABS            | 3                    | U1000 CAN COMM CIRCUIT 3 FFD DTC Explana    |
| METER/M&A      | 3                    | U1000 CAN COMM CIRCUIT 3 FFD DTC Explana    |
| BCM            | NO DTC               |                                             |
| ADAPTIVE LIGHT | NO DTC               |                                             |
| TRANSMISSION   | 3                    | U1000 CAN COMM CIRCUIT 3 FFD DTC Explana    |
| EPS            | PAST                 | U1000 CAN COMM CIRCUIT PAST FFD DTC Explana |

- 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-48. "CAN Diagnostic Support Monitor"](#).

- 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 below).
- Reception item of “METER/M&A”: “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 below).

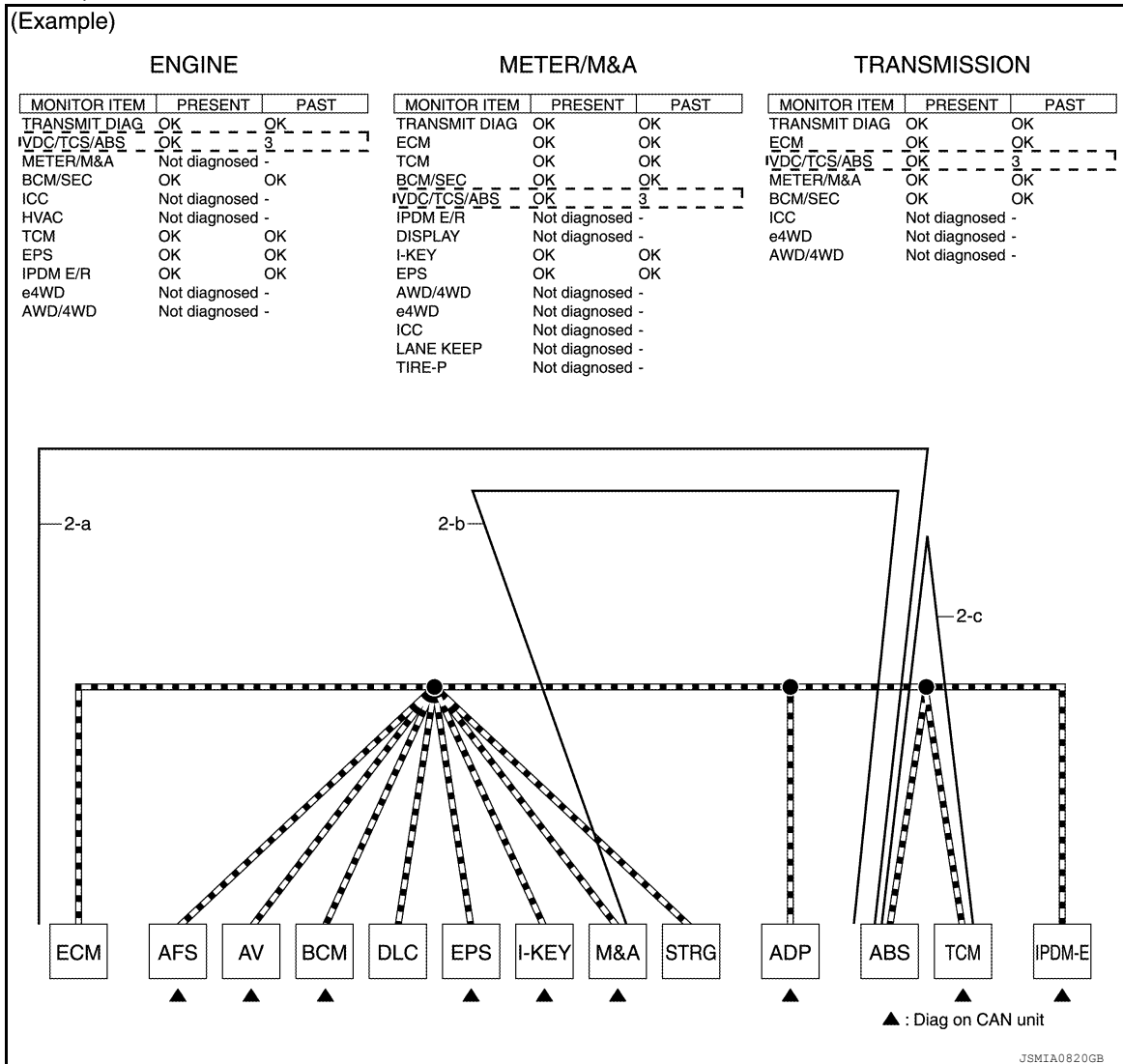
LAN

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- 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 below).



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:

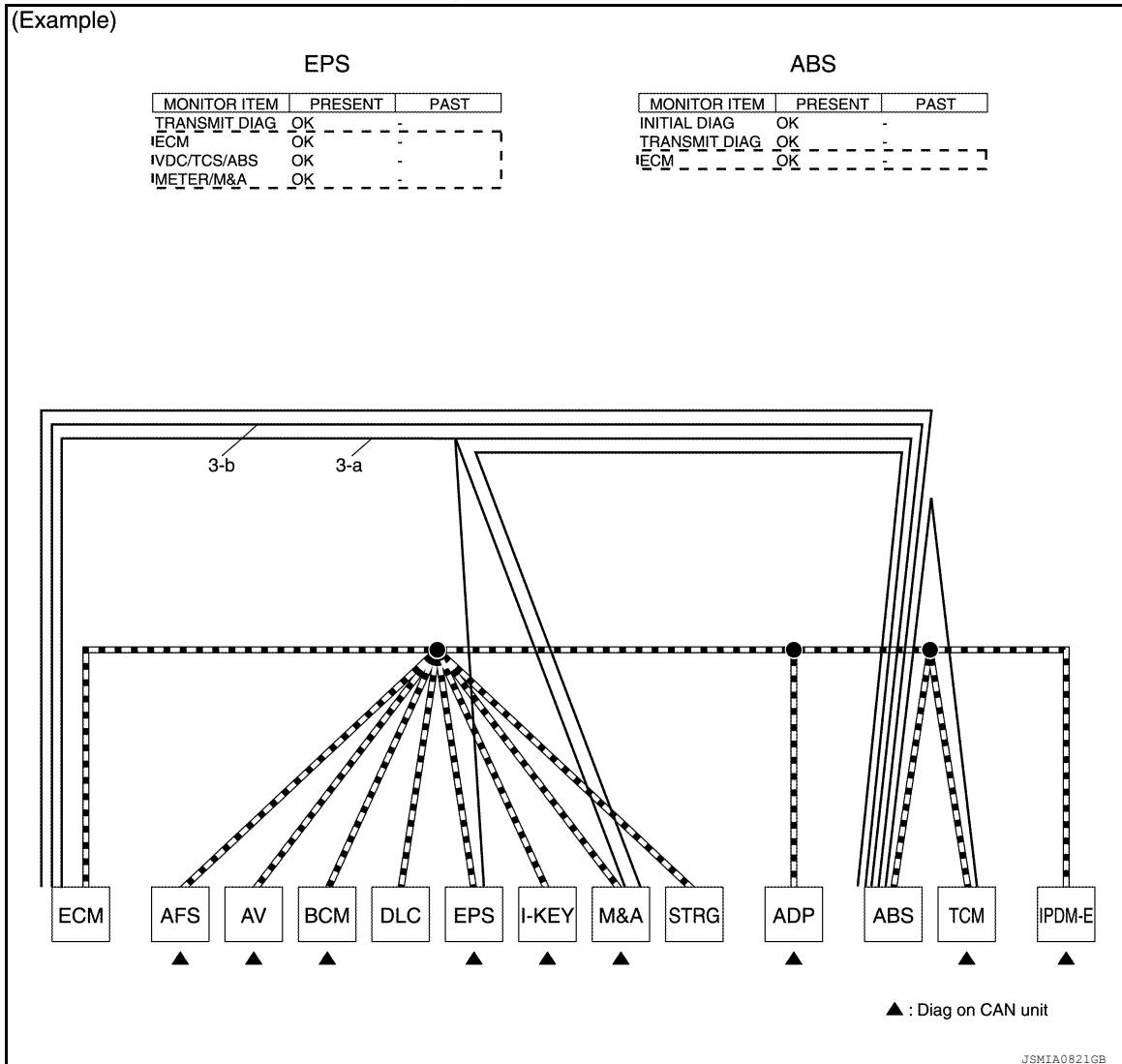
- While an error occurred in the past according to SELF-DIAG RESULTS, it is unclear which signal is not received. Assume that errors were detected from all reception items.
  - Draw a single line among the unit and all reception items. (Work flow differs from CAN DIAG SUPPORT MNTR (with PAST).)
- a.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

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- 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 below).



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-45, "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 below).

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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

(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 <sup>1</sup> | AV <sup>2</sup> | BCM            | EPS | I-KEY <sup>3</sup> | M&A | STRG <sup>1</sup> | ADP <sup>4</sup> | ABS | TCM    | IPDME |
|------------------------------------------|--------|------------------|-----------------|----------------|-----|--------------------|-----|-------------------|------------------|-----|--------|-------|
| 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<br>R |                  |                 |                |     |                    |     |                   |                  |     | R<br>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              | R   | R                  | T   |                   | R                |     | T      | R     |
| Input shaft revolution signal            | R      |                  |                 |                |     |                    |     |                   |                  |     |        | T     |
| Output shaft revolution signal           | R      |                  |                 |                |     |                    |     |                   |                  |     |        | T     |
| Shift position indicator signal          | R      | R                | R               | R <sup>5</sup> |     |                    | R   |                   | R <sup>6</sup>   |     |        | 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 below).

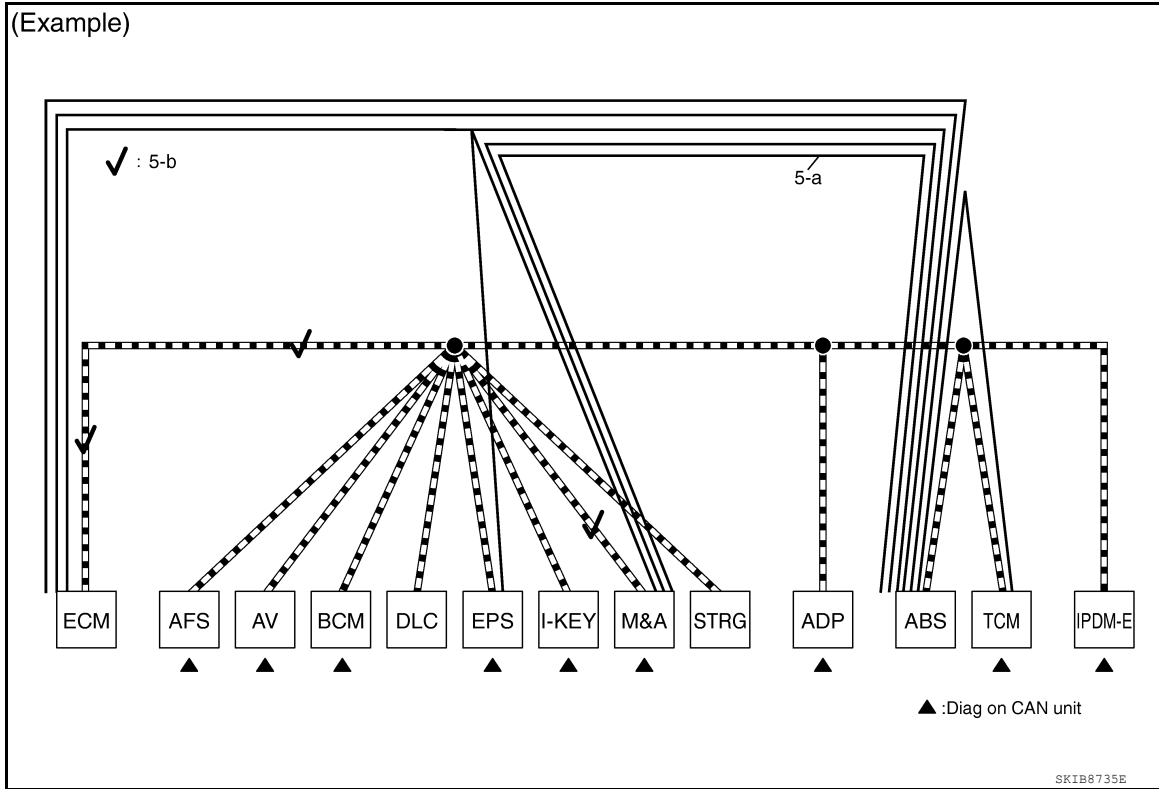


# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

- 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 below).



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 below).

**NOTE:**

For abbreviations, refer to [LAN-36, "Abbreviation List"](#).

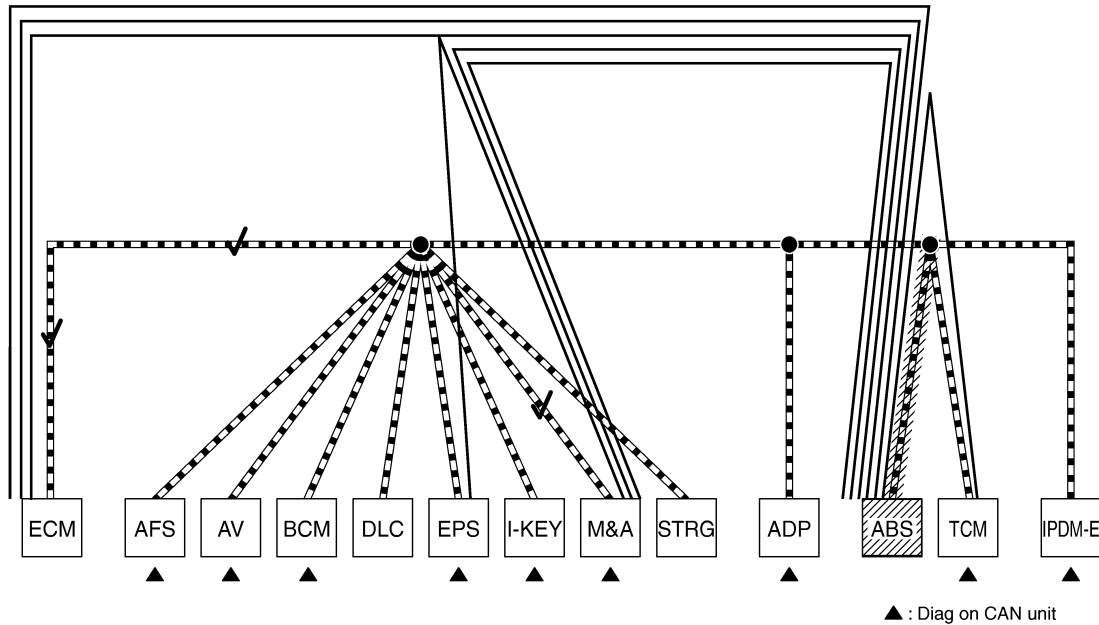
# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

7. Perform the inspection procedure for the possible cause. Refer to “MALFUNCTION AREA CHART”.

(Example)



< Checklist >

|    | Item    | Check box                           |
|----|---------|-------------------------------------|
| 1  | ECM     | <input checked="" type="checkbox"/> |
| 2  | AFS▲    | <input checked="" type="checkbox"/> |
| 3  | AV▲     | <input checked="" type="checkbox"/> |
| 4  | BCM▲    | <input checked="" type="checkbox"/> |
| 5  | EPS▲    | <input checked="" type="checkbox"/> |
| 6  | I-KEY▲  | <input checked="" type="checkbox"/> |
| 7  | M&A▲    | <input checked="" type="checkbox"/> |
| 8  | ADP▲    | <input checked="" type="checkbox"/> |
| 9  | ABS     | <input checked="" type="checkbox"/> |
| 10 | TCM▲    | <input checked="" type="checkbox"/> |
| 11 | IPDM-E▲ | <input checked="" type="checkbox"/> |

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

PKID1224E

Past Error — Short Circuit —

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

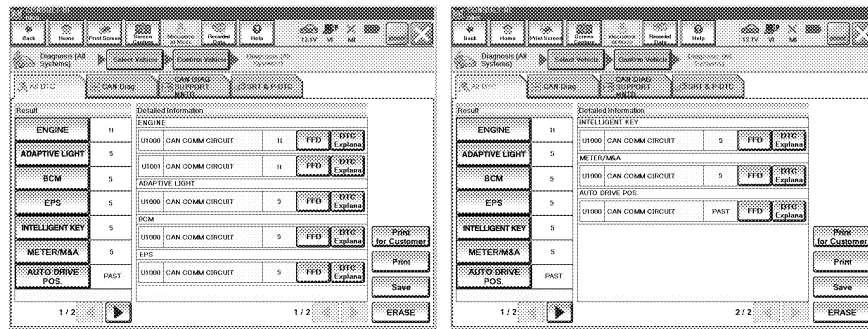
| Item (CONSULT)        | Indication                                                                                                            | Inspection procedure               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------|
| SELF-DIAG RESULTS     | DTC of CAN communication is indicated in the past for most units.                                                     | Refer to “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. |                                    |

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

(Example)



DTC of CAN communication is indicated in the past for more units.

## ENGINE

| MONITOR ITEM  | PRESENT       | PAST |
|---------------|---------------|------|
| TRANSMIT DIAG | OK            | 5    |
| VDC/TCS/ABS   | OK            | 5    |
| METER/M&A     | Not diagnosed | -    |
| BCM/SEC       | OK            | 5    |
| ICC           | Not diagnosed | -    |
| HVAC          | Not diagnosed | -    |
| TCM           | OK            | 5    |
| EPS           | OK            | 5    |
| IPDM E/R      | OK            | 5    |
| e4WD          | Not diagnosed | -    |
| AWD/4WD       | Not diagnosed | -    |

## ADAPTIVE LIGHT

| MONITOR ITEM  | PRESENT       | PAST |
|---------------|---------------|------|
| TRANSMIT DIAG | Not diagnosed | -    |
| ECM           | OK            | 5    |
| METER/M&A     | OK            | 5    |
| TCM           | OK            | 5    |
| STRG          | OK            | 5    |
| EPS           | Not diagnosed | -    |
| IPDM E/R      | OK            | 5    |

## BCM

| MONITOR ITEM  | PRESENT | PAST |
|---------------|---------|------|
| TRANSMIT DIAG | OK      | 5    |
| ECM           | OK      | 5    |
| METER/M&A     | OK      | 5    |
| TCM           | OK      | 5    |
| IPDM E/R      | OK      | 5    |
| I-KEY         | OK      | 5    |

## EPS

| MONITOR ITEM  | PRESENT | PAST |
|---------------|---------|------|
| TRANSMIT DIAG | OK      | -    |
| ECM           | OK      | -    |
| VDC/TCS/ABS   | OK      | -    |
| METER/M&A     | OK      | -    |

## INTELLIGENT KEY

| MONITOR ITEM  | PRESENT | PAST |
|---------------|---------|------|
| TRANSMIT DIAG | OK      | 5    |
| ECM           | OK      | 5    |
| METER/M&A     | OK      | 5    |
| BCM/SEC       | OK      | 5    |

## METER/M&A

| MONITOR ITEM  | PRESENT       | PAST |
|---------------|---------------|------|
| TRANSMIT DIAG | OK            | 5    |
| ECM           | OK            | 5    |
| TCM           | OK            | 5    |
| BCM/SEC       | OK            | 5    |
| VDC/TCS/ABS   | OK            | 5    |
| IPDM E/R      | Not diagnosed | -    |
| DISPLAY       | Not diagnosed | -    |
| I-KEY         | OK            | 5    |
| EPS           | OK            | 5    |
| AWD/4WD       | Not diagnosed | -    |
| e4WD          | Not diagnosed | -    |
| ICC/ADAS      | Not diagnosed | -    |
| LANE CAMERA   | Not diagnosed | -    |
| TIRE-P        | Not diagnosed | -    |

## AUTO DRIVE POS.

| MONITOR ITEM  | PRESENT | PAST |
|---------------|---------|------|
| TRANSMIT DIAG | OK      | 5    |
| METER/M&A     | OK      | 5    |
| BCM/SEC       | OK      | 5    |
| TCM           | OK      | 5    |

Only on CAN DIAG SUPPORT MNTR (with PAST), "1-39" is indicated on "PAST" of "TRANSMIT DIAG" and the reception item.

JSMIA0822GB

## HOW TO USE THIS MANUAL

### HOW TO USE THIS SECTION

#### Caution

INFOID:0000000011071021

- This section describes information peculiar to a vehicle, sheets for trouble diagnosis, and inspection procedures.
- For trouble diagnosis procedure, refer to [LAN-14, "Trouble Diagnosis Procedure"](#).

#### Abbreviation List

INFOID:0000000011071022

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

| Abbreviation | Unit name                                     | SELECT SYSTEM<br>(CONSULT) | CAN DIAG SUPPORT MNTR<br>(CONSULT) |
|--------------|-----------------------------------------------|----------------------------|------------------------------------|
| 4WD          | Transfer control unit                         | ALL MODE AWD/4WD           | AWD/4WD                            |
| A-BAG        | Air bag diagnosis sensor unit                 | AIR BAG                    | AIRBAG                             |
| AV           | AV control unit                               | MULTI AV                   | MULTI AV                           |
| ABS          | ABS actuator and electric unit (control unit) | ABS                        | VDC/TCS/ABS                        |
| BCM          | BCM                                           | BCM                        | BCM/SEC                            |
| DIFF         | Differential lock control unit                | DIFF LOCK                  | DIFF LOCK                          |
| DLC          | Data link connector                           | —                          | —                                  |
| ECM          | ECM                                           | ENGINE                     | ECM                                |
| HVAC         | Front air control                             | HVAC                       | HVAC                               |
| IPDM-E       | IPDM E/R                                      | IPDM E/R                   | IPDM E/R                           |
| M&A          | Combination meter                             | METER/M&A                  | METER/M&A                          |
| STRG         | Steering angle sensor                         | —                          | STRG                               |
| TCM          | TCM                                           | TRANSMISSION               | TCM                                |

## PRECAUTION

### PRECAUTIONS

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

INFOID:0000000011071023

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 SR 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 SR 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 POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.

#### Precautions for Trouble Diagnosis

INFOID:0000000011071024

#### **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.

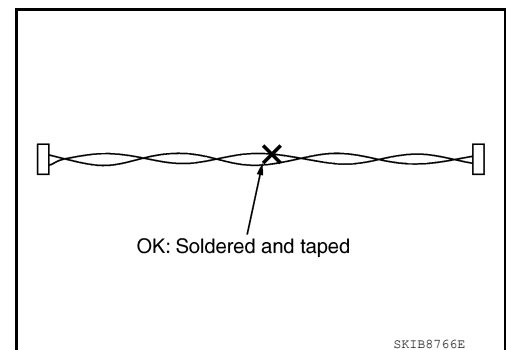
#### Precautions for Harness Repair

INFOID:0000000011071025

- 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).



## PRECAUTIONS

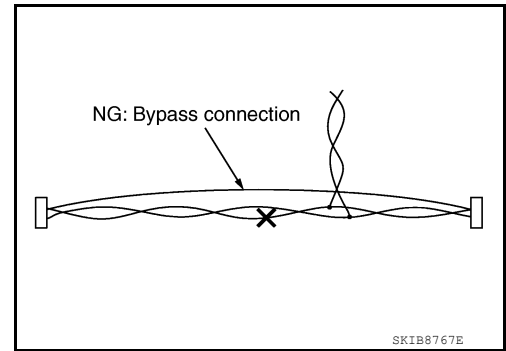
### < PRECAUTION >

[CAN]

- 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.

## BASIC INSPECTION

### DIAGNOSIS AND REPAIR WORKFLOW

#### Interview Sheet

INFOID:0000000011071026

| CAN Communication System Diagnosis Interview Sheet          |                               |
|-------------------------------------------------------------|-------------------------------|
| Date received: <input type="text"/>                         |                               |
| Type: <input type="text"/>                                  | VIN No.: <input type="text"/> |
| Model: <input type="text"/>                                 |                               |
| First registration: <input type="text"/>                    | Mileage: <input type="text"/> |
| CAN system type: <input type="text"/>                       |                               |
| Symptom (Results from interview with customer)              |                               |
| <div style="border: 1px solid black; height: 150px;"></div> |                               |
| Condition at inspection                                     |                               |
| Error symptom : Present / Past                              |                               |
| <div style="border: 1px solid black; height: 150px;"></div> |                               |

SKIB8898E

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
N  
O  
P

LAN

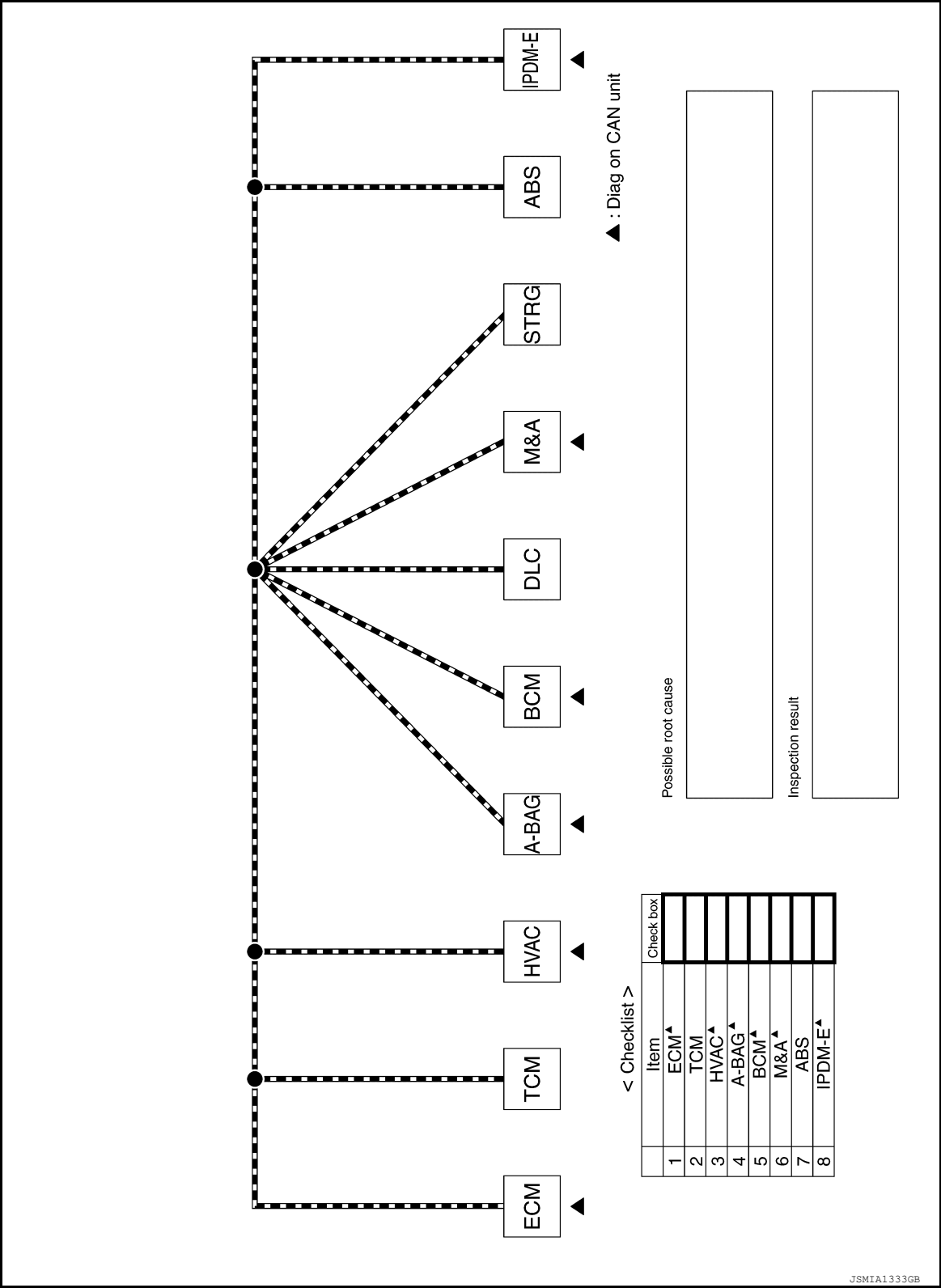
DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN]

Diagnosis Sheet (CAN Type 1)

INFOID:0000000011071027



JSMIA1333GB



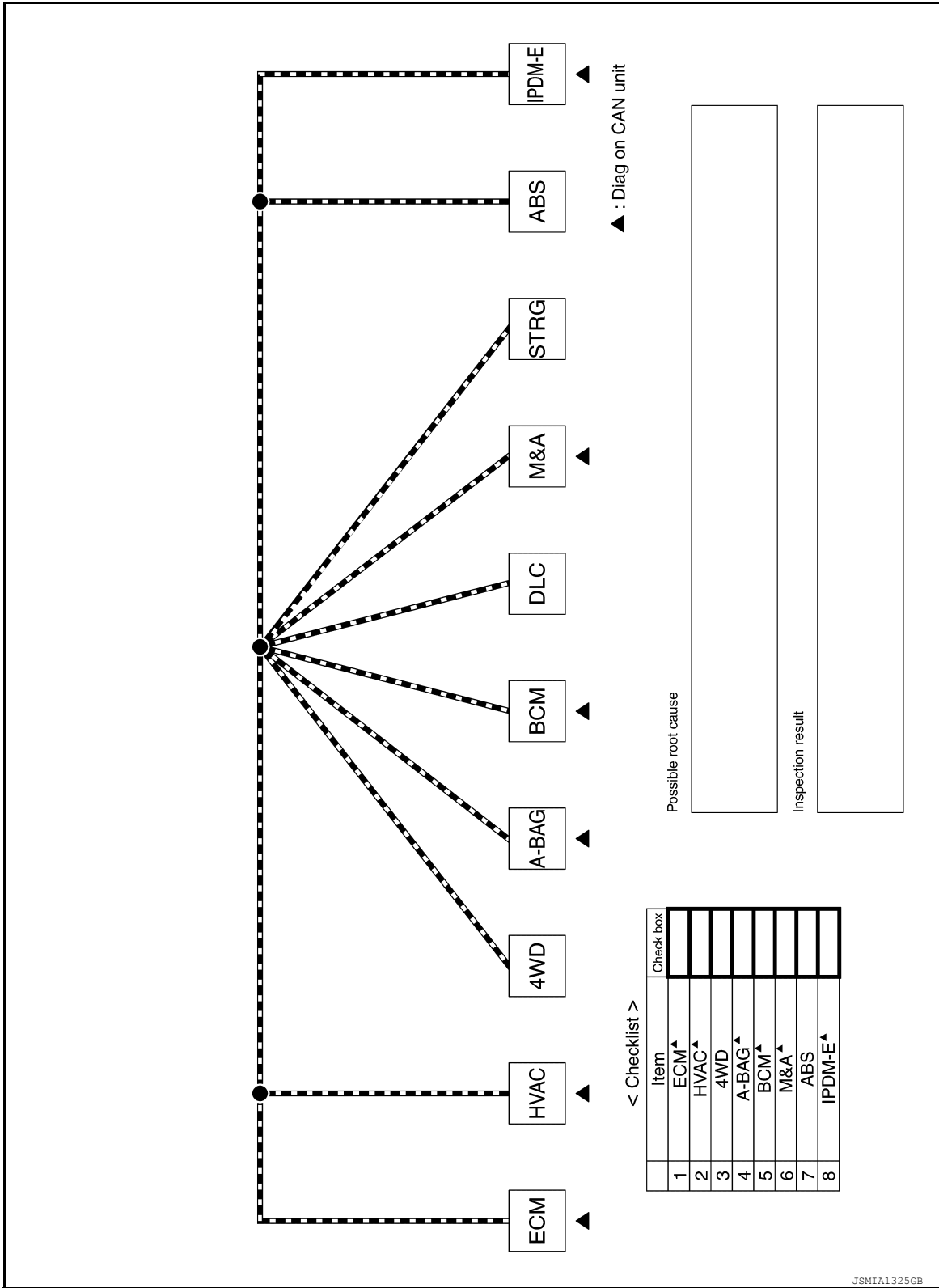
# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN]

## Diagnosis Sheet (CAN Type 2)

INFOID:0000000011071028



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
LAN  
N  
O  
P

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN]

## Diagnosis Sheet (CAN Type 3)

INFOID:0000000011071029

▲ : Diag on CAN unit

Possible root cause

Inspection result

< Checklist >

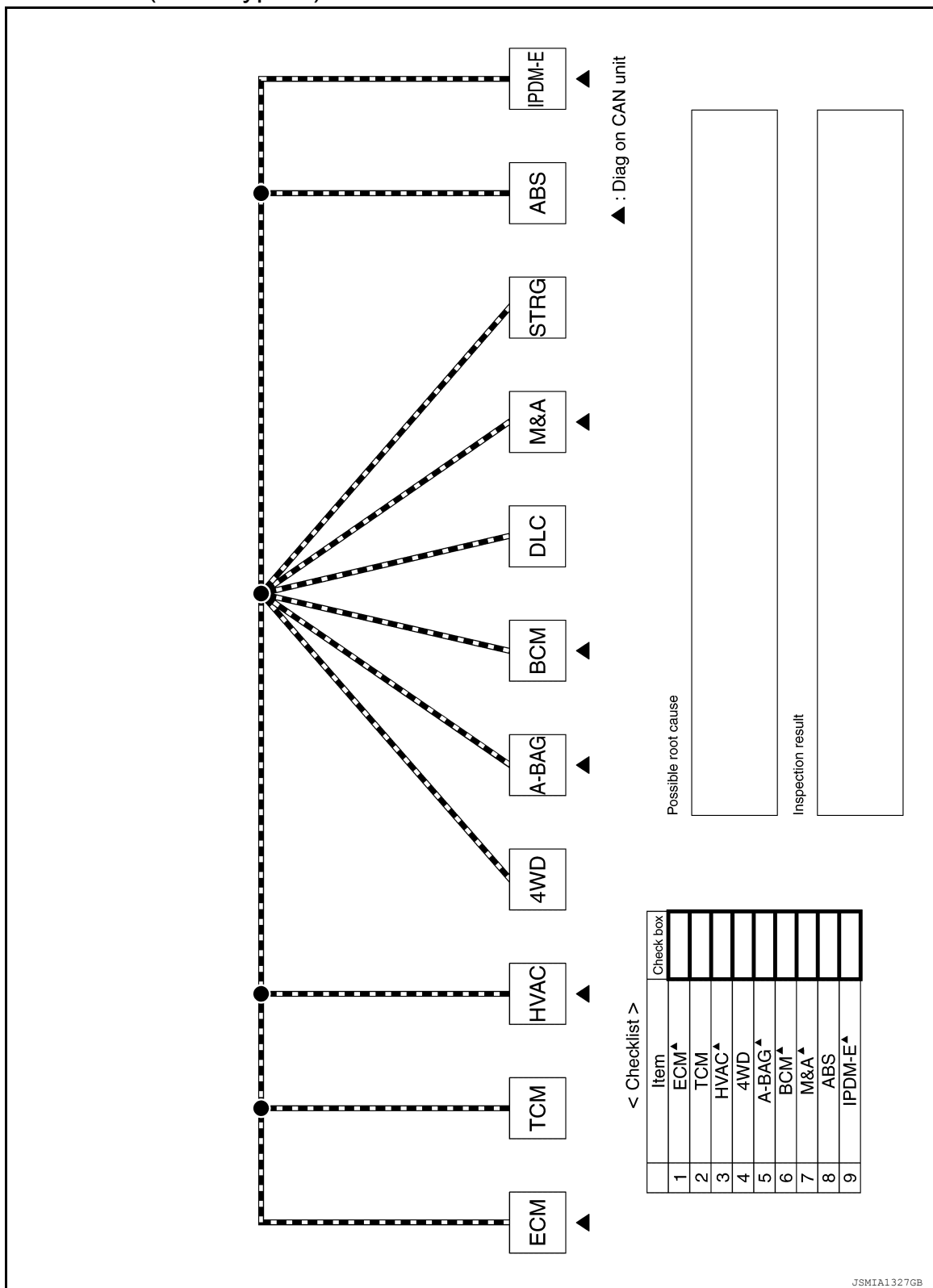
| Item       | Check box                |
|------------|--------------------------|
| 1 ECM▲     | <input type="checkbox"/> |
| 2 AV▲      | <input type="checkbox"/> |
| 3 HVAC▲    | <input type="checkbox"/> |
| 4 4WD      | <input type="checkbox"/> |
| 5 A-BAG▲   | <input type="checkbox"/> |
| 6 BCM▲     | <input type="checkbox"/> |
| 7 DIFF     | <input type="checkbox"/> |
| 8 M&A▲     | <input type="checkbox"/> |
| 9 ABS      | <input type="checkbox"/> |
| 10 IPDM-E▲ | <input type="checkbox"/> |

JSMIA1638GB

**[CAN]**

## Diagnosis Sheet (CAN Type 4)

INFOID:0000000011071030



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
LAN  
N  
O  
P

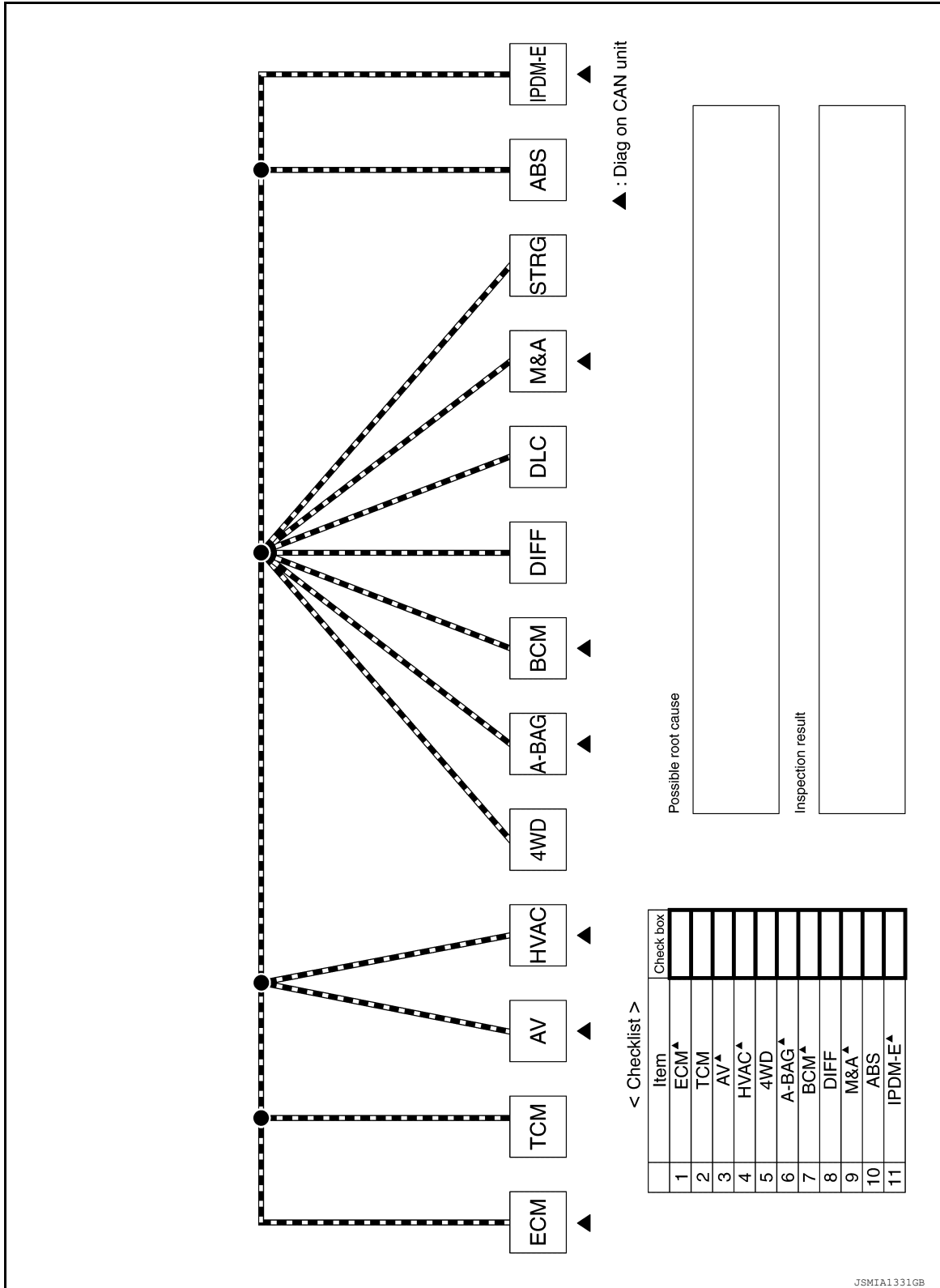
# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN]

## Diagnosis Sheet (CAN Type 5)

INFOID:0000000011071031



# CAN COMMUNICATION SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

## SYSTEM DESCRIPTION

### CAN COMMUNICATION SYSTEM

#### CAN System Specification Chart

INFOID:0000000011071032

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

**NOTE:**

Refer to [LAN-14, "Trouble Diagnosis Procedure"](#) for how to use CAN system specification chart.

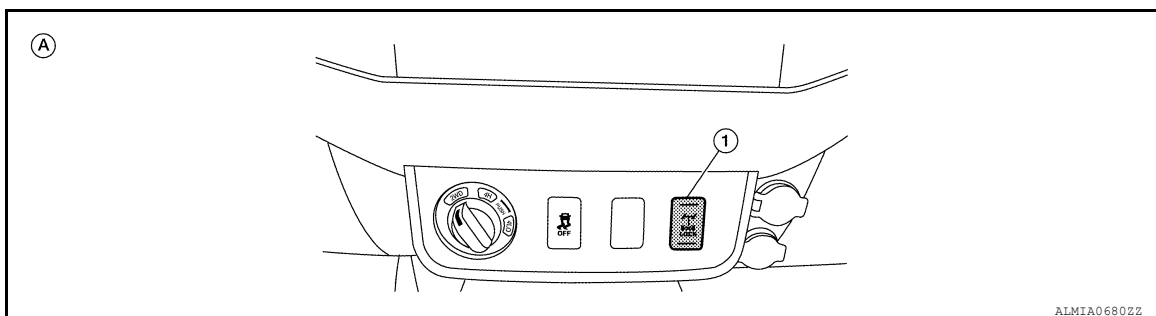
|                                      |                        |                        |                        |                        |                        |
|--------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Body type                            | Wagon                  |                        |                        |                        |                        |
| Axle                                 | 2WD                    | 4WD                    |                        |                        |                        |
| Engine                               | VQ40DE                 |                        |                        |                        |                        |
| Transmission                         | A/T                    | M/T                    |                        | A/T                    |                        |
| Brake control                        | VDC                    |                        |                        |                        |                        |
| Electronic locking rear differential |                        |                        | ×                      |                        | ×                      |
| CAN system type                      | 1                      | 2                      | 3                      | 4                      | 5                      |
| Diagnosis sheet                      | <a href="#">LAN-40</a> | <a href="#">LAN-41</a> | <a href="#">LAN-42</a> | <a href="#">LAN-43</a> | <a href="#">LAN-44</a> |

×: Applicable

#### VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

**NOTE:**

Check CAN system type from the vehicle shape and equipment.



1. Differential lock mode switch
- A. With electronic locking rear differential

#### CAN Communication Signal Chart

INFOID:0000000011071033

Refer to [LAN-13, "How to Use CAN Communication Signal Chart"](#) for how to use CAN communication signal chart.

**NOTE:**

Refer to [LAN-36, "Abbreviation List"](#) for the abbreviations of the connecting units.

T: Transmit R: Receive

| Signal name/Connecting unit       | ECM | TCM | HVAC | AV | 4WD | BCM | DIFF | M&A | STRG | ABS | IPDM-E |
|-----------------------------------|-----|-----|------|----|-----|-----|------|-----|------|-----|--------|
| A/C compressor request signal     | T   |     |      |    |     |     |      |     |      |     | R      |
| Accelerator pedal position signal | T   | R   |      |    |     |     |      |     |      | R   |        |
| ASCD CRUISE lamp signal           | T   |     |      |    |     |     |      | R   |      |     |        |
| ASCD OD cancel request            | T   | R   |      |    |     |     |      |     |      |     |        |
| ASCD operation signal             | T   | R   |      |    |     |     |      |     |      |     |        |
| ASCD SET lamp signal              | T   |     |      |    |     |     |      | R   |      |     |        |
| Battery voltage signal            | T   | R   |      |    |     |     |      |     |      |     |        |

# CAN COMMUNICATION SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

| Signal name/Connecting unit             | ECM | TCM | HVAC | AV | 4WD | BCM | DIFF | M&A | STRG | ABS | IPDM-E |
|-----------------------------------------|-----|-----|------|----|-----|-----|------|-----|------|-----|--------|
| Closed throttle position signal         | T   | R   |      |    |     |     |      |     |      |     |        |
| Cooling fan speed request signal        | T   |     |      |    |     |     |      |     |      |     | R      |
| Engine coolant temperature signal       | T   |     | R    |    |     |     |      | R   |      |     |        |
| Engine speed signal                     | T   | R   | R    | R  | R   |     |      | R   |      | R   |        |
| Engine status signal                    | T   |     |      | R  |     | R   |      |     |      |     |        |
| Fuel consumption monitor signal         | T   |     |      | R  |     |     |      | R   |      |     |        |
| Fuel filler cap warning display signal  | T   |     |      |    |     |     |      | R   |      |     |        |
| Malfunction indicator lamp signal       | T   |     |      |    |     |     |      | R   |      |     |        |
| Power generation command value signal   | T   |     |      |    |     |     |      |     |      |     | R      |
| Wide open throttle position signal      | T   | R   |      |    |     |     |      |     |      |     |        |
| A/T fluid temperature sensor signal     |     | T   |      |    |     |     |      | R   |      |     |        |
| A/T position indicator lamp signal      |     | T   |      |    | R   |     |      | R   |      | R   |        |
| A/T self-diagnosis signal               | R   | T   |      |    |     |     |      |     |      |     |        |
| Input speed signal                      | R   | T   |      |    |     |     |      |     |      |     |        |
| O/D OFF indicator signal                |     | T   |      |    |     |     |      | R   |      |     |        |
| Output shaft revolution signal          | R   | T   |      |    | R   |     |      |     |      |     |        |
| 4WD shift switch signal                 |     |     |      |    | T   |     | R    |     |      | R   |        |
| A/C switch signal                       | R   |     | R    |    |     | T   |      |     |      |     |        |
| Blower fan motor switch signal          | R   |     |      |    |     | T   |      |     |      |     |        |
| Buzzer output signal                    |     |     |      |    |     | T   |      | R   |      |     |        |
| Day time running light request signal*1 |     |     |      |    |     | T   |      |     |      |     | R      |
| Door switch signal                      |     |     |      | R  |     | T   |      | R   |      |     | R      |
| Front fog light request signal          |     |     |      |    |     | T   |      | R   |      |     | R      |
| Front wiper request signal              |     |     |      |    |     | T   |      |     |      |     | R      |
| High beam request signal                |     |     |      |    |     | T   |      | R   |      |     | R      |
| Horn chirp signal                       |     |     |      |    |     | T   |      |     |      |     | R      |
| Ignition switch signal                  |     |     |      |    |     | T   |      |     |      |     | R      |
| Low beam request signal                 |     |     |      |    |     | T   |      |     |      |     | R      |
| Position light request signal           |     |     |      |    |     | T   |      | R   |      |     | R      |
| Rear window defogger switch signal      |     |     |      |    |     | T   |      |     |      |     | R      |
| Sleep wake up signal                    |     |     |      |    |     | T   |      | R   |      |     | R      |
| Theft warning horn request signal       |     |     |      |    |     | T   |      |     |      |     | R      |
| Turn indicator signal                   |     |     |      |    |     | T   |      | R   |      |     |        |
| Differential lock indicator signal      |     |     |      |    |     |     | T    |     |      | R   |        |
| Differential lock switch signal         |     |     |      |    |     |     | T    |     |      | R   |        |
| 1st position switch signal              |     | R   |      |    |     |     |      | T   |      |     |        |
| Distance to empty signal                |     |     |      | R  |     |     |      | T   |      |     |        |
| Fuel filler cap warning reset signal    | R   |     |      |    |     |     |      | T   |      |     |        |
| Fuel level low warning signal           |     |     |      | R  |     |     |      | T   |      |     |        |
| Fuel level sensor signal                | R   |     |      |    |     |     |      | T   |      |     |        |
| Overdrive control switch signal         |     | R   |      |    |     |     |      | T   |      |     |        |
| Seat belt buckle switch signal          |     |     |      |    |     | R   |      | T   |      |     |        |

# CAN COMMUNICATION SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

| Signal name/Connecting unit                  | ECM | TCM | HVAC | AV | 4WD | BCM | DIFF | M&A | STRG | ABS | IPDM-E |
|----------------------------------------------|-----|-----|------|----|-----|-----|------|-----|------|-----|--------|
| Stop lamp switch signal                      |     | R   | R    |    |     | T   |      |     |      |     |        |
|                                              |     |     |      |    | R   |     |      |     |      | T   |        |
| Vehicle speed signal                         | R   | R   |      | R  |     | R   |      | T   |      |     |        |
|                                              | R   |     |      |    | R   |     | R    | R   |      | T   |        |
| Steering angle sensor signal                 |     |     |      |    |     |     |      |     | T    | R   |        |
| ABS warning lamp signal                      |     |     |      |    |     |     |      | R   |      | T   |        |
| Brake warning lamp signal                    |     |     |      |    |     |     |      | R   |      | T   |        |
| Hill descent control indicator lamp signal*2 |     |     |      |    |     |     |      | R   |      | T   |        |
| SLIP indicator lamp signal                   |     |     |      |    |     |     |      | R   |      | T   |        |
| VDC OFF indicator lamp signal                |     |     |      |    |     |     |      | R   |      | T   |        |
| Front wiper stop position signal             |     |     |      |    |     | R   |      |     |      |     | T      |
| High beam status signal                      | R   |     |      |    |     |     |      |     |      |     | T      |
| Low beam status signal                       | R   |     |      |    |     |     |      |     |      |     | T      |
| Rear window defogger control signal          | R   |     |      |    |     |     |      |     |      |     | T      |

\*1: Canada models only

\*2: Models with hill descent control

## NOTE:

CAN data of the air bag diagnosis sensor unit is not used by usual service work, thus it is omitted.

# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN]

## TROUBLE DIAGNOSIS

### CAN Diagnostic Support Monitor

INFOID:0000000011071034

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

#### MONITOR ITEM LIST (CONSULT)

ECM

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

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                                         | Normal  |                     | Error   |      |
|------|----------------------------|-------------------------------------------------------------------------------------|---------|---------------------|---------|------|
|      |                            |                                                                                     | PRESENT | PAST                | PRESENT | PAST |
| ECM  | TRANSMIT DIAG              | Signal transmission status                                                          | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|      | VDC/TCS/ABS                | Signal receiving status from the ABS ac-<br>tuator and electric unit (control unit) |         |                     |         |      |
|      | METER/M&A                  | Signal receiving status from the combi-<br>nation meter                             |         |                     |         |      |
|      | BCM/SEC                    | Signal receiving status from the BCM                                                |         |                     |         |      |
|      | AIRBAG                     | Not used even though indicated                                                      |         |                     |         |      |
|      | ICC/ADAS                   |                                                                                     |         |                     |         |      |
|      | HVAC                       |                                                                                     |         |                     |         |      |
|      | TCM                        | Signal receiving status from the TCM                                                | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|      | MULTI AV                   | Not used even though indicated                                                      |         |                     |         |      |
|      | EPS                        |                                                                                     |         |                     |         |      |
|      | IPDM E/R                   | Signal receiving status from the<br>IPDM E/R                                        | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|      | e4WD                       | Not used even though indicated                                                      |         |                     |         |      |
|      | AWD/4WD                    | Signal receiving status from the transfer<br>control unit                           | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |

\*: 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”.

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                                    | Normal  | Error |
|------|----------------------------|--------------------------------------------------------------------------------|---------|-------|
|      |                            |                                                                                | PRESENT |       |
| TCM  | 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 combination meter                             |         |       |
|      | BCM                        | Not used even though indicated                                                 |         |       |
|      | AWD/4WD                    | Signal receiving status from the transfer control unit                         | OK      | UNKWN |

Front Air Control



# TROUBLE DIAGNOSIS

## < SYSTEM DESCRIPTION >

[CAN]

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

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                                         | Normal  |                     | Error   |      |
|------|----------------------------|-------------------------------------------------------------------------------------|---------|---------------------|---------|------|
|      |                            |                                                                                     | PRESENT | PAST                | PRESENT | PAST |
| HVAC | TRANSMIT DIAG              | Signal transmission status                                                          | OK      | OK<br>or<br>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                                                | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|      | VDC/TCS/ABS                | Signal receiving status from the ABS ac-<br>tuator and electric unit (control unit) |         |                     |         |      |
|      | IPDM E/R                   | Not used even though indicated                                                      |         |                     |         |      |
|      | DISPLAY                    |                                                                                     |         |                     |         |      |
|      | I-KEY                      |                                                                                     |         |                     |         |      |
|      | EPS                        |                                                                                     |         |                     |         |      |
|      | AWD/4WD                    |                                                                                     |         |                     |         |      |
|      | e4WD                       |                                                                                     |         |                     |         |      |
|      | ICC/ADAS                   |                                                                                     |         |                     |         |      |
|      | LANE CAMERA                |                                                                                     |         |                     |         |      |
|      | TIRE-P                     |                                                                                     |         |                     |         |      |
|      | METER/M&A                  |                                                                                     |         |                     |         |      |

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

## 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)

| ITEM | CAN DIAG SUP-PORT MNTR | Description                          | Normal  |                     | Error   |      |
|------|------------------------|--------------------------------------|---------|---------------------|---------|------|
|      |                        |                                      | PRESENT | PAST                | PRESENT | PAST |
| AV   | TRANSMIT DIAG          | Not used even though indicated       |         |                     |         |      |
|      | ECM                    | Signal receiving status from the ECM | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|      | VDC/TCS/ABS            | Not used even though indicated       |         |                     |         |      |
|      | METER/M&A              |                                      |         |                     |         |      |
|      | BCM/SEC                |                                      |         |                     |         |      |
|      | AVM                    |                                      |         |                     |         |      |
|      | ICC/ADAS               |                                      |         |                     |         |      |
|      | HVAC                   |                                      |         |                     |         |      |
|      | STRG                   |                                      |         |                     |         |      |
|      | TIRE-P                 |                                      |         |                     |         |      |
|      | IPDM E/R               |                                      |         |                     |         |      |
|      | TCU                    |                                      |         |                     |         |      |

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

## Transfer Control Unit

### NOTE:

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

# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN]

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                                    | Normal  | Error |
|------|----------------------------|--------------------------------------------------------------------------------|---------|-------|
|      |                            |                                                                                | PRESENT |       |
| 4WD  | 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) |         |       |
|      | TCM                        | Signal receiving status from the TCM                                           |         |       |
|      | METER/M&A                  | Signal receiving status from the combination meter                             |         |       |
|      | BCM/SEC                    | Not used even though indicated                                                 |         |       |

## Air Bag Diagnosis Sensor Unit

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

| ITEM  | CAN DIAG SUP-<br>PORT MNTR | Description                                                                         | Normal  |                     | Error   |      |
|-------|----------------------------|-------------------------------------------------------------------------------------|---------|---------------------|---------|------|
|       |                            |                                                                                     | PRESENT | PAST                | PRESENT | PAST |
| A-BAG | TRANSMIT DIAG              | Not used even though indicated                                                      |         |                     |         |      |
|       | ECM                        | Signal receiving status from the ECM                                                | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |
|       | VDC/TCS/ABS                | Signal receiving status from the ABS actua-<br>tor and electric unit (control unit) |         |                     |         |      |
|       | METER/M&A                  | Signal receiving status from the combina-<br>tion meter                             |         |                     |         |      |
|       | BCM/SEC                    | Not used even though indicated                                                      |         |                     |         |      |
|       | TCM                        |                                                                                     |         |                     |         |      |
|       | STRG                       | Signal receiving status from the steering an-<br>gle sensor                         | OK      | OK<br>or<br>1 – 39* | UNKWN   | 0    |

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

## BCM

### NOTE:

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

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                        | Normal  | Error |
|------|----------------------------|----------------------------------------------------|---------|-------|
|      |                            |                                                    | PRESENT |       |
| BCM  | INITIAL DIAG               | Status of CAN controller                           | OK      | NG    |
|      | TRANSMIT DIAG              | Signal transmission status                         |         | UNKWN |
|      | ECM                        | Signal receiving status from the ECM               |         |       |
|      | IPDM E/R                   | Signal receiving status from the IPDM E/R          |         |       |
|      | METER/M&A                  | Signal receiving status from the combination meter |         |       |
|      | I-KEY                      | Not used even though indicated                     |         |       |

## Differential Lock Control Unit

### NOTE:

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

# TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN]

| ITEM | CAN DIAG SUP-PORT MNTR | Description                                                                    | Normal  | Error |
|------|------------------------|--------------------------------------------------------------------------------|---------|-------|
|      |                        |                                                                                | PRESENT |       |
| DIFF | 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) |         |       |
|      | AWD/4WD                | Signal receiving status from the transfer control unit                         |         |       |

## Combination Meter

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

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                                         | Normal  |                     | Error   |      |
|------|----------------------------|-------------------------------------------------------------------------------------|---------|---------------------|---------|------|
|      |                            |                                                                                     | PRESENT | PAST                | PRESENT | PAST |
| M&A  | TRANSMIT DIAG              | Signal transmission status                                                          | OK      | OK<br>or<br>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 ac-<br>tuator and electric unit (control unit) |         |                     |         |      |
|      | IPDM E/R                   | Signal receiving status from the<br>IPDM E/R                                        |         |                     |         |      |
|      | DISPLAY                    | Not used even though indicated                                                      |         |                     |         |      |
|      | I-KEY                      |                                                                                     |         |                     |         |      |
|      | EPS                        |                                                                                     |         |                     |         |      |
|      | AWD/4WD                    |                                                                                     |         |                     |         |      |
|      | e4WD                       |                                                                                     |         |                     |         |      |
|      | ICC/ADAS                   |                                                                                     |         |                     |         |      |
|      | LANE CAMERA                |                                                                                     |         |                     |         |      |
|      | TIRE-P                     |                                                                                     |         |                     |         |      |

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

## ABS Actuator and Electric Unit (Control Unit)

| ITEM | CAN DIAG SUP-<br>PORT MNTR | Description                                                     | Normal  | Error                 |
|------|----------------------------|-----------------------------------------------------------------|---------|-----------------------|
|      |                            |                                                                 | PRESENT |                       |
| ABS  | INITIAL DIAG               | Status of CAN controller                                        | OK      | NG <sup>Caution</sup> |
|      | 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/ADAS                   | Not used even though indicated                                  |         |                       |
|      | AWD/4WD                    | Signal receiving status from the transfer control unit          | OK      | UNKWN                 |
|      | DIFF LOCK                  | Signal receiving status from the differential lock control unit |         |                       |

### CAUTION:

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

IPDM E/R

# TROUBLE DIAGNOSIS

## < SYSTEM DESCRIPTION >

[CAN]

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

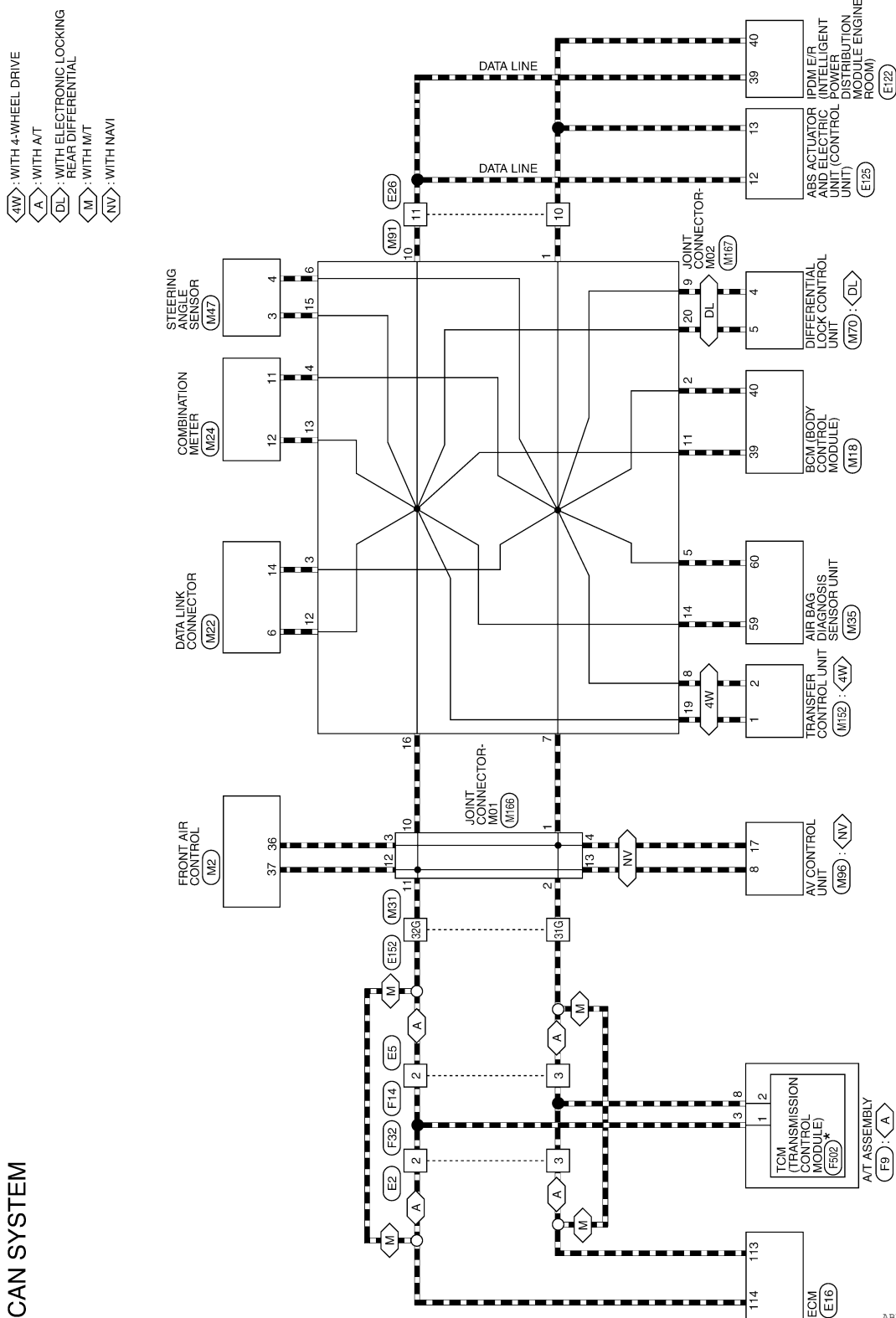
| ITEM   | CAN DIAG SUP-PORT MNTR | Description                          | Normal  |                     | Error   |      |
|--------|------------------------|--------------------------------------|---------|---------------------|---------|------|
|        |                        |                                      | PRESENT | PAST                | PRESENT | PAST |
| IPDM-E | TRANSMIT DIAG          | Signal transmission status           | OK      | OK<br>or<br>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.

## DTC Index

INFOID:0000000011071035

| DTC   | Self-diagnosis item<br>(CONSULT indication) | DTC detection condition                                                                                                                                                        |                                                                                                                               | Inspection/Action                                                                    |
|-------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| U0101 | LOST COMM (TCM)                             | When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) from TCM for 2 seconds or more.                                         |                                                                                                                               | Refer to <a href="#">LAN-36</a> .                                                    |
| U0140 | LOST COMM (BCM)                             | When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) from BCM for 2 seconds or more.                                         |                                                                                                                               |                                                                                      |
| U0164 | LOST COMM (HVAC)                            | When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) from A/C auto amp. or unified meter and A/C amp. for 2 seconds or more. |                                                                                                                               |                                                                                      |
| U1000 | CAN COMM CIRCUIT                            | ECM                                                                                                                                                                            | When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more. |                                                                                      |
|       |                                             | Except for ECM                                                                                                                                                                 | 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” or “P0607”.                              |
| P0607 | ECM                                         |                                                                                                                                                                                |                                                                                                                               |                                                                                      |

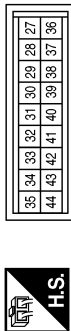


\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

ARMWA2185GB

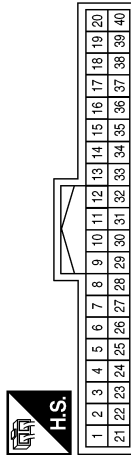
## CAN SYSTEM CONNECTORS

|                 |                   |
|-----------------|-------------------|
| Connector No.   | M2                |
| Connector Name  | FRONT AIR CONTROL |
| Connector Color | WHITE             |



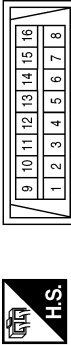
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 36           | P             | CAN-L       |
| 37           | L             | CAN-H       |

|                 |                           |
|-----------------|---------------------------|
| Connector No.   | M18                       |
| Connector Name  | BCM (BODY CONTROL MODULE) |
| Connector Color | WHITE                     |



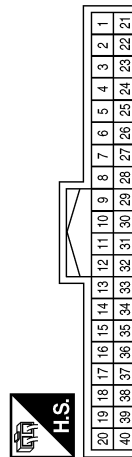
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 39           | L             | CAN-H       |
| 40           | P             | CAN-L       |

|                 |                     |
|-----------------|---------------------|
| Connector No.   | M22                 |
| Connector Name  | DATA LINK CONNECTOR |
| Connector Color | WHITE               |



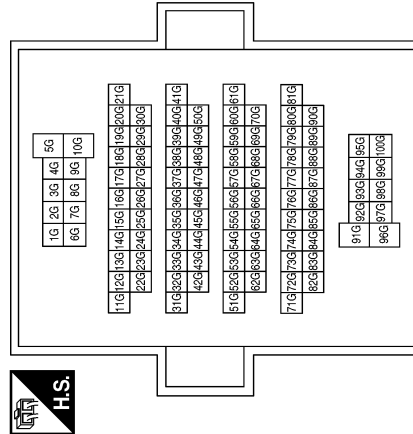
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 6            | L             | -           |
| 14           | P             | -           |

|                 |                   |
|-----------------|-------------------|
| Connector No.   | M24               |
| Connector Name  | COMBINATION METER |
| Connector Color | WHITE             |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 11           | P             | CAN-L       |
| 12           | L             | CAN-H       |

|                 |              |
|-----------------|--------------|
| Connector No.   | M31          |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |



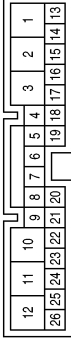
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 31G          | P             | -           |
| 32G          | L             | -           |

# CAN SYSTEM

< WIRING DIAGRAM >

[CAN]

|                 |                                |
|-----------------|--------------------------------|
| Connector No.   | M70                            |
| Connector Name  | DIFFERENTIAL LOCK CONTROL UNIT |
| Connector Color | WHITE                          |

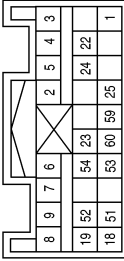
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 4            | P             | CAN-L       |
| 5            | L             | CAN-H       |

|                 |                       |
|-----------------|-----------------------|
| Connector No.   | M47                   |
| Connector Name  | STEERING ANGLE SENSOR |
| Connector Color | WHITE                 |



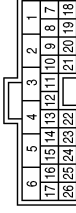

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 3            | L             | -           |
| 4            | P             | -           |

|                 |                               |
|-----------------|-------------------------------|
| Connector No.   | M35                           |
| Connector Name  | AIR BAG DIAGNOSIS SENSOR UNIT |
| Connector Color | YELLOW                        |

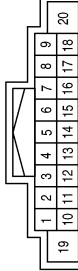
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 59           | L             | CAN-H       |
| 60           | P             | CAN-L       |

|                 |                       |
|-----------------|-----------------------|
| Connector No.   | M152                  |
| Connector Name  | TRANSFER CONTROL UNIT |
| Connector Color | WHITE                 |

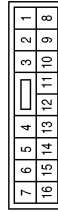
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1            | L             | CAN-H       |
| 2            | P             | CAN-L       |

|                 |                             |
|-----------------|-----------------------------|
| Connector No.   | M96                         |
| Connector Name  | AV CONTROL UNIT (WITH NAVI) |
| Connector Color | WHITE                       |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 8            | L             | CAN-H       |
| 17           | P             | CAN-L       |

|                 |              |
|-----------------|--------------|
| Connector No.   | M91          |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 10           | P             | -           |
| 11           | L             | -           |

ABMIA6378GB

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
N  
O  
P

LAN

# CAN SYSTEM

< WIRING DIAGRAM >

[CAN]

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 10           | L             | -           |
| 11           | L             | -           |
| 12           | L             | -           |
| 13           | L             | -           |
| 14           | L             | -           |
| 15           | L             | -           |
| 16           | L             | -           |
| 19           | L             | -           |
| 20           | L             | -           |

|                 |                     |
|-----------------|---------------------|
| Connector No.   | M167                |
| Connector Name  | JOINT CONNECTOR-M02 |
| Connector Color | BLUE                |

|  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1            | P             | -           |
| 2            | P             | -           |
| 3            | P             | -           |
| 4            | P             | -           |
| 5            | P             | -           |
| 6            | P             | -           |
| 7            | P             | -           |
| 8            | P             | -           |
| 9            | P             | -           |

|                 |                     |
|-----------------|---------------------|
| Connector No.   | M166                |
| Connector Name  | JOINT CONNECTOR-M01 |
| Connector Color | BLUE                |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1            | P             | -           |
| 2            | P             | -           |
| 3            | P             | -           |
| 4            | P             | -           |
| 10           | L             | -           |
| 11           | L             | -           |
| 12           | L             | -           |
| 13           | L             | -           |

|                 |      |
|-----------------|------|
| Connector No.   | E16  |
| Connector Name  | ECM  |
| Connector Color | GRAY |



|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 97  | 101 | 105 | 109 | 113 | 117 | 121 | 125 |
| 98  | 102 | 106 | 110 | 114 | 118 | 122 | 126 |
| 99  | 103 | 107 | 111 | 115 | 119 | 123 | 127 |
| 100 | 104 | 108 | 112 | 116 | 120 | 124 | 128 |

|                 |              |
|-----------------|--------------|
| Connector No.   | E5           |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |



|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |

|                 |              |
|-----------------|--------------|
| Connector No.   | E2           |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |



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

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 113          | P             | CAN-L       |
| 114          | L             | CAN-H       |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 2            | L             | -           |
| 3            | P             | -           |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 2            | L             | -           |
| 3            | P             | -           |

ABMIA5185GB



# CAN SYSTEM

< WIRING DIAGRAM >

[CAN]

|                 |              |
|-----------------|--------------|
| Connector No.   | E26          |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |

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



|                 |                                                              |
|-----------------|--------------------------------------------------------------|
| Connector No.   | E122                                                         |
| Connector Name  | IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) |
| Connector Color | WHITE                                                        |

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 42 | 41 | 40 | 39 | 38 | 37 |
| 48 | 47 | 46 | 45 | 44 | 43 |



|                 |                                               |
|-----------------|-----------------------------------------------|
| Connector No.   | E125                                          |
| Connector Name  | ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) |
| Connector Color | BLACK                                         |



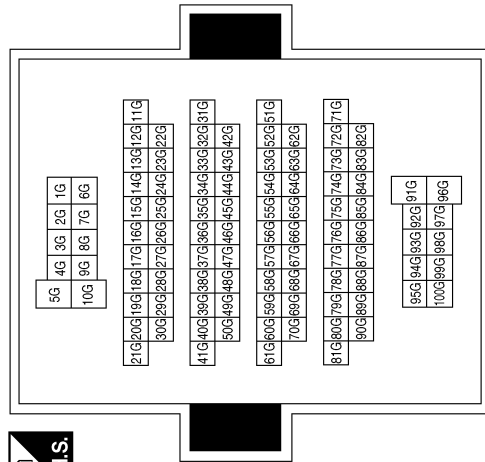
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 10           | P             | -           |
| 11           | L             | -           |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 39           | L             | CAN-H       |
| 40           | P             | CAN-L       |

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 12           | L             | CAN-H       |
| 13           | P             | CAN-L       |

|                 |              |
|-----------------|--------------|
| Connector No.   | E152         |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 31G          | P             | -           |
| 32G          | L             | -           |

|                 |              |
|-----------------|--------------|
| Connector No.   | F9           |
| Connector Name  | A/T ASSEMBLY |
| Connector Color | GREEN        |



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

| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 3            | L             | -           |
| 8            | P             | -           |

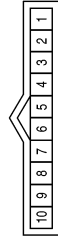
A B C D E F G H I J K L LAN N O P

# CAN SYSTEM

< WIRING DIAGRAM >

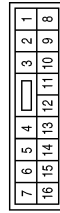
[CAN]

|                 |                                   |
|-----------------|-----------------------------------|
| Connector No.   | F502                              |
| Connector Name  | TCM (TRANSMISSION CONTROL MODULE) |
| Connector Color | GRAY                              |



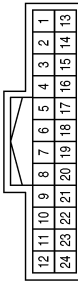
| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 1            | BR            | CAN-H       |
| 2            | L/Y           | CAN-L       |

|                 |              |
|-----------------|--------------|
| Connector No.   | F32          |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |



| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 2            | L             | -           |
| 3            | P             | -           |

|                 |              |
|-----------------|--------------|
| Connector No.   | F14          |
| Connector Name  | WIRE TO WIRE |
| Connector Color | WHITE        |

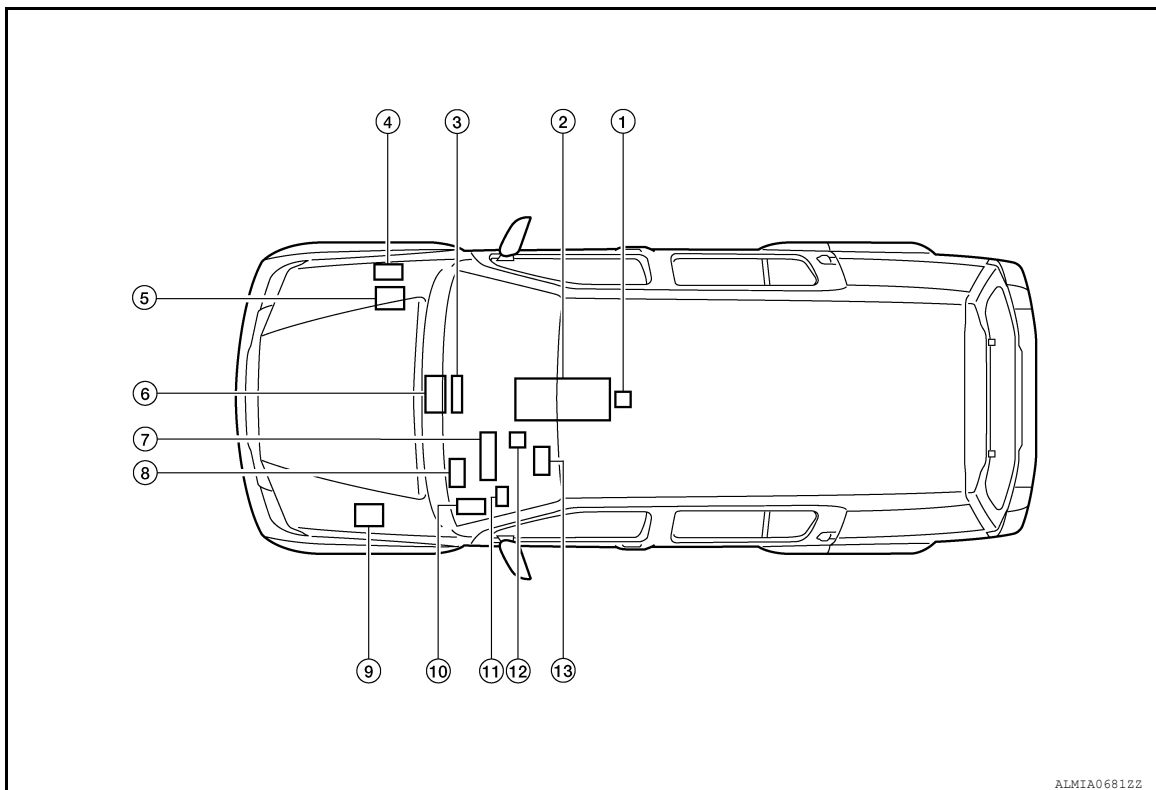


| Terminal No. | Color of Wire | Signal Name |
|--------------|---------------|-------------|
| 2            | L             | -           |
| 3            | P             | -           |

ABMIA5187GB

**DTC/CIRCUIT DIAGNOSIS****CAN COMMUNICATION SYSTEM****Component Parts Location**

INFOID:0000000011071037



- |                                      |                                        |                                                       |
|--------------------------------------|----------------------------------------|-------------------------------------------------------|
| 1. Air bag diagnosis sensor unit M35 | 2. A/T assembly F9                     | 3. Front air control M2                               |
| 4. ECM E16                           | 5. IPDM E/R E122                       | 6. AV control unit M96                                |
| 7. Combination meter M24             | 8. BCM M18                             | 9. ABS actuator and electric unit (control unit) E125 |
| 10. Transfer control unit M152       | 11. Differential lock control unit M70 | 12. Data link connector M22                           |
| 13. Steering angle sensor M47        |                                        |                                                       |

LAN

# MALFUNCTION AREA CHART

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## MALFUNCTION AREA CHART

### Main Line

INFOID:0000000011071038

| Malfunction area                                                                        | Reference                                     |
|-----------------------------------------------------------------------------------------|-----------------------------------------------|
| Main line between TCM and front air control                                             | <a href="#">LAN-61. "Diagnosis Procedure"</a> |
| Main line between Front air control and data link connector                             | <a href="#">LAN-63. "Diagnosis Procedure"</a> |
| Main line between data link connector and ABS actuator and electric unit (control unit) | <a href="#">LAN-64. "Diagnosis Procedure"</a> |

### Branch Line

INFOID:0000000011071039

| Malfunction area                                                  | Reference                                     |
|-------------------------------------------------------------------|-----------------------------------------------|
| ECM branch line circuit                                           | <a href="#">LAN-65. "Diagnosis Procedure"</a> |
| TCM branch line circuit                                           | <a href="#">LAN-66. "Diagnosis Procedure"</a> |
| Front air control branch line circuit                             | <a href="#">LAN-67. "Diagnosis Procedure"</a> |
| AV control unit branch line circuit                               | <a href="#">LAN-68. "Diagnosis Procedure"</a> |
| Transfer control unit branch line circuit                         | <a href="#">LAN-69. "Diagnosis Procedure"</a> |
| Air bag diagnosis sensor unit branch line circuit                 | <a href="#">LAN-70. "Diagnosis Procedure"</a> |
| BCM branch line circuit                                           | <a href="#">LAN-71. "Diagnosis Procedure"</a> |
| Differential lock control unit branch line circuit                | <a href="#">LAN-72. "Diagnosis Procedure"</a> |
| Data link connector branch line circuit                           | <a href="#">LAN-73. "Diagnosis Procedure"</a> |
| Combination meter branch line circuit                             | <a href="#">LAN-74. "Diagnosis Procedure"</a> |
| Steering angle sensor branch line circuit                         | <a href="#">LAN-75. "Diagnosis Procedure"</a> |
| ABS actuator and electric unit (control unit) branch line circuit | <a href="#">LAN-76. "Diagnosis Procedure"</a> |
| IPDM E/R branch line circuit                                      | <a href="#">LAN-77. "Diagnosis Procedure"</a> |

### Short Circuit

INFOID:0000000011071040

| Malfunction area          | Reference                                     |
|---------------------------|-----------------------------------------------|
| CAN communication circuit | <a href="#">LAN-78. "Diagnosis Procedure"</a> |

# MAIN LINE BETWEEN TCM AND HVAC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## MAIN LINE BETWEEN TCM AND HVAC CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071041

#### 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 F14
  - Harness connector E5
  - Harness connector E152
  - Harness connector M31

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
  - A/T assembly
  - Harness connectors F14 and E5
2. Check the continuity between the A/T assembly harness connector and the harness connector.

| A/T assembly harness connector |              | Harness connector |              | Continuity |
|--------------------------------|--------------|-------------------|--------------|------------|
| Connector No.                  | Terminal No. | Connector No.     | Terminal No. |            |
| F9                             | 3            | F14               | 2            | Existed    |
|                                | 8            |                   | 3            | Existed    |

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the A/T assembly and the harness connector F14.

#### 3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

| Harness connector |              | Harness connector |              | Continuity |
|-------------------|--------------|-------------------|--------------|------------|
| Connector No.     | Terminal No. | Connector No.     | Terminal No. |            |
| E5                | 2            | E152              | 32G          | Existed    |
|                   | 3            |                   | 31G          | Existed    |

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors E5 and E152.

#### 4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of front air control.
2. Check the continuity between the harness connector and the front air control harness connector.

| Harness connector |              | Front air control harness connector |              | Continuity |
|-------------------|--------------|-------------------------------------|--------------|------------|
| Connector No.     | Terminal No. | Connector No.                       | Terminal No. |            |
| M31               | 32G          | M2                                  | 37           | Existed    |
|                   | 31G          |                                     | 36           | Existed    |

Is the inspection result normal?

YES (Present error)>>Check the following items again.

- Decision of CAN system type.

## MAIN LINE BETWEEN TCM AND HVAC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

- Not received CONSULT data (SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

YES (Past error)>>Error was detected in the main line between the TCM and the front air control.

NO >> Repair the main line between the harness connector M31 and the front air control.

# MAIN LINE BETWEEN HVAC AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## MAIN LINE BETWEEN HVAC AND DLC CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071042

#### 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
  - Front air control
4. Check the continuity between the front air control harness connector and the data link connector.

| Front air control harness connector |              | Data link connector |              | Continuity |
|-------------------------------------|--------------|---------------------|--------------|------------|
| Connector No.                       | Terminal No. | Connector No.       | Terminal No. |            |
| M2                                  | 37           | M22                 | 6            | Existed    |
|                                     | 36           |                     | 14           | Existed    |

#### Is the inspection result normal?

YES (Present error)>>Check the following items again.

- Decision of CAN system type.
- Not received CONSULT data (SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

YES (Past error)>>Error was detected in the main line between the front air control and the data link connector.

NO >> Repair the main line between the front air control and the data link connector.

LAN

# MAIN LINE BETWEEN DLC AND ABS CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## MAIN LINE BETWEEN DLC AND ABS CIRCUIT

### Diagnosis Procedure

INFOID:000000011071043

#### 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 M91
  - Harness connector E26

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M91 and E26.
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. |            |
| M22                 | 6            | M91               | 11           | Existed    |
|                     | 14           |                   | 10           | Existed    |

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the data link connector and the harness connector M91.

#### 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)<br>harness connector |              | Continuity |
|-------------------|--------------|--------------------------------------------------------------------|--------------|------------|
| Connector No.     | Terminal No. | Connector No.                                                      | Terminal No. |            |
| E26               | 11           | E125                                                               | 12           | Existed    |
|                   | 10           |                                                                    | 13           | Existed    |

Is the inspection result normal?

YES (Present error)>>Check the following items again.

- Decision of CAN system type.
- Not received CONSULT data (SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

YES (Past error)>>Error was detected in the main line between the data link connector and the ABS actuator and electric unit (control unit).

NO >> Repair the main line between the harness connector E26 and the ABS actuator and electric unit (control unit).



# ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## ECM BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071044

#### 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).
  - M/T models
    - ECM
    - Harness connector E152
    - Harness connector M31
  - A/T models
    - ECM
    - Harness connector E2
    - Harness connector F32

Is the inspection result normal?

YES >> GO TO 2.

NO >> 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. |     |                   |
| E16                   | 114          | 113 | Approx. 108 – 132 |

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> 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-151, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to [EC-124, "Additional Service When Replacing ECM"](#).

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

LAN

# TCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## TCM BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071045

#### 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 A/T assembly for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> 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. |   |                 |
| F9                             | 3            | 8 | Approx. 54 – 66 |

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

#### 3.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the control valve with TCM. Refer to [TM-234, "Removal and Installation"](#).
2. Disconnect the connector of TCM.
3. Check the continuity between the A/T assembly harness connector and TCM harness connector.

| A/T assembly harness connector | TCM harness connector |              | Continuity |
|--------------------------------|-----------------------|--------------|------------|
| Terminal No.                   | Connector No.         | Terminal No. |            |
| 3                              | F502                  | 1            | Existed    |
| 8                              |                       | 2            | Existed    |

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harness between the A/T assembly harness connector and TCM harness connector.

#### 4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-164, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the control valve with TCM. Refer to [TM-234, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

# HVAC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## HVAC BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071046

#### 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 front air control for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of front air control.
2. Check the resistance between the front air control harness connector terminals.

| Front air control harness connector |              |    | Resistance (Ω)  |
|-------------------------------------|--------------|----|-----------------|
| Connector No.                       | Terminal No. |    |                 |
| M2                                  | 37           | 36 | Approx. 54 – 66 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
NO >> Repair the front air control branch line.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control. Refer to [HAC-41, "Front Air Control Power and Ground Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the front air control. Refer to [VTL-7, "Removal and Installation"](#).  
YES (Past error)>>Error was detected in the front air control branch line.  
NO >> Repair the power supply and the ground circuit.

LAN

## AV BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071047

#### 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 AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.  
 NO >> 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. |    |                 |
| M96                               | 8            | 17 | Approx. 54 – 66 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
 NO >> Repair the AV control unit branch line.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to [AV-175, "AV CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the AV control unit. Refer to [AV-218, "Removal and Installation"](#).  
 YES (Past error)>>Error was detected in the AV control unit branch line.  
 NO >> Repair the power supply and the ground circuit.

## 4WD BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

### 4WD BRANCH LINE CIRCUIT

#### Diagnosis Procedure

INFOID:0000000011071048

#### 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 transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

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

| Transfer control unit harness connector |              |   | Resistance (Ω)  |
|-----------------------------------------|--------------|---|-----------------|
| Connector No.                           | Terminal No. |   |                 |
| M152                                    | 1            | 2 | Approx. 54 – 66 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
NO >> Repair the transfer control unit branch line.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to [DLN-20, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the transfer control unit. Refer to [DLN-90, "Removal and Installation"](#).  
YES (Past error)>>Error was detected in the transfer control unit branch line.  
NO >> Repair the power supply and the ground circuit.

LAN

# A-BAG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## A-BAG BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071049

#### **WARNING:**

Always observe the following items for preventing accidental activation.

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

#### **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 air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> Replace the main harness.

#### **2**.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-3. "Work Flow"](#).

Is the inspection result normal?

- YES >> Replace the main harness.  
NO >> Replace parts whose air bag system has a malfunction.

# BCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## BCM BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071050

#### 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).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> 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. |    |                 |
| M18                   | 39           | 40 | Approx. 54 – 66 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
NO >> 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-29, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-51, "Removal and Installation"](#).  
YES (Past error)>>Error was detected in the BCM branch line.  
NO >> Repair the power supply and the ground circuit.

LAN

# DIFF BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## DIFF BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071051

#### 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 differential lock control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

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

| Differential lock control unit harness connector |              |   | Resistance (Ω)  |
|--------------------------------------------------|--------------|---|-----------------|
| Connector No.                                    | Terminal No. |   |                 |
| M70                                              | 5            | 4 | Approx. 54 – 66 |

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the differential lock control unit branch line.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to [DLN-249, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to [DLN-283, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the differential lock control unit branch line.

NO >> Repair the power supply and the ground circuit.



# DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## DLC BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071052

#### 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 data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> 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. |    |                 |
| M22                 | 6            | 14 | Approx. 54 – 66 |

Is the measurement value within the specification?

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

YES (Past error)>>Error was detected in the data link connector branch line circuit.

NO >> Repair the data link connector branch line.

LAN

## M&A BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071053

#### 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 combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

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

| Combination meter harness connector |              |    | Resistance (Ω)  |
|-------------------------------------|--------------|----|-----------------|
| Connector No.                       | Terminal No. |    |                 |
| M24                                 | 12           | 11 | Approx. 54 – 66 |

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the combination meter branch line.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to [MWI-30, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-84, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

# STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## STRG BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071054

#### 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).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> 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                                     | 3            | 4 | Approx. 54 – 66 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
NO >> 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 the following.

- Models with hill descent control: [BRC-212, "Wiring Diagram - WITH HILL DESCENT CONTROL/HILL START ASSIST"](#)
- Models without hill descent control: [BRC-90, "Wiring Diagram - WITHOUT HILL DESCENT CONTROL/HILL START ASSIST"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to the following.
- Models with hill descent control: [BRC-238, "Removal and Installation"](#)
  - Models without hill descent control: [BRC-116, "Removal and Installation"](#)
- YES (Past error)>>Error was detected in the steering angle sensor branch line.  
NO >> Repair the power supply and the ground circuit.

LAN

# ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## ABS BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071055

#### 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).

Is the inspection result normal?

YES >> GO TO 2.

NO >> 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. |    |                 |
| E125                                                            | 12           | 13 | Approx. 54 – 66 |

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> 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 the following.

- Models with hill descent control: [BRC-160, "Diagnosis Procedure"](#)
- Models without hill descent control: [BRC-41, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.

- Models with hill descent control: [BRC-236, "Removal and Installation"](#)
- Models without hill descent control: [BRC-114, "Removal and Installation"](#)

YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.

NO >> Repair the power supply and the ground circuit.

# IPDM-E BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## IPDM-E BRANCH LINE CIRCUIT

### Diagnosis Procedure

INFOID:0000000011071056

#### 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).

Is the inspection result normal?

- YES >> GO TO 2.  
NO >> 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. |    |                   |
| E122                       | 39           | 40 | Approx. 108 – 132 |

Is the measurement value within the specification?

- YES >> GO TO 3.  
NO >> 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 [PCS-14, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-27, "Removal and Installation"](#).  
YES (Past error)>>Error was detected in the IPDM E/R branch line.  
NO >> Repair the power supply and the ground circuit.

## CAN COMMUNICATION CIRCUIT

## Diagnosis Procedure

INFOID:000000011071057

## 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.

Is the inspection result normal?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; 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. |    |             |
| M22                 | 6            | 14 | Not existed |

Is the inspection result normal?

YES &gt;&gt; GO TO 3.

NO &gt;&gt; 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. |        |             |
| M22                 | 6            |        | Not existed |
|                     | 14           |        | Not existed |

Is the inspection result normal?

YES &gt;&gt; GO TO 4.

NO &gt;&gt; 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. |     |                   |
| 114          | 113 | Approx. 108 – 132 |

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

| IPDM E/R     |    | Resistance (Ω)    |
|--------------|----|-------------------|
| Terminal No. |    |                   |
| 39           | 40 | Approx. 108 – 132 |

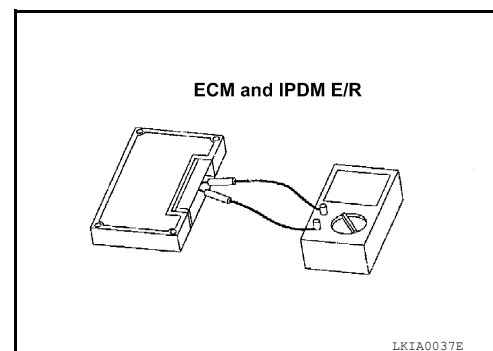
Is the measurement value within the specification?

YES &gt;&gt; GO TO 5.

NO &gt;&gt; Replace the ECM and/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.



# CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

## 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 from 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 the unit whose connector was disconnected.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P