

SECTION

BCS

BODY CONTROL SYSTEM

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BCS

# PRECAUTIONS

## PRECAUTIONS

PFP:00001

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

AKS008YT

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

AKS003RC

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)

PFP:284B2

### System Description

AKS00AV5

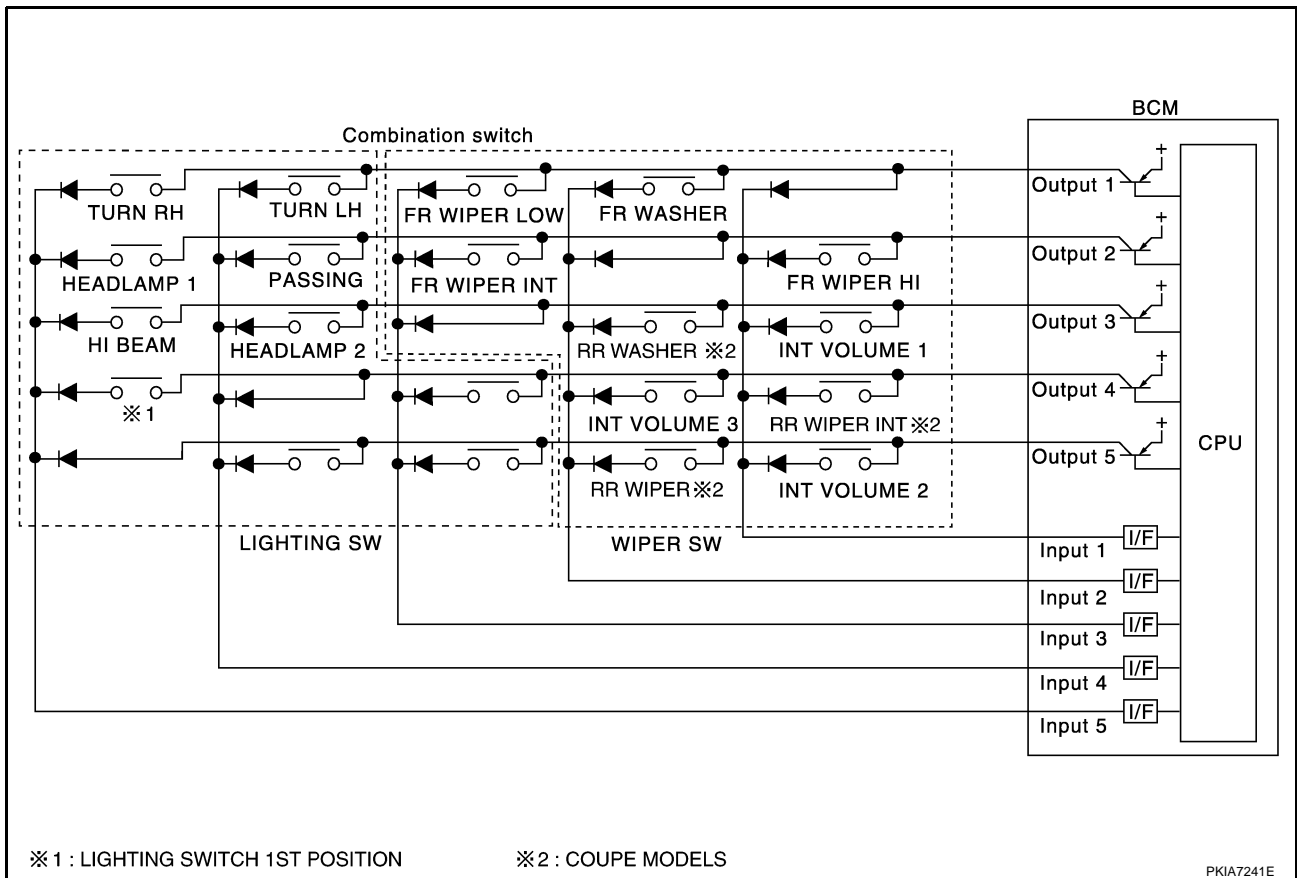
- BCM (Body Control Module) controls the operation of various electrical units installed on the vehicle.

### 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.



3. BCM - Operation table of combination switches

## 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	RR WIPER INT ON※	RR WIPER INT OFF※	INT VOLUME 2 ON	INT VOLUME 2 OFF
COMB SW INPUT 2	FR WASHER ON	FR WASHER OFF	—	—	RR WASHER ON ※	RR WASHER OFF ※	INT VOLUME 3 ON	INT VOLUME 3 OFF	RR WIPER ON ※	RR WIPER OFF ※
COMB SW INPUT 3	FR WIPER LOW ON	FR WIPER LOW OFF	FR WIPER INT ON	FR WIPER INT OFF	—	—	—	—	—	—
COMB SW INPUT 4	TURN LH ON	TURN LH OFF	PASSING ON	PASSING OFF	HEAD-LAMP 2 ON	HEAD-LAMP 2 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	—	—

※ : COUPE MODELS

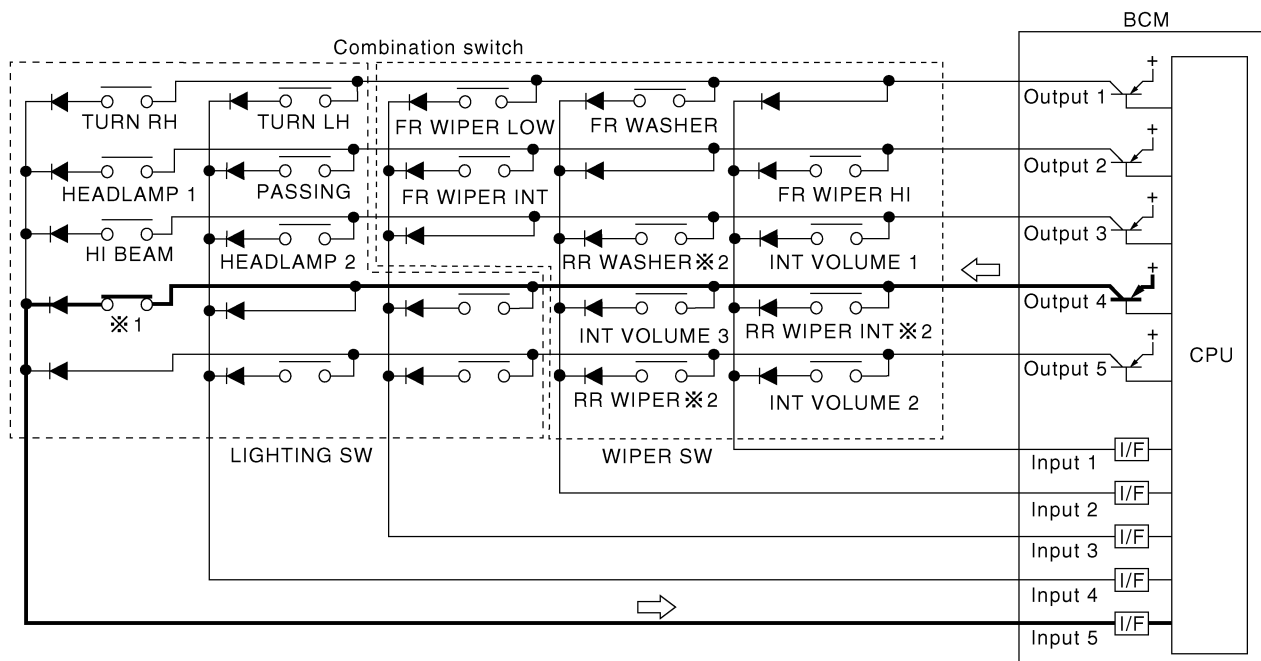
PKIA7242E

### 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

※2 : COUPE MODELS

PKIA7617E

## 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

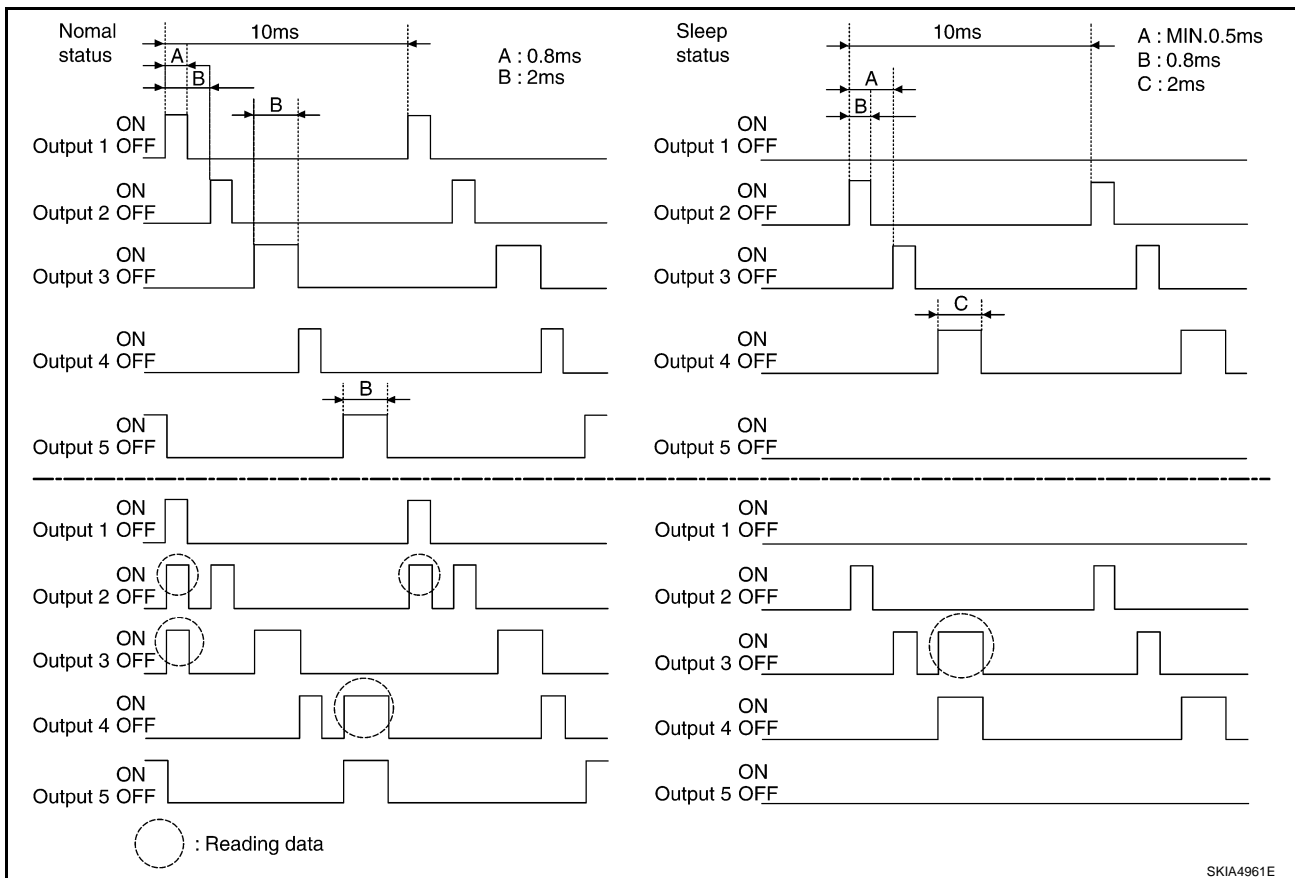
- Combination switch reading function has operation modes shown below.

##### 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-5, "CAN Communication Unit"](#).

# BCM (BODY CONTROL MODULE)

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## 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)
    - Back door 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-21, "POWER DOOR LOCK SYSTEM"</a>
Remote keyless entry	<a href="#">BL-61, "REMOTE KEYLESS ENTRY SYSTEM"</a>
Power window <sup>NOTE 1</sup>	<a href="#">GW-18, "POWER WINDOW SYSTEM"</a>
Power seat <sup>NOTE</sup>	<a href="#">SE-12, "POWER SEAT/FOR COUPE"</a> or <a href="#">SE-15, "POWER SEAT/FOR ROADSTER"</a>
Room lamp timer	<a href="#">LT-212, "INTERIOR ROOM LAMP"</a>
Warning chime	<a href="#">DI-80, "WARNING CHIME"</a>
Rear wiper <sup>NOTE 2</sup>	<a href="#">WW-38, "REAR WIPER AND WASHER SYSTEM"</a>

#### NOTE:

1. Power supply only. No system control.
2. COUPE models

### SYSTEMS CONTROLLED BY BCM AND IPDM E/R

System	Reference
Panic alarm	<a href="#">BL-61, "REMOTE KEYLESS ENTRY SYSTEM"</a>
Theft warning	<a href="#">BL-126, "VEHICLE SECURITY (THEFT WARNING) SYSTEM"</a>
IVIS (NATS)	<a href="#">BL-155, "NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)"</a>
Headlamp, tail lamp, Battery saver control, day time light system	<ul style="list-style-type: none"> <li>• <a href="#">LT-7, "HEADLAMP (FOR USA) - XENON TYPE -"</a></li> <li>• <a href="#">LT-39, "HEADLAMP (FOR USA) - CONVENTIONAL TYPE -"</a></li> <li>• <a href="#">LT-69, "HEADLAMP (FOR CANADA) - XENON TYPE -"</a></li> <li>• <a href="#">LT-106, "HEADLAMP (FOR CANADA) - CONVENTIONAL TYPE -"</a></li> </ul>
Front wiper	<a href="#">WW-4, "FRONT WIPER AND WASHER SYSTEM"</a>
Rear window defogger	<a href="#">GW-56, "REAR WINDOW DEFOGGER"</a>

### SYSTEMS CONTROLLED BY BCM AND COMBINATION METER

System	Reference
Warning chime	<a href="#">DI-80, "WARNING CHIME"</a>
Turn signal and hazard warning lamps	<a href="#">LT-185, "PARKING, LICENSE PLATE AND TAIL LAMPS"</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>● 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	Ignition power supply	Power window system
Power supply (BAT) to power window and power seat	Battery power supply	Power window 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>● 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>
Battery saver control	<ul style="list-style-type: none"> <li>● Ignition switch</li> <li>● Combination switch</li> </ul>	IPDM E/R
Headlamp	Combination switch	IPDM E/R
Day time light system	<ul style="list-style-type: none"> <li>● Engine speed signal</li> <li>● Ignition switch</li> <li>● Combination switch</li> </ul>	IPDM E/R
Tail lamp	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>● Key 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 intermittent wiper <sup>NOTE</sup>	Combination switch	Rear wiper motor
Rear window defogger	<ul style="list-style-type: none"> <li>● Rear window defogger switch</li> <li>● Ignition switch</li> </ul>	IPDM E/R
A/C switch signal	Unified meter and A/C amp.	ECM
Blower fan switch signal	Unified meter and A/C amp.	ECM



CAN Communication System Description

AKS000Z4

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicles are equipped with many electronic control units and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

CAN Communication Unit

AKS003MH

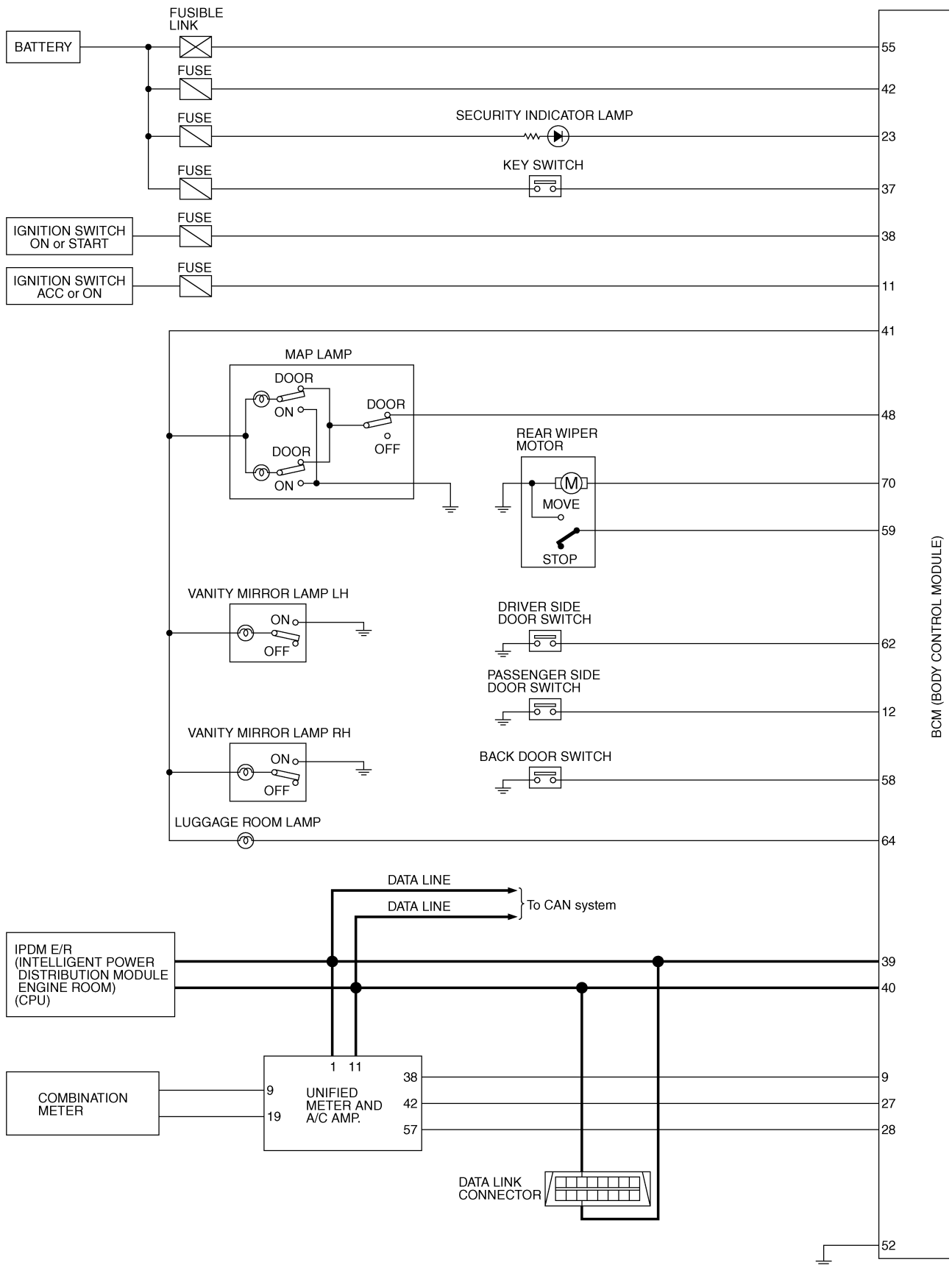
Refer to [LAN-5, "CAN Communication Unit"](#) .

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

# BCM (BODY CONTROL MODULE)

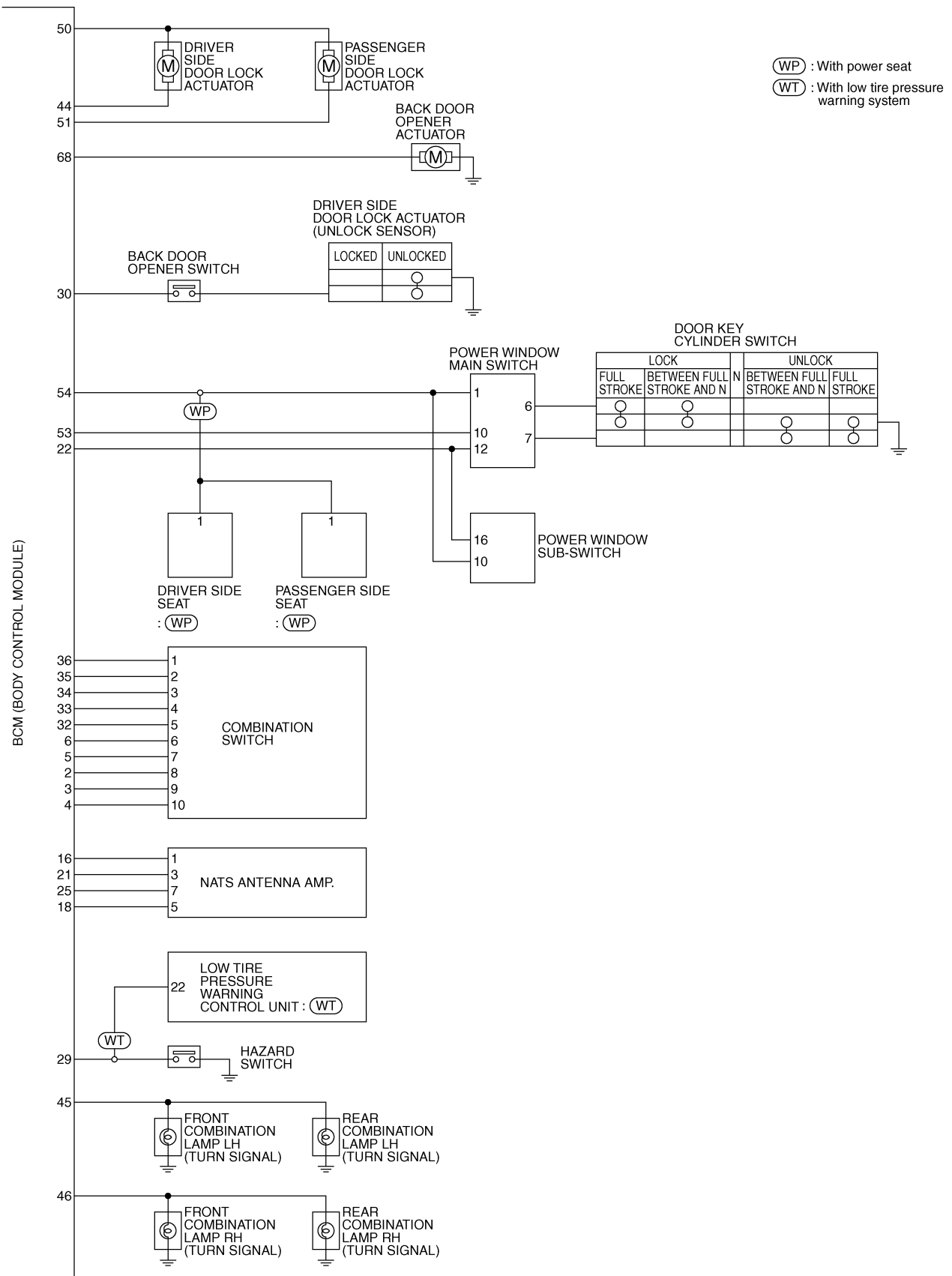
## Schematic COUPE MODELS

AKS000Z5



TKWT1872E

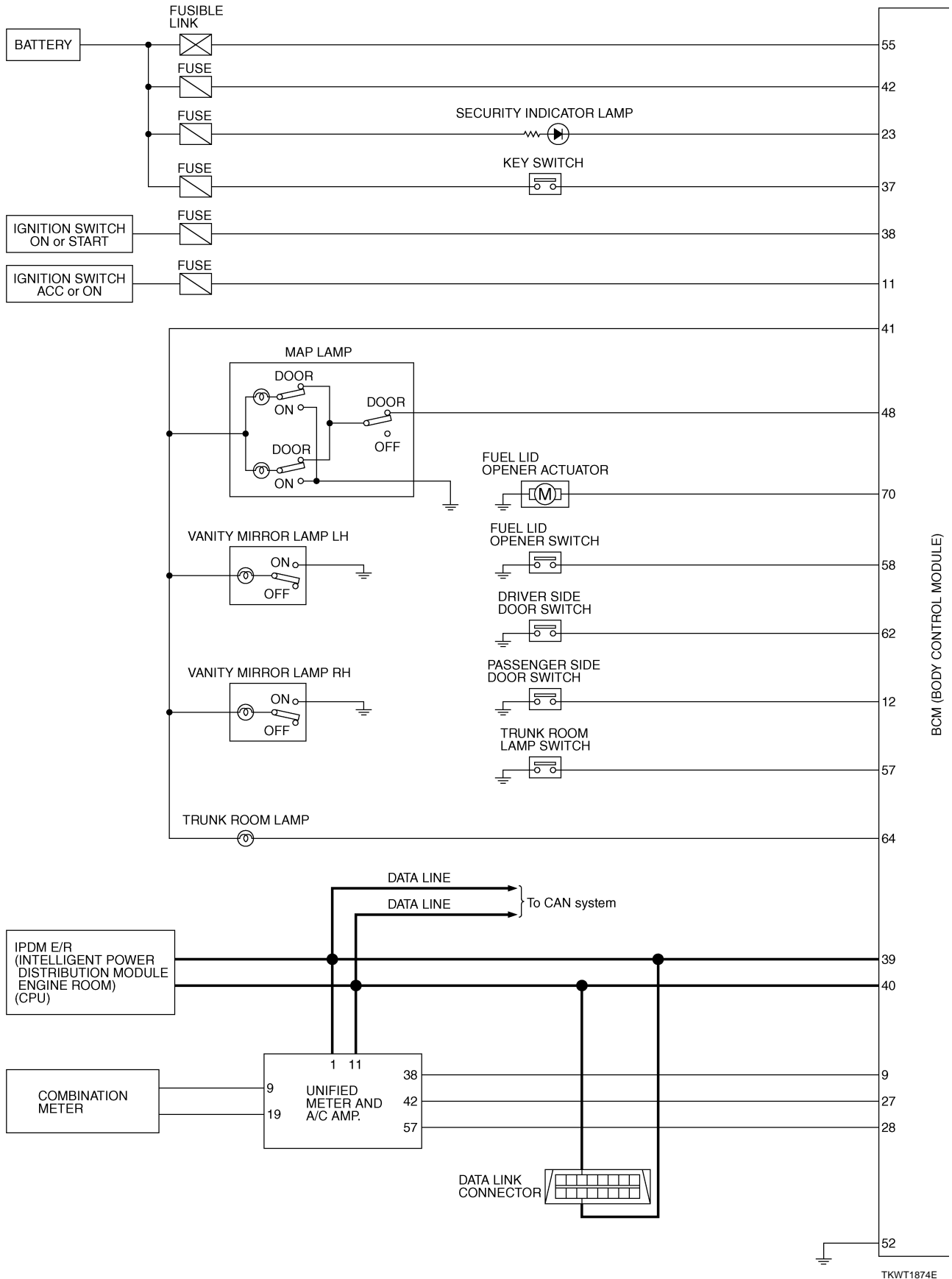
# BCM (BODY CONTROL MODULE)



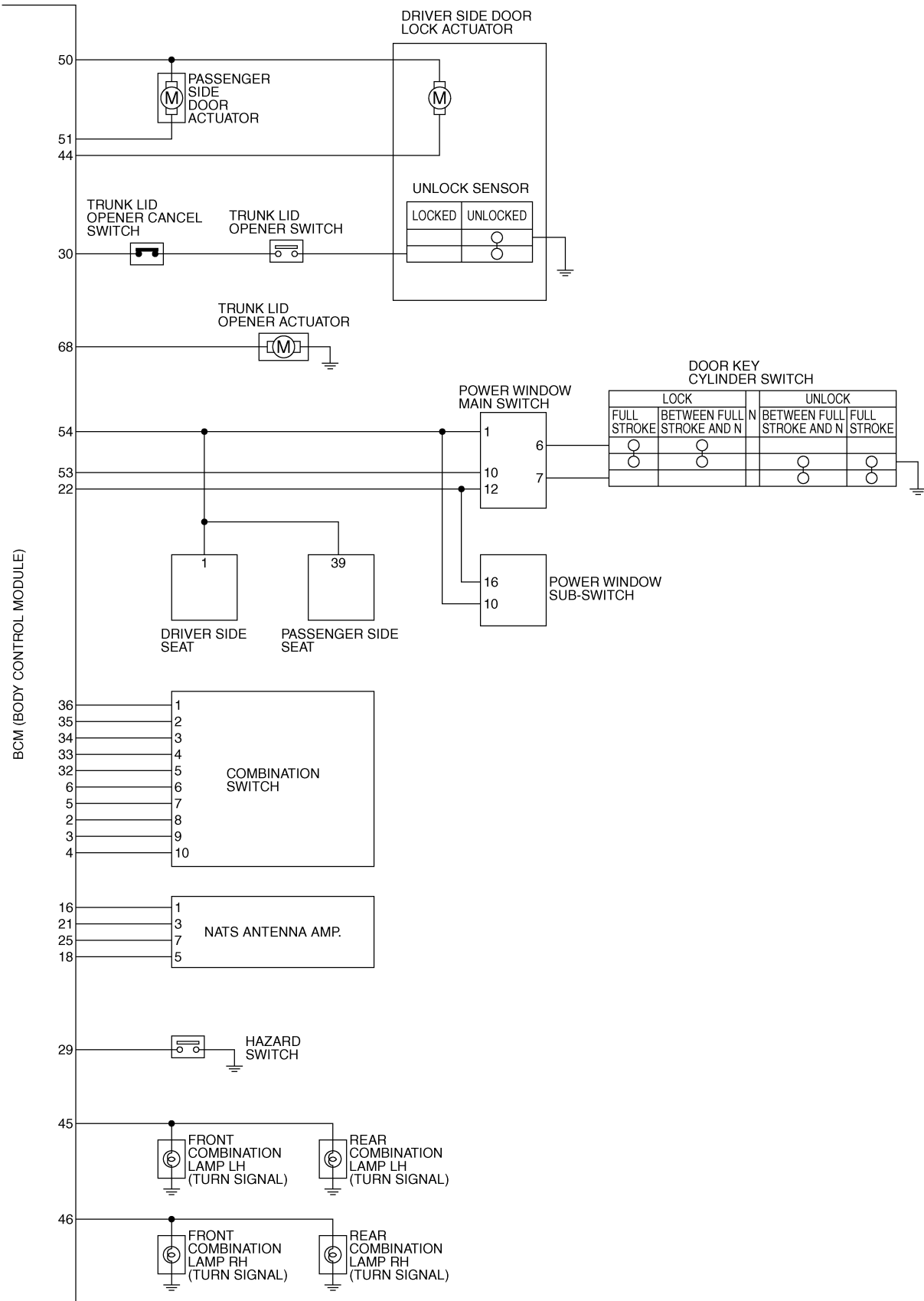
TKWT1873E

# BCM (BODY CONTROL MODULE)

## ROADSTER MODELS



# BCM (BODY CONTROL MODULE)



TKWT1875E

# BCM (BODY CONTROL MODULE)

## CONSULT-II

AKS00AV6

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

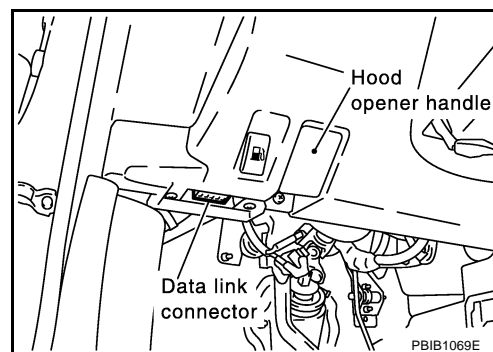
BCM diagnostic test item	Check item, diagnostic test mode	Content
Inspection by part	Work support	Changes setting of each function.
	Self-diagnosis results	BCM performs self-diagnosis of CAN communication.
	Data monitor	Displays the input data of BCM in real time.
	Active test	Gives a drive signal to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

## CONSULT-II BASIC OPERATION

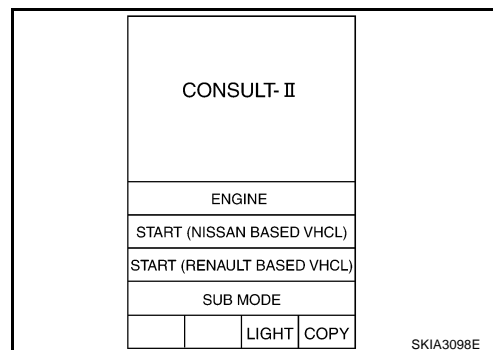
### CAUTION:

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.

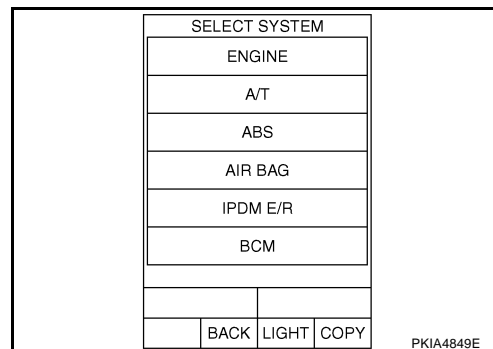
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, then turn the ignition switch ON.



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.

SELECT SYSTEM
DOOR LOCK
REAR DEFOGGER
BUZZER
INT LAMP
MULTI REMOTE ENT
HEAD LAMP
SKIA4963E

A  
B  
C  
D

### 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	ECU PART NUMBER	ACTIVE TEST	CON-FIGU-RATION
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 Hazard lamp	FLASHER			×		×	
Blower fan switch signal A/C switch signal	AIR CONDITONER			×			
Intelligent Key system	INTELLIGENT KEY			×			
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			×		×	

F  
G  
H  
I  
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K  
L  
M

BCS

#### NOTE:

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

# 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)

AKS000Z7

### 1. SELF-DIAGNOSTIC RESULT CHECK

#### 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	CAN COMM
	CAN CIRC 1
	CAN CIRC 2
	CAN CIRC 3
	CAN CIRC 4

#### Contents displayed

No malfunction>>INSPECTION END

Malfunction in CAN communication system>>GO TO 2.

### 2. SYMPTOM CHECK

1. Select "CAN diagnosis support monitor" in data monitor.
2. Select "START" and check display content.

Diagnosis item	Self-diagnostic result content	
	Normal	Not normal (Example)
CAN COMM	OK	NG
CAN CIRC 1	OK	UNKWN
CAN CIRC 2	OK	UNKWN
CAN CIRC 3	OK	UNKWN
CAN CIRC 4	OK	UNKWN

>> After printing the monitor items, go to "CAN System". Refer to [LAN-3, "Precautions When Using CONSULT-II"](#).

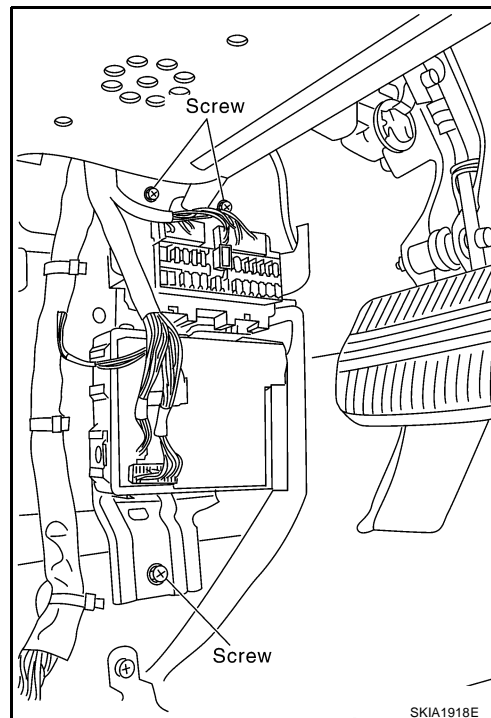


# BCM (BODY CONTROL MODULE)

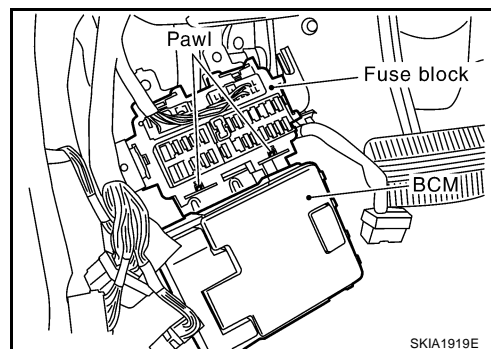
## Removal and Installation of BCM

### REMOVAL

1. Remove the dash side finisher (LH). Refer to [EI-35, "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.

