

# SECTION **BCS**

## BODY CONTROL SYSTEM

### CONTENTS

|   |          |  |          |
|---|----------|--|----------|
| <b>PRECAUTIONS</b> .....  | <b>2</b> | BINATION METER .....   | <b>7</b> |
| Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" ..... | 2        | MAJOR COMPONENTS AND CONTROL SYSTEM .....                            | 8        |
| Precautions for Battery Service .....   | 2        | CAN Communication Unit .....   | 9        |
| <b>BCM (BODY CONTROL MODULE)</b> .....  | <b>3</b> | Schematic .....  | 10       |
| System Description .....  | 3        | CONSULT-II .....   | 12       |
| BCM FUNCTION .....  | 3        | CONSULT-II BASIC OPERATION .....                                     | 12       |
| COMBINATION SWITCH READING FUNCTION .....   | 3        | ITEMS OF EACH PART .....   | 13       |
| CAN COMMUNICATION CONTROL .....   | 5        | WORK SUPPORT .....   | 14       |
| BCM STATUS CONTROL .....  | 6        | CAN Communication Inspection Using CONSULT-II (Self-Diagnosis) ..... | 14       |
| SYSTEMS CONTROLLED BY BCM DIRECTLY .....  | 7        | Removal and Installation of BCM .....                                | 15       |
| SYSTEMS CONTROLLED BY BCM AND IPDM E/R .....  | 7        | REMOVAL .....  | 15       |
| SYSTEMS CONTROLLED BY BCM AND COM-  |          | INSTALLATION .....   | 15       |

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

**BCS**

# PRECAUTIONS

## PRECAUTIONS

PFP:00001

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

AKS004VH

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

#### **WARNING:**

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

### Precautions for Battery Service

AKS00B6A

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

# BCM (BODY CONTROL MODULE)

## BCM (BODY CONTROL MODULE)

PFP:284B2

### System Description

AKS00A2S

- BCM (Body Control Module) controls the operation of various electrical units installed on the vehicle.

### BCM FUNCTION

BCM has combination switch reading function for reading the operation of combination switches (light, wiper washer, turn signal) in addition to a function for controlling the operation of various electrical components. Also it has an interface function allowing it to receive signals from the unified meter and A/C amp., and send signals to ECM using CAN communication.

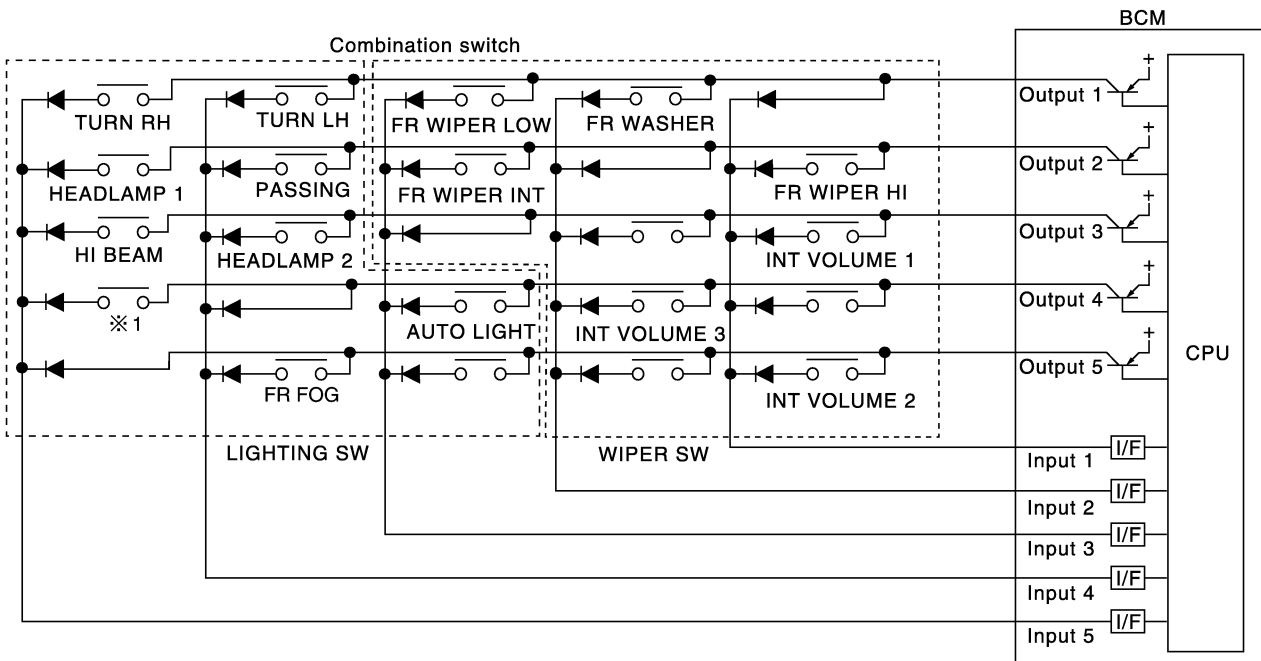
### COMBINATION SWITCH READING FUNCTION

#### 1. Description

- BCM reads combination switch (light, wiper) status, and controls related systems such as head lamps and wipers, according to the results.
- BCM reads information of a maximum of 20 switches by combining five output terminals (OUTPUT 1-5) and five input terminals (INPUT 1-5).

#### 2. Operation description

- BCM activates transistors of output terminals (OUTPUT 1-5) periodically and, allows current to flow in turn.
- If any (1 or more) switches are turned ON, circuit of output terminals (OUTPUT 1-5) and input terminals (INPUT 1-5) becomes active.
- At this time, transistors of output terminals (OUTPUT 1-5) are activated to allow current to flow. When voltage of input terminals (INPUT 1-5) corresponding to that switch changes, interface in BCM detects voltage change, and BCM determines that switch is ON.



※1 : LIGHTING SWITCH 1ST POSITION

SKIA8639E

#### 3. BCM - Operation table of combination switches

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

BCS

# BCM (BODY CONTROL MODULE)

- BCM reads operation status of combination switch using combinations shown in table below.

|                 | COMB SW OUTPUT 1 |                  | COMB SW OUTPUT 2 |                  | COMB SW OUTPUT 3 |                  | COMB SW OUTPUT 4     |                       | COMB SW OUTPUT 5 |                  |
|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|-----------------------|------------------|------------------|
|                 | ON               | OFF              | ON               | OFF              | ON               | OFF              | ON                   | OFF                   | ON               | OFF              |
| COMB SW INPUT 1 | —                | —                | FR WIPER HI ON   | FR WIPER HI OFF  | INT VOLUME 1 ON  | INT VOLUME 1 OFF | —                    | —                     | INT VOLUME 2 ON  | INT VOLUME 2 OFF |
| COMB SW INPUT 2 | FR WASHER ON     | FR WASHER OFF    | —                | —                | —                | —                | INT VOLUME 3 ON      | INT VOLUME 3 OFF      | —                | —                |
| COMB SW INPUT 3 | FR WIPER LOW ON  | FR WIPER LOW OFF | FR WIPER INT ON  | FR WIPER INT OFF | —                | —                | AUTO LIGHT ON        | AUTO LIGHT OFF        | —                | —                |
| COMB SW INPUT 4 | TURN LH ON       | TURN LH OFF      | PASSING ON       | PASSING OFF      | HEAD-LAMP 2 ON   | HEAD-LAMP 2 OFF  | —                    | —                     | FR FOG ON        | FR FOG OFF       |
| COMB SW INPUT 5 | TURN RH ON       | TURN RH OFF      | HEAD-LAMP 1 ON   | HEAD-LAMP 1 OFF  | HI BEAM ON       | HI BEAM OFF      | LIGHTING SW (1st) ON | LIGHTING SW (1st) OFF | —                | —                |

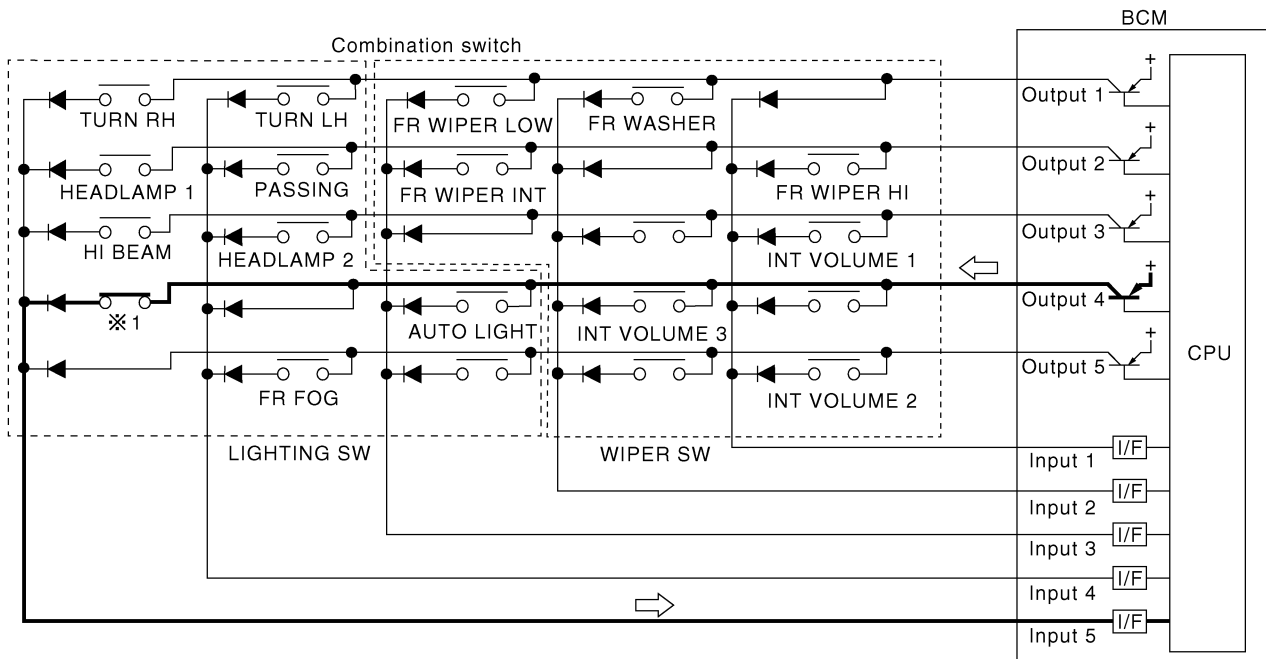
SKIA8640E

## NOTE:

Headlamp has a dual system switch.

### 4. Sample operation: (When lighting switch 1st position turned ON)

- When lighting switch 1st position is turned ON, contact in combination switch turns ON. At this time if OUTPUT 4 transistor is activated, BCM detects that voltage changes in INPUT 5.
- When OUTPUT 4 transistor is ON, BCM detects that voltage changes in INPUT 5, and judges that lighting switch 1st position is ON. Then BCM sends tail lamp ON signal to IPDM E/R using CAN communication.
- When OUTPUT 4 transistor is activated again, BCM detects that voltage changes in INPUT 5, and recognizes that lighting switch 1st position is continuously ON.



※ 1 : LIGHTING SWITCH 1ST POSITION

SKIA8641E

# BCM (BODY CONTROL MODULE)

**NOTE:**

Each OUTPUT terminal transistor is activated at 10 ms intervals. Therefore after switch is turned ON, electrical loads are activated with time delay. But this time delay is so short that it cannot be detected by human senses.

5. Operation mode

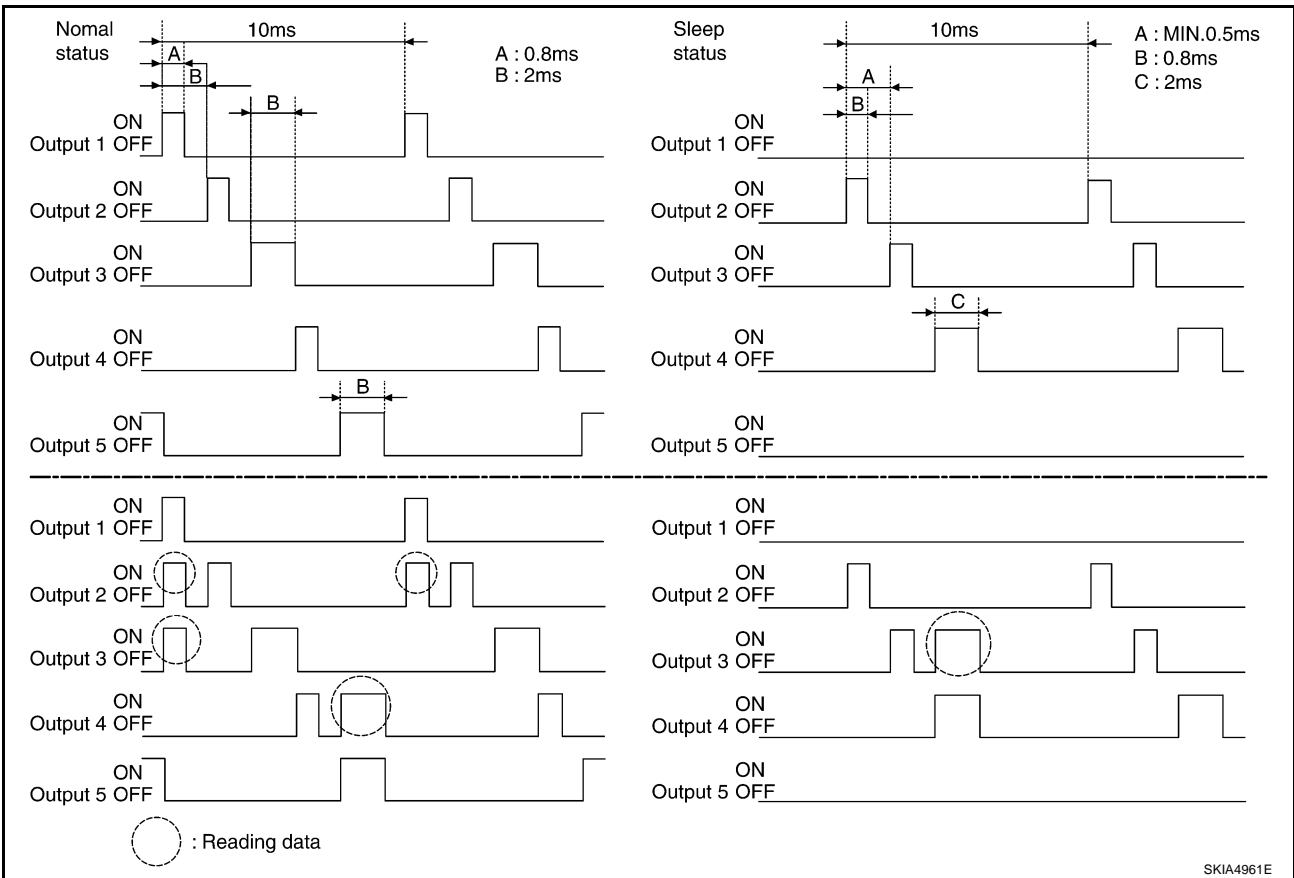
- Combination switch reading function has operation modes shown below.

a. Normal status

- When BCM is not in sleep status, OUTPUT terminals (1-5) each turn ON-OFF every 10 ms.

b. Sleep status

- When BCM is in sleep status, transistors of OUTPUT 1 and 5 stop the output, and BCM enters low current consumption mode. OUTPUT (2, 3, and 4) turn ON-OFF every 10 ms, and only input from light switch system is accepted.



## CAN COMMUNICATION CONTROL

CAN communication allows a high rate of information transmission through the two communication lines (CAN L line, CAN H line) connecting the various control units in the system. Each control unit transmits/receives data but selectively reads required data only. For details of signals that are transmitted/received by BCM via CAN communication, refer to [LAN-4, "CAN Communication Unit"](#).

# BCM (BODY CONTROL MODULE)

---

## BCM STATUS CONTROL

BCM changes its status depending on the operation status in order to save power consumption.

1. CAN communication status
  - With ignition switch ON, CAN communicates with other control units normally.
  - Control by BCM is being operated properly.
  - When ignition switch is OFF, switching to sleep mode is possible.
  - Even when ignition switch is OFF, if CAN communication with IPDM E/R and combination meter is active, CAN communication status is active.
2. Sleep transient status
  - This status shuts down CAN communication when ignition switch is turned OFF.
  - It transmits sleep request signal to IPDM E/R and combination meter.
  - Two seconds after CAN communication of all control units stops, CAN communication switches to inactive status.
3. CAN communication inactive status
  - With ignition switch OFF, CAN communication is not active.
  - With ignition switch OFF, control performed only by BCM is active.
  - Three seconds after CAN communication of all control units stops, CAN communication switches to inactive status.
4. Sleep status
  - BCM is activated with low current consumption mode.
  - CAN communication is not active.
  - When CAN communication operation is detected, it switches to CAN communication status.
  - When a state of the following switches changes, it switches to CAN communication state.
    - Key switch
    - Hazard switch
    - Door lock/unlock switch
    - Front door switch (driver side, passenger side)
    - Rear door switch (LH, RH)
    - Trunk lid opener switch
    - Combination switch (passing, lighting switch 1st position, Front fog lamp)
    - Key fob (lock/unlock signal)
    - Key cylinder switch
  - When control performed only by BCM is required by switch, it shifts to CAN communication inactive mode.
  - Status of combination switch reading function is changed.

# BCM (BODY CONTROL MODULE)

## SYSTEMS CONTROLLED BY BCM DIRECTLY

| System                           | Reference  |
|----------------------------------|--|
| Power door lock                  | <a href="#">BL-20. "POWER DOOR LOCK SYSTEM"</a>      |
| Remote keyless entry             | <a href="#">BL-46. "REMOTE KEYLESS ENTRY SYSTEM"</a> |
| Power window <sup>NOTE</sup>     | <a href="#">GW-17. "POWER WINDOW SYSTEM"</a>         |
| Front power seat <sup>NOTE</sup> | <a href="#">SE-13. "POWER SEAT"</a>                  |
| Sunroof <sup>NOTE</sup>          | <a href="#">RF-10. "SUNROOF"</a>                     |
| Room lamp timer                  | <a href="#">LT-163. "INTERIOR ROOM LAMP"</a>         |

### NOTE:

Power supply only. No system control.

## SYSTEMS CONTROLLED BY BCM AND IPDM E/R

| System  | Reference   |
|---|---|
| Panic alarm   | <a href="#">BL-46. "REMOTE KEYLESS ENTRY SYSTEM"</a>  |
| Theft warning   | <a href="#">BL-93. "VEHICLE SECURITY (THEFT WARNING) SYSTEM"</a>  |
| IVIS (NATS)   | <a href="#">BL-119. "IVIS (INFINITI VEHICLE IMMOBILIZER SYSTEM-NATS)"</a>   |
| Headlamp, tail lamp, auto light system, Battery saver control | <ul style="list-style-type: none"> <li>• <a href="#">LT-7. "HEADLAMP (FOR USA)"</a></li> <li>• <a href="#">LT-38. "HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -"</a></li> </ul> |
| Fog lamp  | <a href="#">LT-89. "FRONT FOG LAMP"</a>   |
| Front wiper   | <a href="#">WW-4. "FRONT WIPER AND WASHER SYSTEM"</a>   |
| Rear window defogger  | <a href="#">GW-60. "REAR WINDOW DEFOGGER"</a>   |

## SYSTEMS CONTROLLED BY BCM AND COMBINATION METER

| System                               | Reference  |
|--------------------------------------|--|
| Warning chime                        | <a href="#">DI-39. "WARNING CHIME"</a>                         |
| Turn signal and hazard warning lamps | <a href="#">LT-107. "TURN SIGNAL AND HAZARD WARNING LAMPS"</a> |
| Low tire pressure warning system     | <a href="#">WT-7. "LOW TIRE PRESSURE WARNING SYSTEM"</a>       |

## BCM (BODY CONTROL MODULE)

### MAJOR COMPONENTS AND CONTROL SYSTEM

| System  | Input   | Output  |
|---|---|---|
| Remote control entry system   | key fob   | <ul style="list-style-type: none"> <li>● All-door locking actuator</li> <li>● Trunk lid opener actuator</li> <li>● Turn signal lamp (LH, RH)</li> </ul> |
| Power door lock system  | <ul style="list-style-type: none"> <li>● Power window main switch (door lock and unlock switch)</li> <li>● Power window sub switch (passenger side) (door lock and unlock switch)</li> </ul>                            | All-door locking actuator   |
| Power supply (IGN) to power window, sunroof   | Ignition power supply   | Power window and sunroof system   |
| Power supply (BAT) to power window, sunroof and power seat  | Battery power supply  | Power window, sunroof system and power seat   |
| Panic alarm   | <ul style="list-style-type: none"> <li>● Key switch</li> <li>● Key fob</li> </ul>   | IPDM E/R  |
| Theft warning system  | <ul style="list-style-type: none"> <li>● All-door switch</li> <li>● Hood switch</li> <li>● Key fob</li> <li>● Power window main switch (door lock and unlock switch)</li> </ul>   | <ul style="list-style-type: none"> <li>● IPDM E/R</li> <li>● Security indicator lamp</li> </ul>   |
| Auto light system   | <ul style="list-style-type: none"> <li>● Optical sensor</li> <li>● Combination switch</li> </ul>  | IPDM E/R  |
| Battery saver control   | <ul style="list-style-type: none"> <li>● Ignition switch</li> <li>● Combination switch</li> </ul>   | IPDM E/R  |
| <ul style="list-style-type: none"> <li>● Headlamp</li> <li>● Tail lamp</li> <li>● Fog lamp</li> </ul>     | Combination switch  | IPDM E/R  |
| Turn signal lamp  | Combination switch  | <ul style="list-style-type: none"> <li>● Turn signal lamp</li> <li>● Combination meter</li> </ul>   |
| Hazard lamp   | Hazard switch   | <ul style="list-style-type: none"> <li>● Turn signal lamp</li> <li>● Combination meter</li> </ul>   |
| Room lamp timer   | <ul style="list-style-type: none"> <li>● Key switch</li> <li>● key fob</li> <li>● Power window main switch (door lock and unlock switch)</li> <li>● Front door switch driver side</li> <li>● All-door switch</li> </ul> | Interior room lamp  |
| Key warning chime   | <ul style="list-style-type: none"> <li>● Key switch</li> <li>● Front door switch driver side</li> </ul>   | Combination meter (warning buzzer)  |
| Light warning chime   | <ul style="list-style-type: none"> <li>● Combination switch</li> <li>● Front door switch driver side</li> </ul>   | Combination meter (warning buzzer)  |
| Seat belt warning chime   | <ul style="list-style-type: none"> <li>● Combination meter (Seat belt buckle (driver side) switch)</li> <li>● Ignition switch</li> </ul>  | Combination meter (warning buzzer)  |
| Vehicle-speed-sensing intermittent wiper  | <ul style="list-style-type: none"> <li>● Combination switch</li> <li>● Combination meter</li> </ul>   | IPDM E/R  |
| Rear window defogger  | <ul style="list-style-type: none"> <li>● Rear window defogger switch</li> <li>● Ignition switch</li> </ul>  | IPDM E/R  |
| <ul style="list-style-type: none"> <li>● A/C switch signal</li> <li>● Blower fan switch signal</li> </ul> | Display and A/C auto amp.   | ECM   |
| Low tire pressure warning system  | Remote keyless entry receiver   | Combination meter   |



# BCM (BODY CONTROL MODULE)

## CAN Communication Unit

AKS00A2T

Refer to [LAN-4, "CAN Communication Unit"](#) .

A

B

C

D

E

F

G

H

I

J

BCS

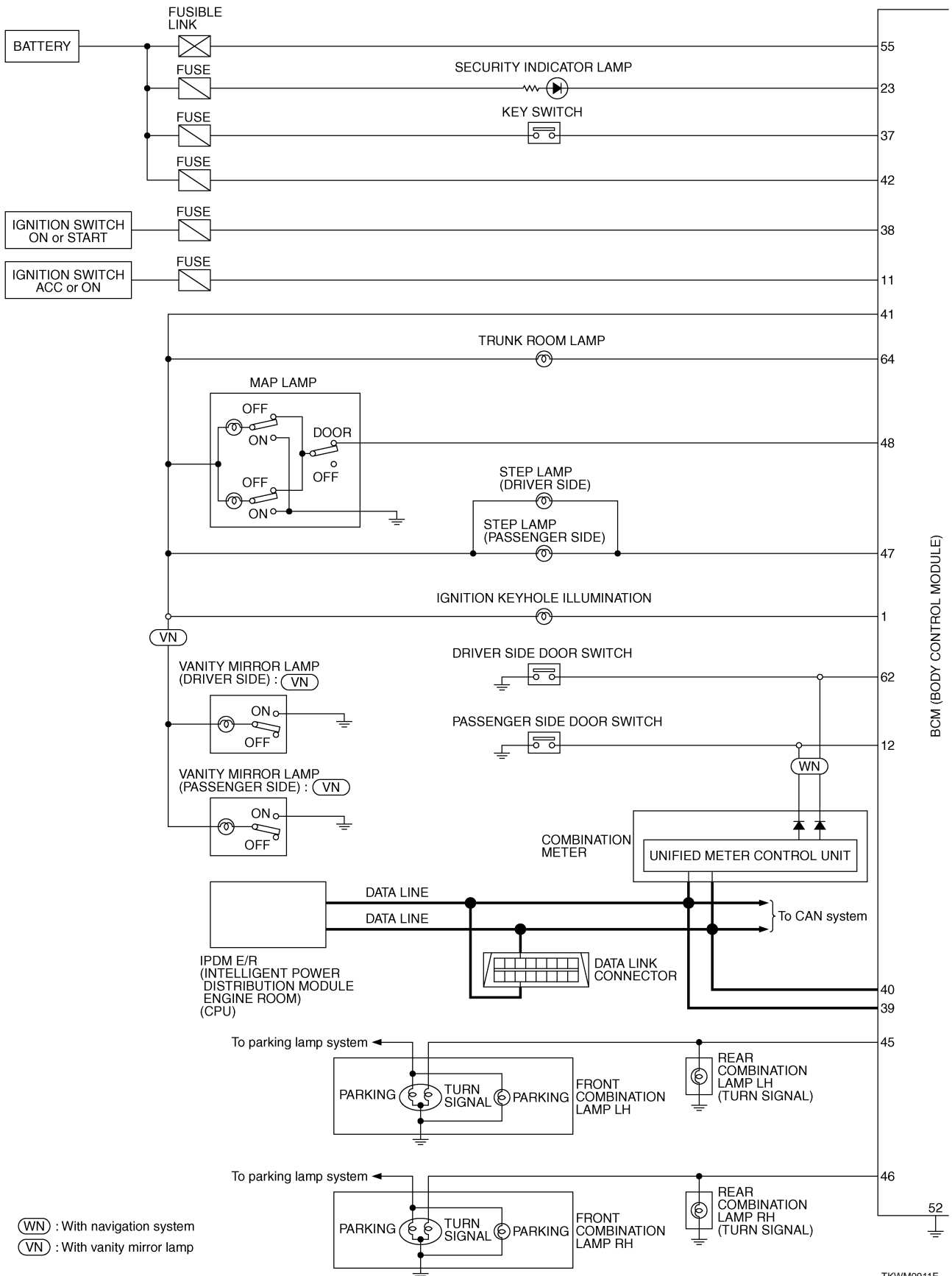
L

M

# BCM (BODY CONTROL MODULE)

## Schematic

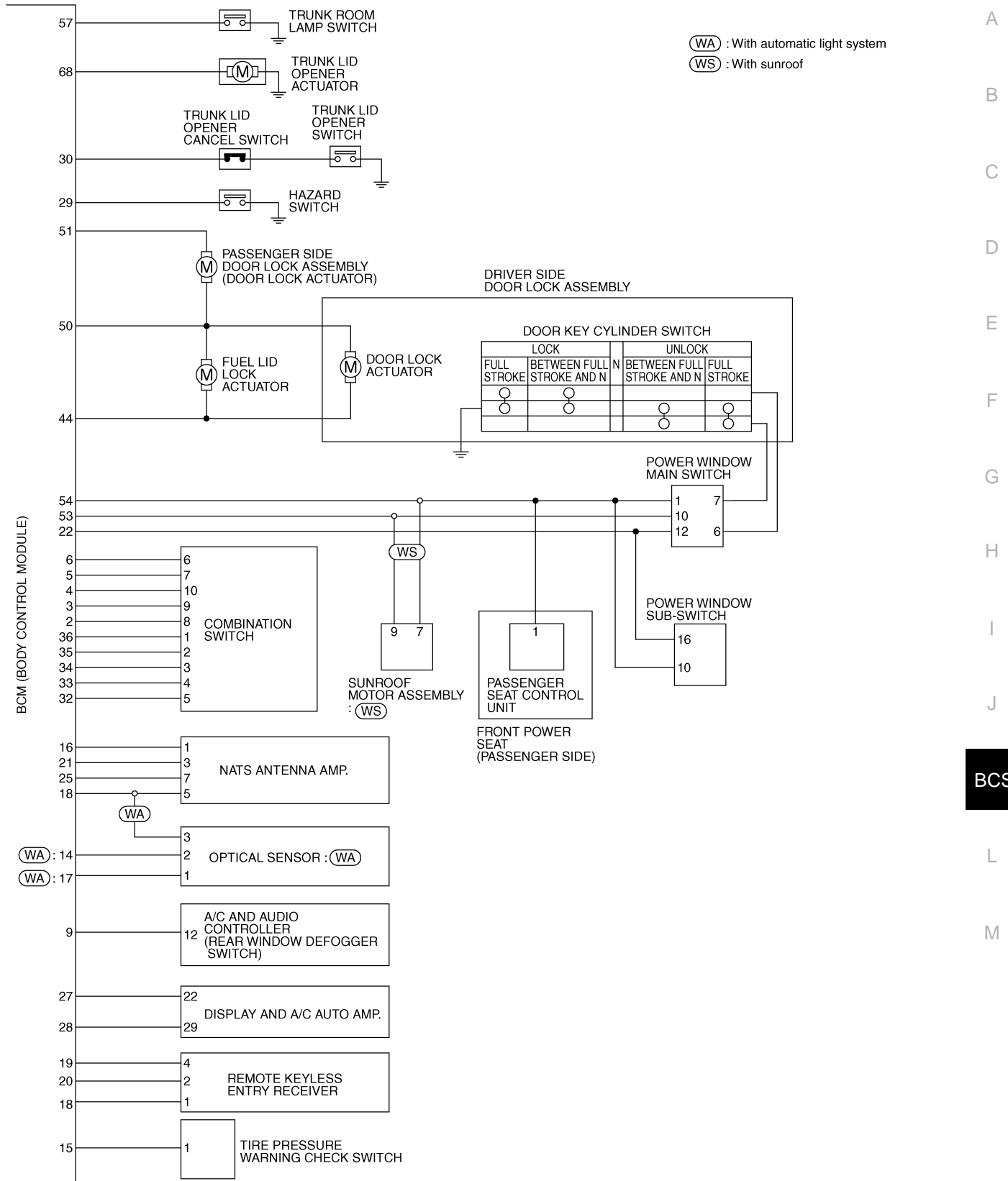
AKS00A2U



BCM (BODY CONTROL MODULE)

TKWM0911E

# BCM (BODY CONTROL MODULE)



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

BCS

# BCM (BODY CONTROL MODULE)

## CONSULT-II

AKS00A2V

CONSULT-II performs the following functions with combination of data receiving, command and transmission using the CAN communication line from the BCM.

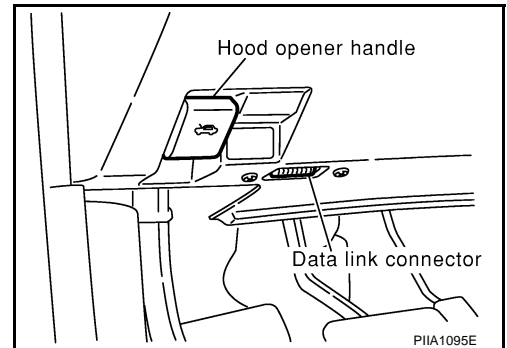
| BCM diagnostic test item | Check item, diagnostic test mode | Content  |
|--------------------------|----------------------------------|--|
| Inspection by part       | Work support                     | Changes setting of each function.  |
|                          | Self-diagnosis results           | BCM performs self-diagnosis of CAN communication and combination switch.   |
|                          | Data monitor                     | Displays the input data of BCM in real time.                               |
|                          | CAN diagnostic support monitor   | The result of transmit/receive diagnosis of CAN communication can be read. |
|                          | Active test                      | Gives a drive signal to a load to check the operation.                     |

## CONSULT-II BASIC OPERATION

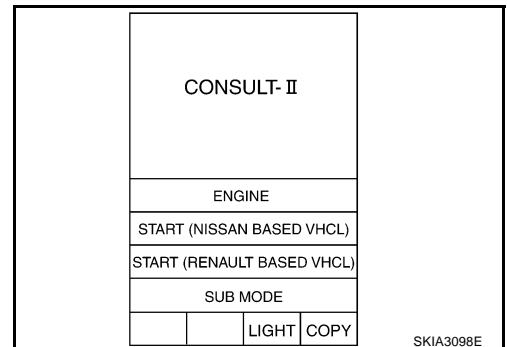
### CAUTION:

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

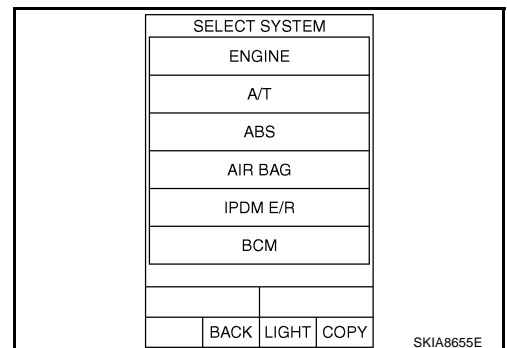
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, then turn the ignition switch ON.



2. Touch "START (NISSAN BASED VHCL)".

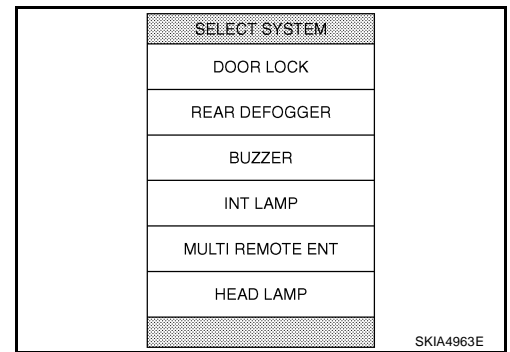


3. Touch "BCM" on "SELECT SYSTEM" screen.  
If "BCM" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



# BCM (BODY CONTROL MODULE)

4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

## ITEMS OF EACH PART

### NOTE:

CONSULT-II will Only display systems the vehicle possesses.

×:Applicable

| System and item                               | CONSULT-II display   | Diagnostic test mode (Inspection by part) |                   |              |                       |                 |             |                   |
|---|----------------------|---|-------------------|--------------|-----------------------|-----------------|-------------|-------------------|
|   |                      | WORK SUPPORT                              | SELF-DIAG RESULTS | DATA MONITOR | CAN DIAG SUPPORT MNTR | ECU PART NUMBER | ACTIVE TEST | CONFIGURATION     |
| Power door lock system                        | DOOR LOCK            | ×   |                   | ×            |                       |                 | ×           |                   |
| Rear window defogger                          | REAR DEFOGGER        |   |                   | ×            |                       |                 | ×           |                   |
| Warning chime                                 | BUZZER               |   |                   | ×            |                       |                 | ×           |                   |
| Room lamp timer                               | INT LAMP             | ×   |                   | ×            |                       |                 | ×           |                   |
| Remotecontrol entry system                    | MULTI REMOTE ENT     | ×   |                   | ×            |                       |                 | ×           |                   |
| Headlamp                                      | HEAD LAMP            | ×   |                   | ×            |                       |                 | ×           |                   |
| Wiper   | WIPER                | ×   |                   | ×            |                       |                 | ×           |                   |
| Turn signal lamp<br>Hazard lamp               | FLASHER              |   |                   | ×            |                       |                 | ×           |                   |
| Blower fan switch signal<br>A/C switch signal | AIR CONDITONER       |   |                   | ×            |                       |                 |             |                   |
| Combination switch                            | COMB SW              |   |                   | ×            |                       |                 |             |                   |
| BCM   | BCM                  | ×   | ×                 | ×            | ×                     | ×               |             | × <sup>Note</sup> |
| IVIS  | IMMU                 |   |                   | ×            |                       |                 | ×           |                   |
| Room lamp battery saver                       | BATTERY SAVER        | ×   |                   | ×            |                       |                 | ×           |                   |
| Trunk lid                                     | TRUNK                |   |                   | ×            |                       |                 | ×           |                   |
| Vehicle security system                       | THEFT ALM            | ×   |                   | ×            |                       |                 | ×           |                   |
| Retained power control                        | RETAINED PWR         | ×   |                   | ×            |                       |                 | ×           |                   |
| Oil pressure switch                           | SIGNAL BUFFER        |   |                   | ×            |                       |                 | ×           |                   |
| Panic system                                  | PANIC ALARM          |   |                   |              |                       |                 | ×           |                   |
| Low tire pressure warning system              | AIR PRESSURE MONITOR | ×   | ×                 | ×            |                       |                 | ×           |                   |

### NOTE:

This item is indicated, but it is what it does not use.

BCS

# BCM (BODY CONTROL MODULE)

## WORK SUPPORT

### Operation Procedure

1. Touch "BCM" on "SELECT TEST ITEM" screen.
2. Touch "WORK SUPPORT" on "SELECT DIAG MODE" screen.
3. Touch item on "SELECT WORK ITEM" screen.
4. Touch "START".
5. Touch "CHANGE SET".
6. The setting will be changed and "RESETTING COMPLETED" will be displayed.
7. Touch "END".

### Display Item List

| Item                | Description   |
|---------------------|---|
| RESET SETTING VALUE | Return a value set with WORK SUPPORT of each system to a default value in factory shipment. |

## CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)

AKS00A2W

### 1. CHECK SELF-DIAGNOSTIC RESULT

#### CAUTION:

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

1. Connect to CONSULT-II, and select "BCM" on "SELECT SYSTEM" screen.
2. Select "BCM control unit" on "SELECT WORK ITEM" screen, and select "SELF-DIAG RESULTS".
3. Check display content in self-diagnostic results.

| CONSULT-II display code | Diagnosis item |
|-------------------------|----------------|
| U1000                   | INITIAL DIAG   |
|                         | TRANSMIT DIAG  |
|                         | ECM            |
|                         | IPDM E/R       |
|                         | METER / M&A    |
|                         | I - KEY        |

#### Contents displayed

No malfunction>>INSPECTION END

Malfunction in CAN communication system>>After printing the monitor items, go to "CAN System". Refer to [LAN-2, "Precautions When Using CONSULT-II"](#).

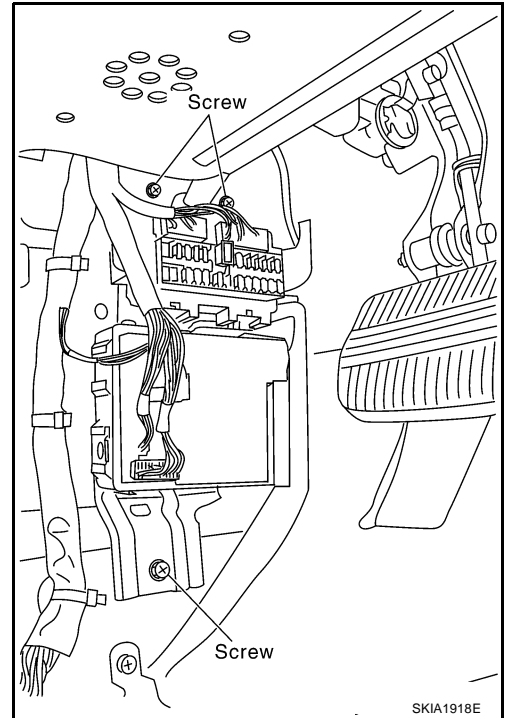
# BCM (BODY CONTROL MODULE)

AKS00A2X

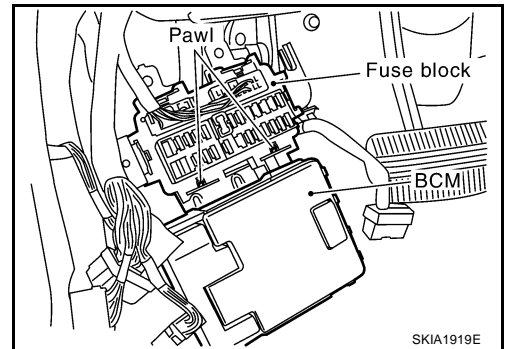
## Removal and Installation of BCM

### REMOVAL

1. Remove the dash side finisher. Refer to [EI-32, "BODY SIDE TRIM"](#) in "EI Exterior/Interior."
2. Disconnect BCM connector.
3. Remove bracket mounting screws (3) to remove BCM and fuse block with bracket.



4. Raise the pawl of fuse block and remove bracket from fuse block to remove BCM.



### INSTALLATION

Install in the reverse order of removal.

#### NOTE:

When replacing BCM perform initialization of NATS system and registration of all NATS ignition key IDs.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
BCS  
L  
M

## BCM (BODY CONTROL MODULE)

---