# SECTION BCS
# BODY CONTROL SYSTEM

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# 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 and 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.

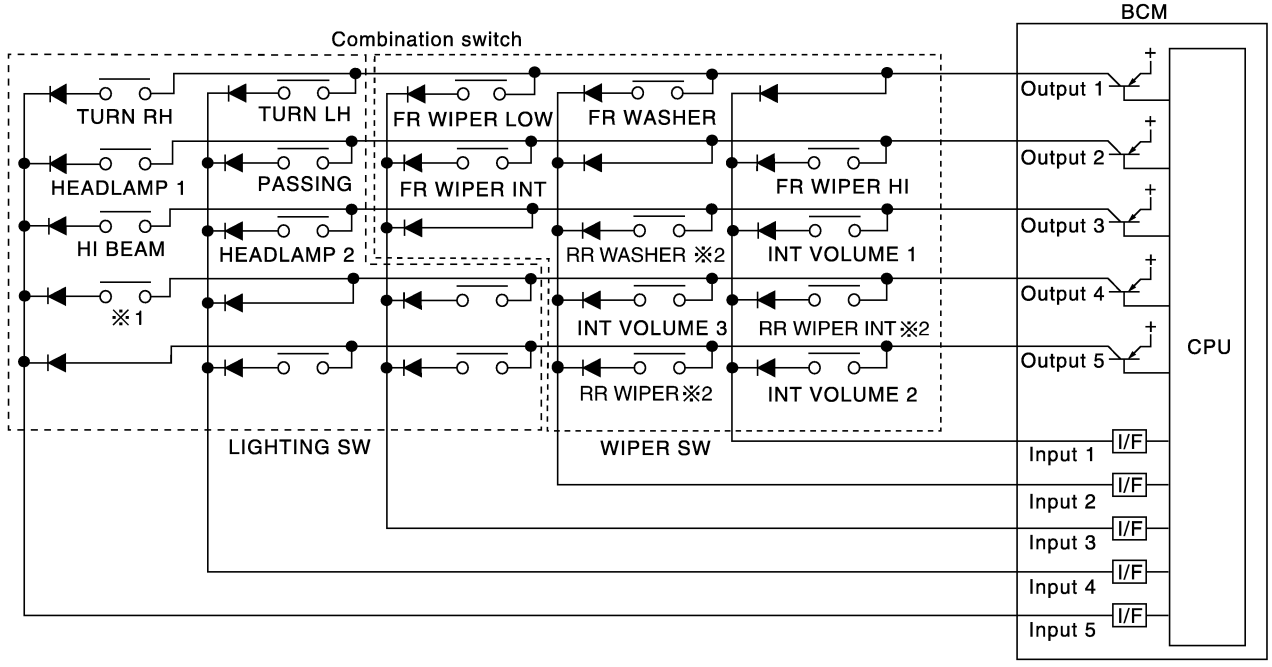
### COMBINATION SWITCH READING FUNCTION

#### Description

- BCM reads combination switch (lighting switch, wiper switch) status, and controls various electrical component, 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).

#### 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 ※2 : COUPE MODELS

PKIA7241E

## Operation Table of BCM and Combination Switches

- 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 | — | — |

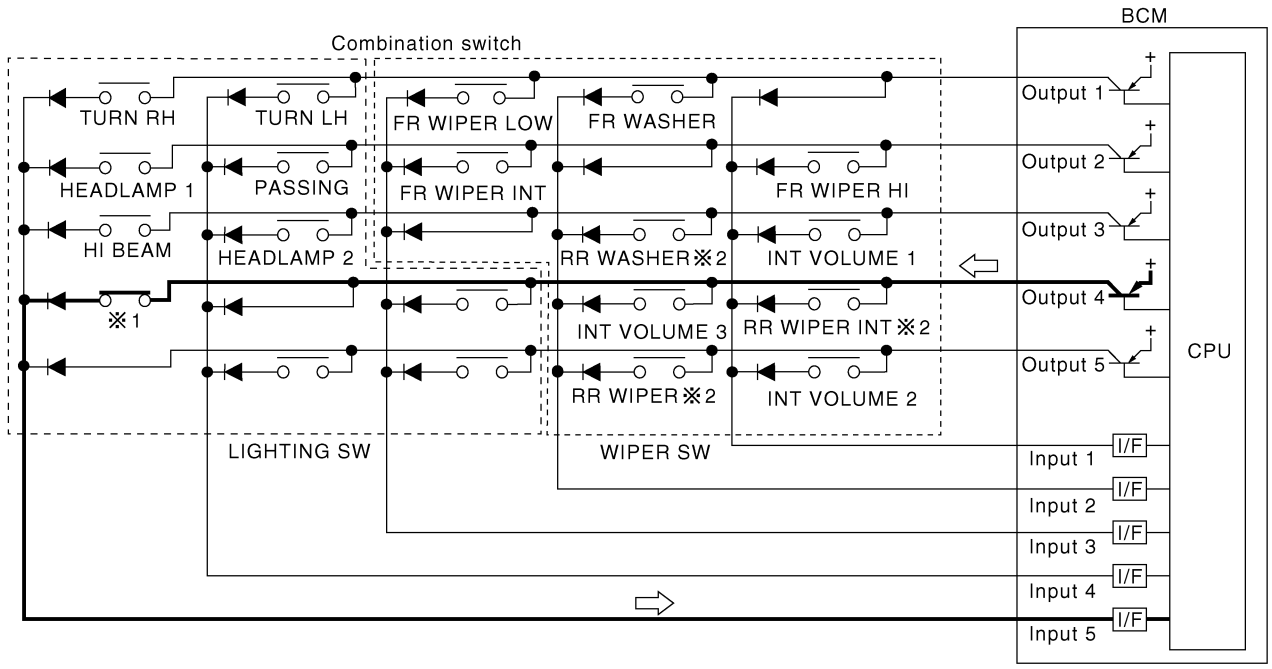
※ : COUPE MODELS

PKIA7242E

**NOTE:**
Headlamp has a dual system switch.

## 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 lighting switch (1ST position) 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

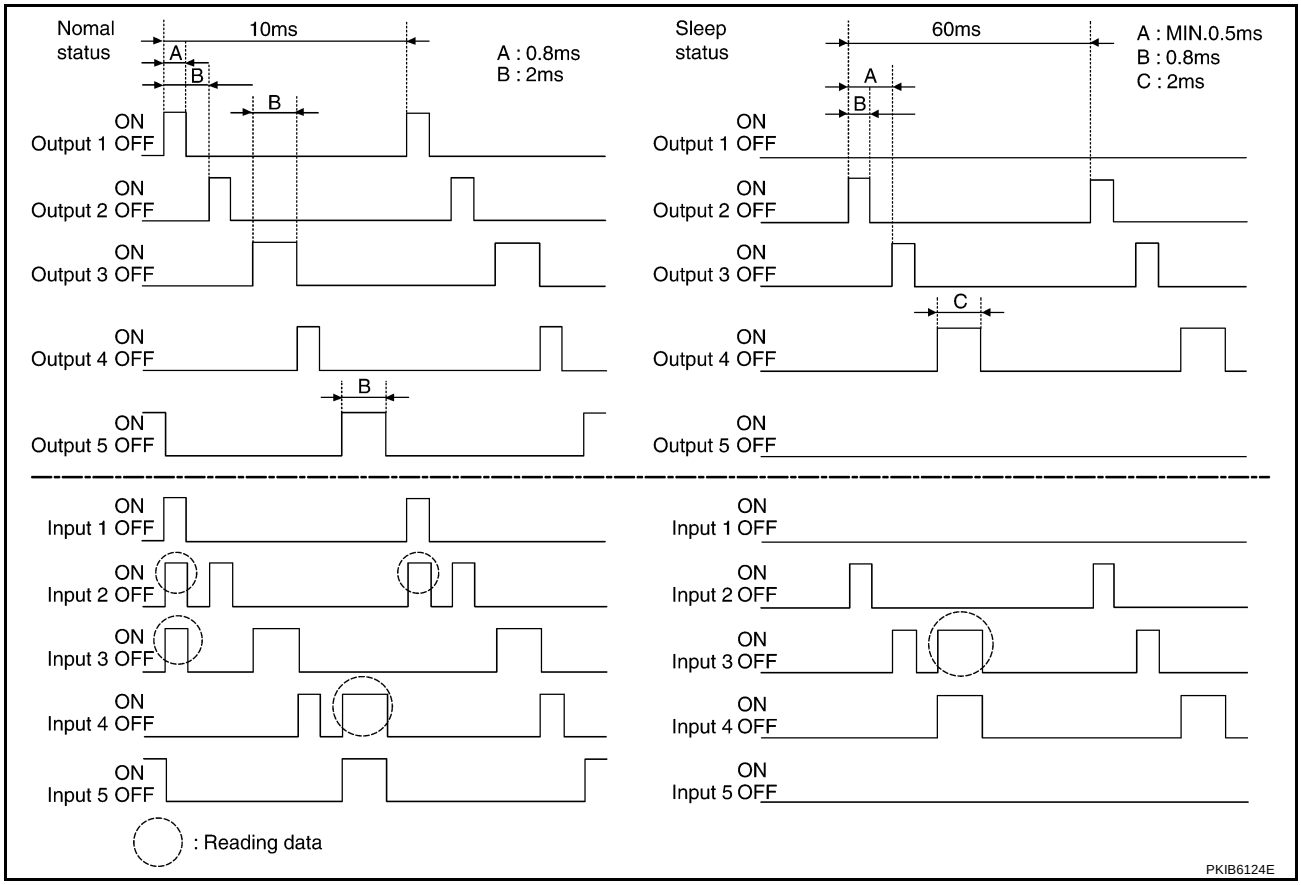
PKIA7617E

**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.

## Operation Mode

- Combination switch reading function has operation modes shown below.

1. Normal status
   - When BCM is not in sleep status, OUTPUT terminals (1-5) each send out ON signal every 10 ms.
2. Sleep status
   - When BCM is in sleep status, transistors of OUTPUT 1 and 5 stop the output, and BCM enters low power mode. Mean while OUTPUT 2, 3, and 4 send out ON signal every 60 ms, and only input from light switch system.




## 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-21, "CAN Communication Unit" .

## 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, sleep transient status switches to CAN communication 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 inactive status switches to sleep status.
4. Sleep status
   - BCM is activated with low power 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)
     - 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.

## SYSTEMS CONTROLLED BY BCM DIRECTLY

| System | Reference |
|---|---|
| Power door lock | BL-21, "POWER DOOR LOCK SYSTEM" |
| Remote keyless entry | BL-62, "REMOTE KEYLESS ENTRY SYSTEM" |
| Power window NOTE 1 | GW-18, "POWER WINDOW SYSTEM" |
| Power seat NOTE 1 | SE-12, "POWER SEAT/FOR COUPE" or SE-15, "POWER SEAT/FOR ROADSTER" |
| Room lamp timer | LT-214, "INTERIOR ROOM LAMP" |
| Rear wiper NOTE 2 | WW-38, "REAR WIPER AND WASHER SYSTEM" |

**NOTE:**

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

## SYSTEMS CONTROLLED BY BCM AND IPDM E/R

| System | Reference |
|---|---|
| Panic alarm | BL-62, "REMOTE KEYLESS ENTRY SYSTEM" |
| Theft warning | BL-134, "VEHICLE SECURITY (THEFT WARNING) SYSTEM" |
| NVIS (NATS) | BL-164, "NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)" |
| Headlamp, clearance lamp tail lamp, Battery saver control, day time light system | ● LT-7, "HEADLAMP (FOR USA) - XENON TYPE -"<br>● LT-38, "HEADLAMP (FOR USA) - CONVENTIONAL TYPE -"<br>● LT-67, "HEADLAMP (FOR CANADA) - XENON TYPE -"<br>● LT-108, "HEADLAMP (FOR CANADA) - CONVENTIONAL TYPE -" |
| Front wiper | WW-4, "FRONT WIPER AND WASHER SYSTEM" |
| Rear window defogger | GW-57, "REAR WINDOW DEFOGGER" |

## SYSTEMS CONTROLLED BY BCM AND COMBINATION METER

| System | Reference |
|---|---|
| Warning chime | DI-79, "WARNING CHIME" |
| Turn signal and hazard warning lamps | LT-147, "TURN SIGNAL AND HAZARD WARNING LAMPS" |
| Low tire pressure warning system | WT-10, "LOW TIRE PRESSURE WARNING SYSTEM" |

## MAJOR COMPONENTS AND CONTROL SYSTEM

| System | Input | Output |
|---|---|---|
| Remote control entry system | Remote keyless entry receiver | ● All-door locking actuator<br>● Turn signal lamp (LH, RH) |
| Power door lock system | ● Power window main switch (door lock and unlock switch)<br>● Power window sub switch (passenger side) (door lock and unlock switch) | 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 | ● Key switch<br>● Remote keyless entry receiver | IPDM E/R |
| Theft warning system | ● All-door switch<br>● Remote keyless entry receiver<br>● Power window main switch (door lock and unlock switch) | ● IPDM E/R<br>● Security indicator lamp |
| Battery saver control | ● Ignition switch<br>● Combination switch | IPDM E/R |
| Headlamp | Combination switch | IPDM E/R |
| Day time light system | ● Engine speed signal<br>● Ignition switch<br>● Combination switch | IPDM E/R |
| Tail lamp | Combination switch | IPDM E/R |
| Turn signal lamp | Combination switch | ● Turn signal lamp<br>● Combination meter |
| Hazard lamp | Hazard switch | ● Turn signal lamp<br>● Combination meter |
| Room lamp timer | ● Key switch<br>● Remote keyless entry receiver<br>● Power window main switch (door lock and unlock switch)<br>● Front door switch driver side<br>● All-door switch | Interior room lamp |
| Key warning chime | ● Key switch<br>● Front door switch driver side | Combination meter (warning buzzer) |
| Light warning chime | ● Combination switch<br>● Key switch<br>● Front door switch driver side | Combination meter (warning buzzer) |
| Seat belt warning chime | ● Combination meter [Seat belt buckle (driver side) switch]<br>● Ignition switch | Combination meter (warning buzzer) |
| Vehicle-speed-sensing intermittent wiper | ● Combination switch<br>● Combination meter | IPDM E/R |
| Rear intermittent wiper NOTE | Combination switch | Rear wiper motor |
| Rear window defogger | ● Rear window defogger switch<br>● Ignition switch | IPDM E/R |
| A/C switch signal | Unified meter and A/C amp. | ECM |

| System | Input | Output |
|---|---|---|
| Blower fan switch signal | Unified meter and A/C amp. | ECM |
| Low tire pressure warning system | Remote keyless entry receiver | Combination meter |

**NOTE:**
Coupe models

## 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

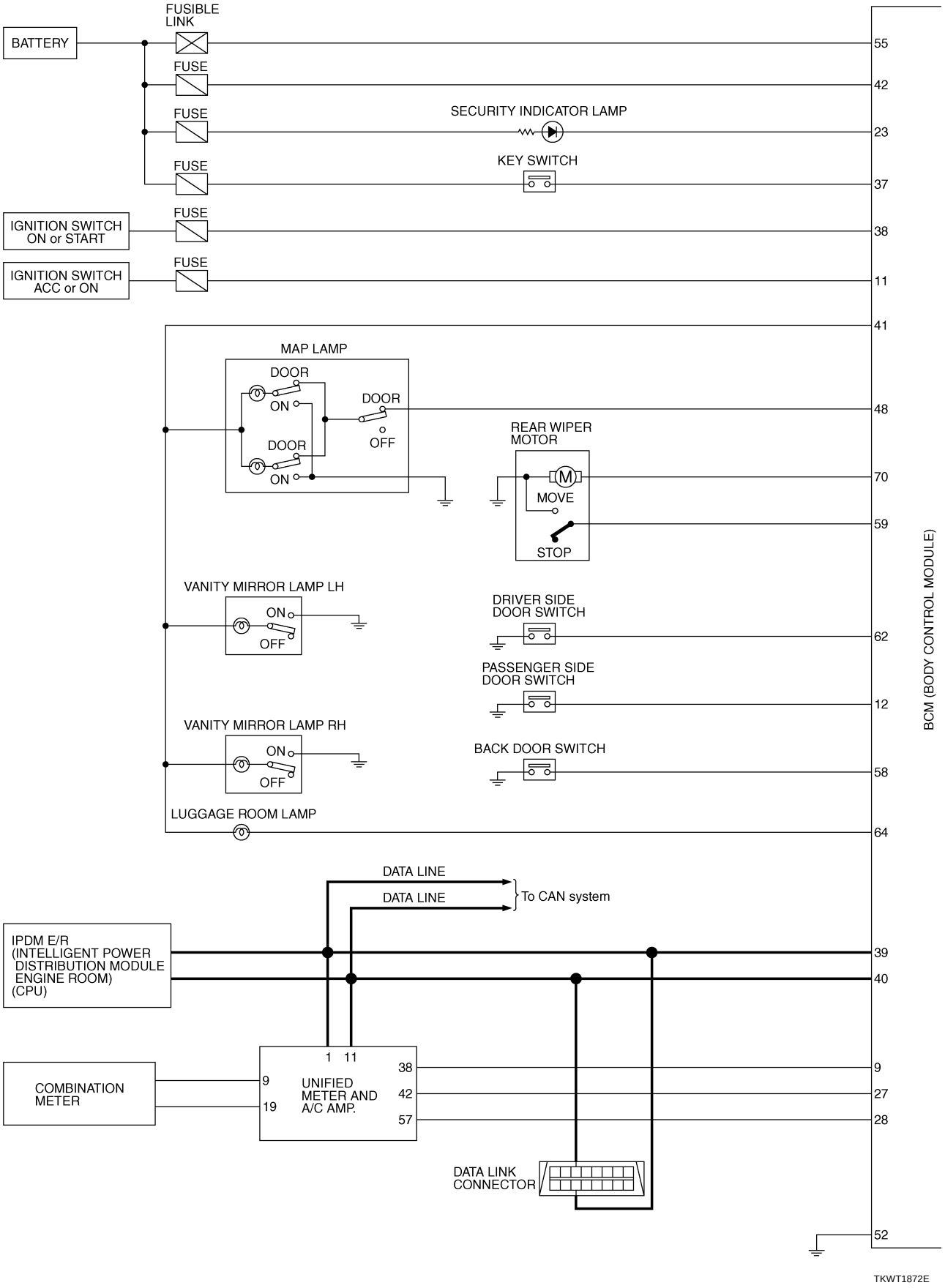
AKS003MH

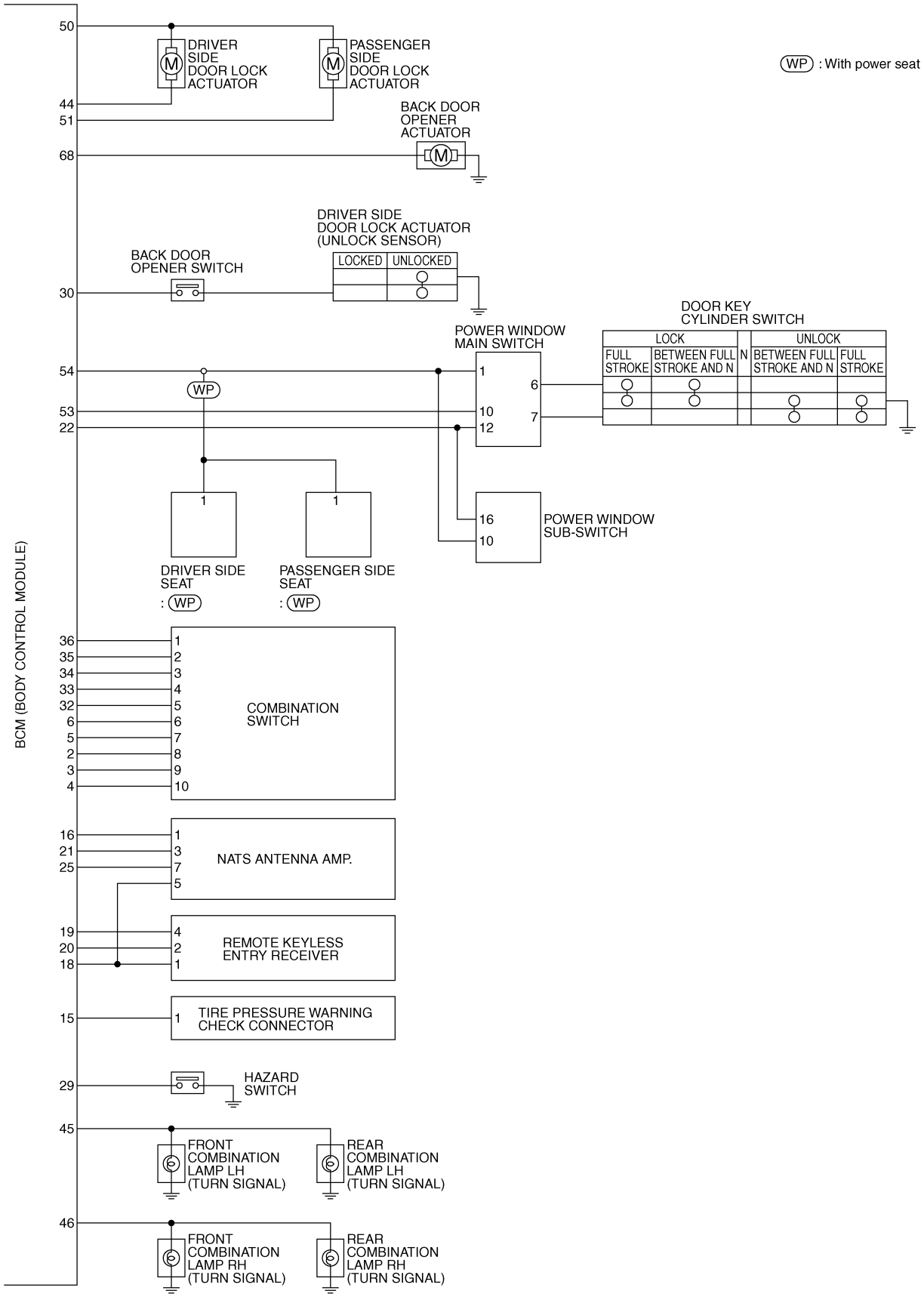
Refer to LAN-21, "CAN Communication Unit" .

## Schematic

AKS000Z5

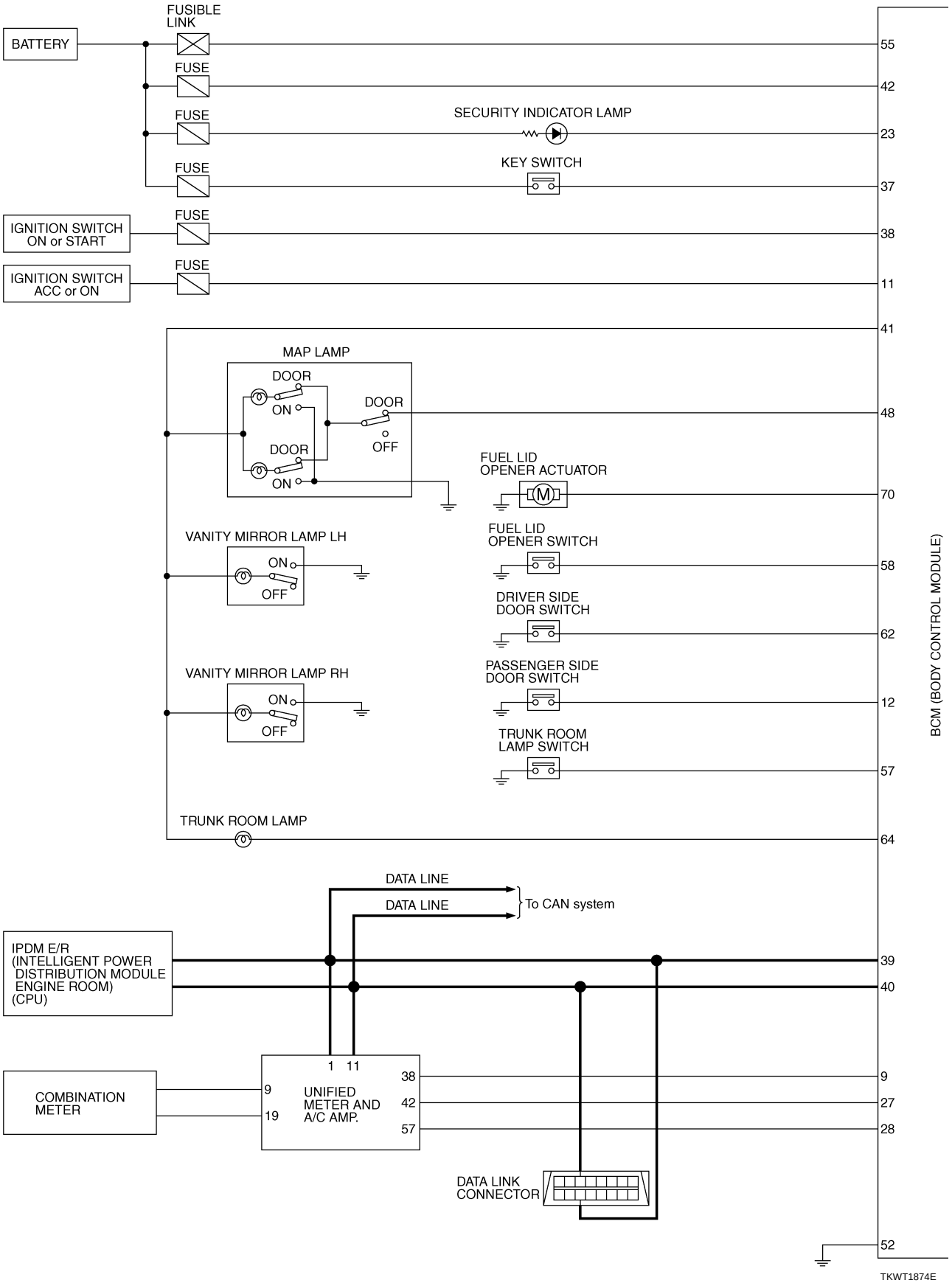
### COUPE MODELS

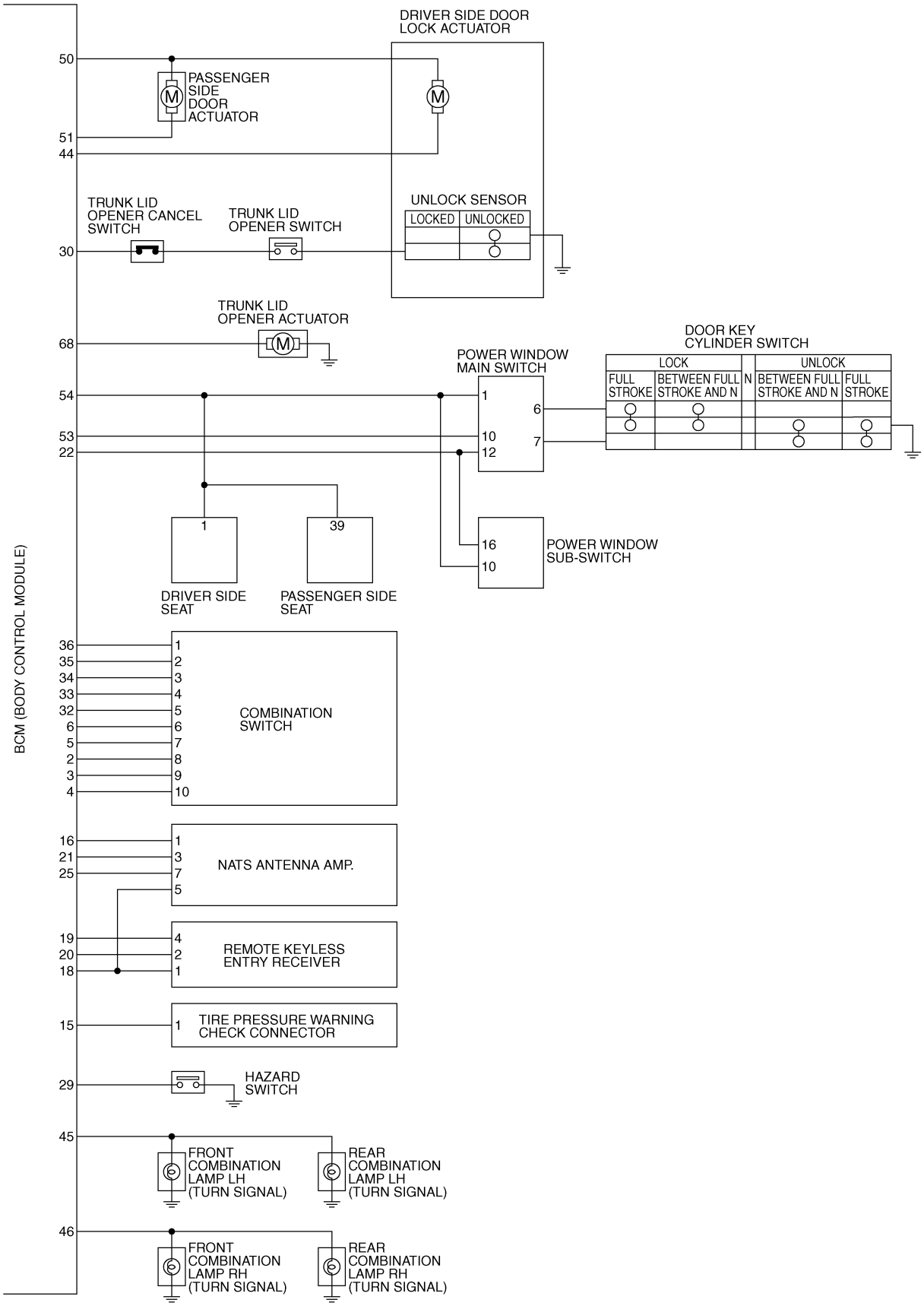



WP : With power seat
BCM (BODY CONTROL MODULE)
50
DRIVER SIDE DOOR LOCK ACTUATOR
PASSENGER SIDE DOOR LOCK ACTUATOR
44
51
BACK DOOR OPENER ACTUATOR
68
DRIVER SIDE DOOR LOCK ACTUATOR (UNLOCK SENSOR)
LOCKED
UNLOCKED
BACK DOOR OPENER SWITCH
30
DOOR KEY CYLINDER SWITCH
LOCK
UNLOCK
FULL STROKE
BETWEEN FULL STROKE AND N
N
BETWEEN FULL STROKE AND N
FULL STROKE
POWER WINDOW MAIN SWITCH
54
53
22
WP
1
6
10
12
7
16
10
POWER WINDOW SUB-SWITCH
DRIVER SIDE SEAT
: WP
PASSENGER SIDE SEAT
: WP
36
35
34
33
32
6
5
2
3
4
COMBINATION SWITCH
16
21
25
NATS ANTENNA AMP.
19
20
18
REMOTE KEYLESS ENTRY RECEIVER
15
TIRE PRESSURE WARNING CHECK CONNECTOR
29
HAZARD SWITCH
45
FRONT COMBINATION LAMP LH (TURN SIGNAL)
REAR COMBINATION LAMP LH (TURN SIGNAL)
46
FRONT COMBINATION LAMP RH (TURN SIGNAL)
REAR COMBINATION LAMP RH (TURN SIGNAL)

TKWT2340E

## ROADSTER MODELS




DRIVER SIDE DOOR LOCK ACTUATOR
PASSENGER SIDE DOOR ACTUATOR
TRUNK LID OPENER CANCEL SWITCH
TRUNK LID OPENER SWITCH
UNLOCK SENSOR
LOCKED
UNLOCKED
TRUNK LID OPENER ACTUATOR
DOOR KEY CYLINDER SWITCH
LOCK
UNLOCK
FULL STROKE
BETWEEN FULL STROKE AND N
N
POWER WINDOW MAIN SWITCH
POWER WINDOW SUB-SWITCH
DRIVER SIDE SEAT
PASSENGER SIDE SEAT
BCM (BODY CONTROL MODULE)
COMBINATION SWITCH
NATS ANTENNA AMP.
REMOTE KEYLESS ENTRY RECEIVER
TIRE PRESSURE WARNING CHECK CONNECTOR
HAZARD SWITCH
FRONT COMBINATION LAMP LH (TURN SIGNAL)
REAR COMBINATION LAMP LH (TURN SIGNAL)
FRONT COMBINATION LAMP RH (TURN SIGNAL)
REAR COMBINATION LAMP RH (TURN SIGNAL)

TKWT2341E

## CONSULT-II Function (BCM)

AKS00AV6

CONSULT-II can display each diagnostic item using the diagnostic test mode shown following.

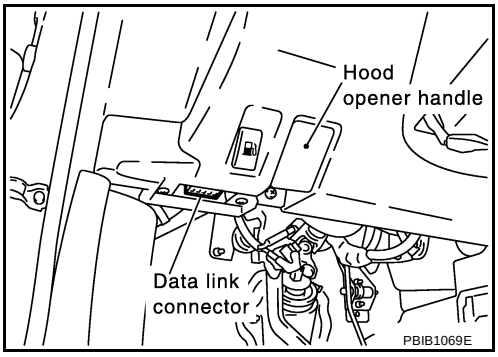
| BCM diagnostic test item | Check item, diagnostic test mode | Content |
|---|---|---|
| Inspection by part | WORK SUPPORT | Changes setting of each function. |
| | SELF-DIAG RESULTS | BCM performs self-diagnosis of CAN communication. |
| | DATA MONITOR | Displays the input data of BCM in real time. |
| | ACTIVE TEST | Gives a drive signal to a load to check the operation. |
| | CAN DIAG SUPPORT MNTR | The result of transmit/receive diagnosis of CAN communication can be read. |
| | ECU PART NUMBER | ECM part number can be read. |

### CONSULT–II BASIC OPERATION

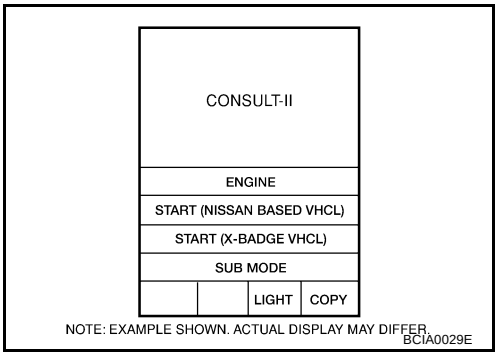
**CAUTION:**

**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.**

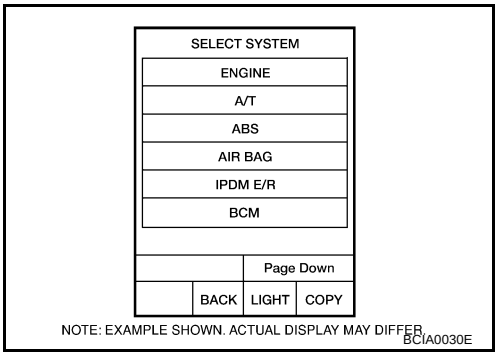
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, then turn the ignition switch ON.



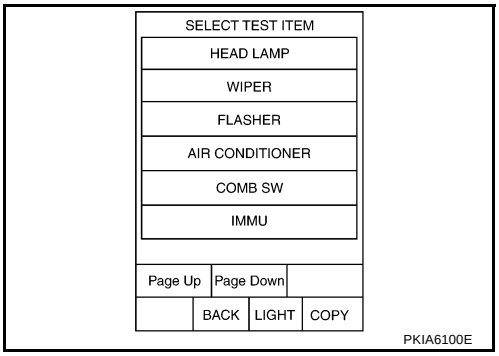

2. Touch “START (NISSAN BASED VHCL)”.




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



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




## ITEMS OF EACH PART

**NOTE:**
CONSULT-II displays systems equipped in the vehicle.

×:Applicable

| System and item | CONSULT-II display | Diagnostic test mode (Inspection by part) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | WORK SUPPORT | SELF–DIAG RESULTS | DATA MONITOR | CAN DIAG SUPPORT MNTR | ACTIVE TEST | ECU PART NUMBER | CONFIGURATION |
| BCM | BCM | × | × | | × | | × | × NOTE |
| 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 | | | × | | | | |
| NVIS | 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 | | | × NOTE | | × | | |
| Fuel lid | FUEL LID | | | × | | × | | |
| Low tire pressure warning system | AIR PRESSURE MONITOR | × | | × | | × | | |
| Panic system | PANIC ALARM | | | | | × | | |

**NOTE:**
This item is displayed, but should not be used.

## 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 | INITIAL DIAG |
| | TRANSMIT DIAG |
| | ECM |
| | IPDM E/R |
| | METER / M&A |

Contents displayed

No malfunction>>INSPECTION END

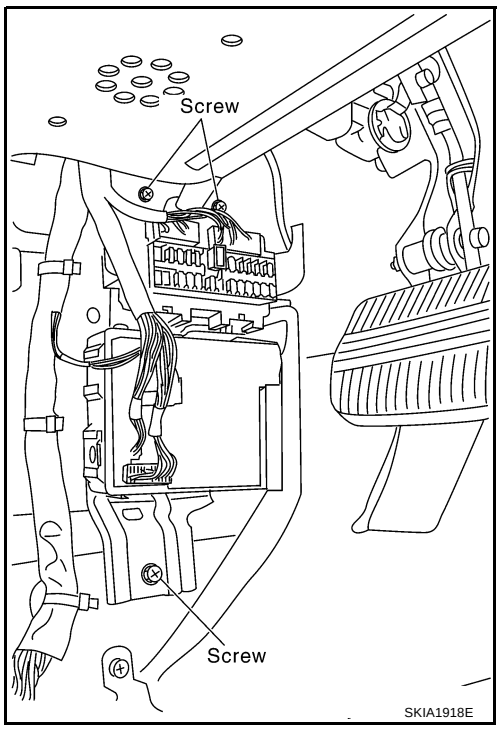
Malfunction in CAN communication system>>After printing the monitor items, go to “CAN System”. Refer to LAN-3, "Precautions When Using CONSULT-II" .

## Removal and Installation of BCM

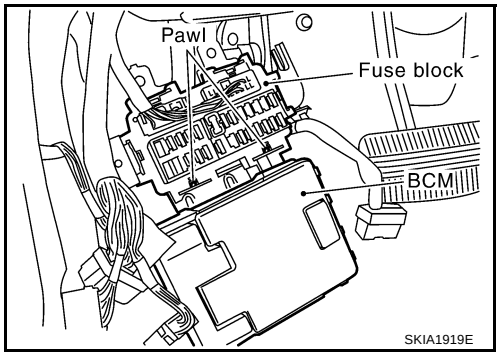
AKS000ZB

### 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

Installation is the reverse order of removal.