

PCS

SECTION

POWER CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:000000009012991

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 3 minutes before performing any service.

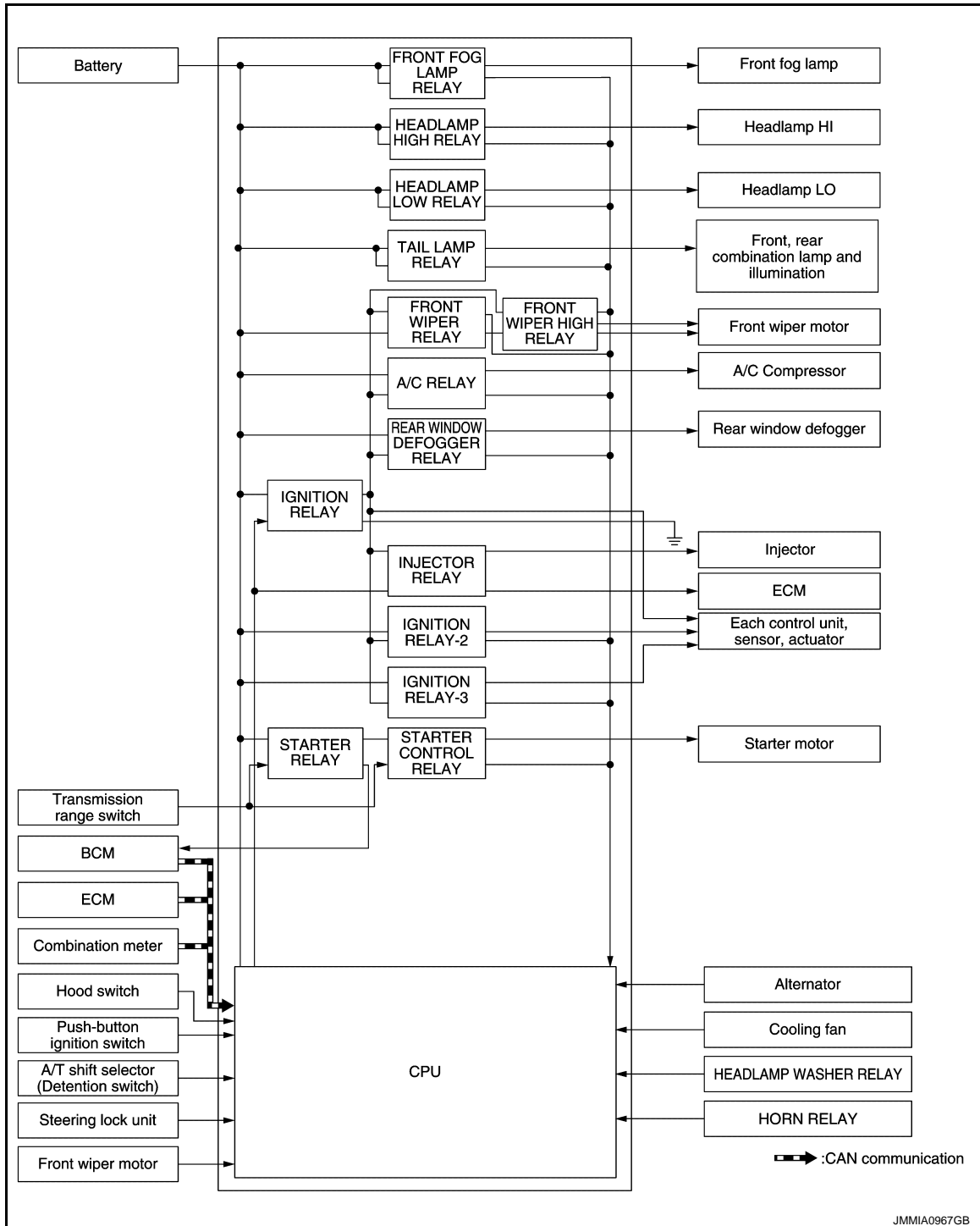
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SYSTEM
RELAY CONTROL SYSTEM

RELAY CONTROL SYSTEM : System Diagram

INFOID:000000009012993



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RELAY CONTROL SYSTEM : System Description

INFOID:000000009012994

IPDM E/R activates the internal control circuit to perform the relay ON-OFF control according to the input signals from various sensors and the request signals received from control units via CAN communication.

CAUTION:
IPDM E/R integrated relays cannot be removed.

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R]

| Control relay | Input/output | Transmit unit | Control part | Reference page |
|--|---|-----------------------------|---|--|
| <ul style="list-style-type: none"> Headlamp low relay Headlamp high relay | <ul style="list-style-type: none"> Low beam request signal High beam request signal | BCM (CAN) | <ul style="list-style-type: none"> Headlamp (LO) Headlamp (HI) | EXL-10 |
| Front fog lamp relay | Front fog light request signal | BCM (CAN) | Front fog lamp | EXL-19 |
| Tail lamp relay | Position light request signal | BCM (CAN) | <ul style="list-style-type: none"> Parking lamp License plate lamp Tail lamp Side marker lamp | EXL-18 |
| | | | Illuminations | INL-6 |
| <ul style="list-style-type: none"> Front wiper relay Front wiper high relay | Front wiper request signal | BCM (CAN) | Front wiper motor | WW-6, "FRONT WIPER AND WASHER SYSTEM : System Diagram" |
| | Front wiper stop position signal | Front wiper motor | | |
| Rear window defogger relay | Rear window defogger control signal | BCM (CAN) | Rear window defogger | DEF-5, "System Diagram" |
| <ul style="list-style-type: none"> Horn relay Theft warning horn relay | <ul style="list-style-type: none"> Theft warning horn request signal Horn reminder signal | BCM (CAN) | Horn (high) Horn (low) | SEC-15 |
| <ul style="list-style-type: none"> Starter relay^{NOTE} Starter control relay | Starter control relay signal | BCM (CAN) | Starter motor | SEC-8, SEC-8 |
| | Starter relay control signal | TCM | | |
| A/C relay | A/C compressor request signal | ECM (CAN) | A/C compressor (Magnet clutch) | HAC-18 |
| Headlamp washer relay | Headlamp washer request signal | BCM (CAN) | Headlamp washer pump | WW-11, "HEADLAMP WASHER SYSTEM : System Diagram" |
| <ul style="list-style-type: none"> Ignition relay Ignition relay-2 Ignition relay-3 | Ignition switch ON signal | BCM (CAN) | Each control unit, sensor, actuator and relay (ignition power supply) | PCS-27 |
| | Vehicle speed signal | Combination meter (CAN) | | |
| | Push-button ignition switch signal | Push-button ignition switch | | |

NOTE:

BCM controls the starter relay.

RELAY CONTROL SYSTEM : Fail-safe

INFOID:000000009325299

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

| Control part | Fail-safe operation |
|----------------|---|
| Cooling fan | <ul style="list-style-type: none"> Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. |
| A/C compressor | A/C relay OFF |
| Alternator | Transmits the power generation command signal (PWM signal) 0% |

If No CAN Communication Is Available With BCM

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R]

| Control part | Fail-safe operation |
|---|---|
| Headlamp | <ul style="list-style-type: none"> • Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF |
| <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Illumination • Tail lamp • Side marker lamp | <ul style="list-style-type: none"> • Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF |
| Front wiper motor | <ul style="list-style-type: none"> • The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Return automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stops in the other position than stop position. |
| Front fog lamp | Front fog lamp relay OFF |
| Horn | Horn OFF |
| Ignition relay | The status just before activation of fail-safe is maintained. |
| Starter motor | Starter control relay OFF |

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

| Voltage judgment | | IPDM E/R judgment | Operation |
|-----------------------------|-------------------------------------|---------------------------|--|
| Ignition relay contact side | Ignition relay excitation coil side | | |
| ON | ON | Ignition relay ON normal | — |
| OFF | OFF | Ignition relay OFF normal | — |
| ON | OFF | Ignition relay ON stuck | <ul style="list-style-type: none"> • Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes |
| OFF | ON | Ignition relay OFF stuck | Detects DTC “B2099: IGN RELAY OFF” |

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal. When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

| Ignition switch | Front wiper switch | Front wiper stop position signal |
|-----------------|--------------------|--|
| ON | OFF | The front wiper stop position signal (stop position) cannot be input for 10 seconds. |
| | ON | The front wiper stop position signal does not change for 10 seconds. |

NOTE:

This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

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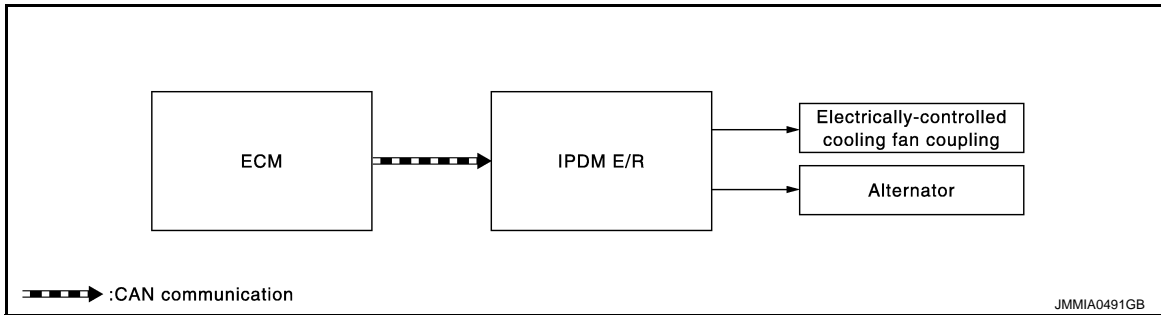
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< SYSTEM DESCRIPTION >

[IPDM E/R]

POWER CONTROL SYSTEM : System Diagram

INFOID:000000009012996



POWER CONTROL SYSTEM : System Description

INFOID:000000009012997

COOLING FAN CONTROL

IPDM E/R outputs cooling fan control signal (PWM signal) to the electrically-controlled cooling fan coupling according to the status of the cooling fan speed request signal received from ECM via CAN communication. Refer to [EC-48, "COOLING FAN CONTROL : System Diagram"](#).

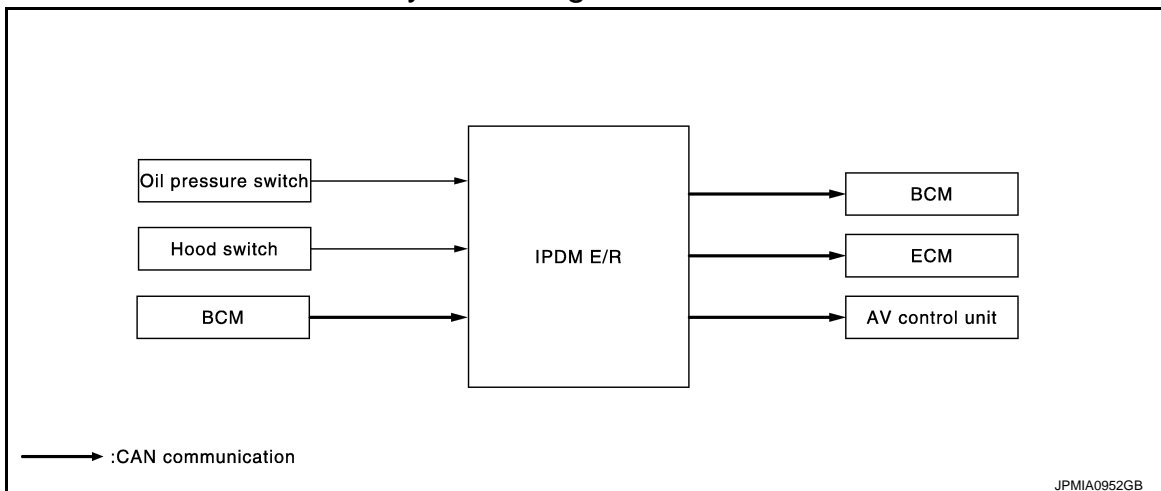
ALTERNATOR CONTROL

IPDM E/R outputs power generation command signal (PWM signal) to the alternator according to the status of the power generation command value signal received from ECM via CAN communication. Refer to [CHG-6, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM : System Diagram"](#).

SIGNAL BUFFER SYSTEM

SIGNAL BUFFER SYSTEM : System Diagram

INFOID:000000009012998



SIGNAL BUFFER SYSTEM : System Description

INFOID:000000009012999

- IPDM E/R reads the status of the oil pressure switch and transmits the oil pressure switch signal to BCM via CAN communication. Refer to [MWI-15, "OIL PRESSURE WARNING LAMP : System Diagram"](#).
- IPDM E/R reads the status of the hood switch and transmits the hood switch signal to BCM via CAN communication. Refer to [SEC-15, "VEHICLE SECURITY SYSTEM : System Diagram"](#).
- IPDM E/R receives the rear window defogger control signal from BCM via CAN communication and transmits it to ECM and AV control unit via CAN communication. Refer to [DEF-5, "System Diagram"](#).

POWER CONSUMPTION CONTROL SYSTEM

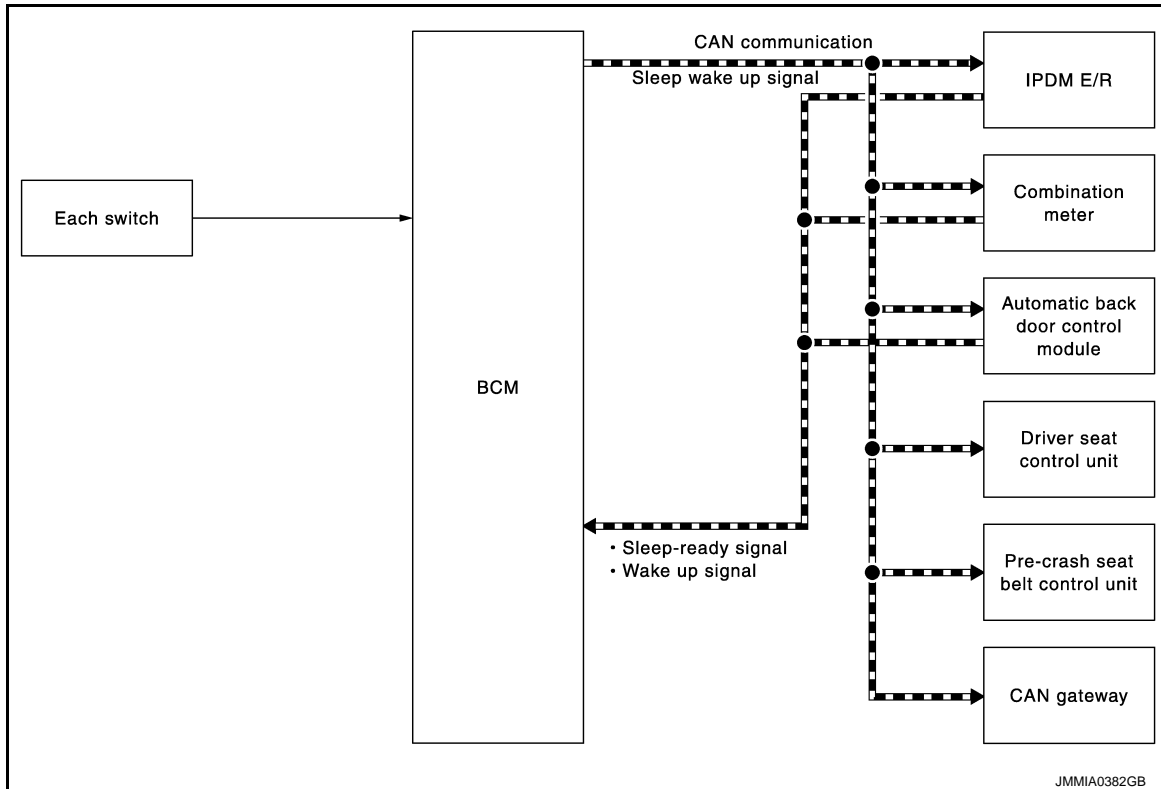
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< SYSTEM DESCRIPTION >

[IPDM E/R]

POWER CONSUMPTION CONTROL SYSTEM : System Diagram

INFOID:000000009013000



POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:000000009013001

OUTLINE

- IPDM E/R incorporates a power consumption control function that reduces the power consumption according to the vehicle status.
- IPDM E/R changes its status (control mode) with the sleep wake up signal received from BCM via CAN communication.

Normal mode (wake-up)

- CAN communication is normally performed with other control units.
- Individual unit control by IPDM E/R is normally performed.

Low power consumption mode (sleep)

- Low power consumption control is active.
- CAN transmission is stopped.

SLEEP MODE ACTIVATION

- IPDM E/R judges that the sleep-ready conditions are fulfilled when the ignition switch is OFF and none of the conditions below are present. Then it transmits a sleep-ready signal (ready) to BCM via CAN communication.
 - Outputting signals to actuators
 - Switches or relays operating
 - Output requests are being received from control units via CAN communication.
- IPDM E/R stops CAN communication and enters the low power consumption mode when it receives a sleep wake up signal (sleep) from BCM and the sleep-ready conditions are fulfilled.

WAKE-UP OPERATION

- IPDM E/R changes from the low power consumption mode to the normal mode when it receives a sleep wake-up signal (wake up) from BCM or any of the following conditions is fulfilled. In addition, it transmits a sleep-ready signal (not-ready) to BCM via CAN communication to report the CAN communication start.
 - Ignition switch ON
 - Hood switch status changes.
 - An output request is received from a control unit via CAN communication.

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DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000009013002

AUTO ACTIVE TEST

Description

In auto active test, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp
- Rear window defogger
- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Side marker lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)

Operation Procedure

CAUTION:

Never perform auto active test in the following conditions.

- Engine is running.
- CONSULT is connected.

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.

CAUTION:

Close passenger door.

4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.

CAUTION:

Engine starts when ignition switch is turned ON while brake pedal is depressed.

5. The oil pressure warning lamp starts blinking when the auto active test starts.
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to [DLK-98](#), "[Component Function Check](#)".

Inspection in Auto Active Test

When auto active test is actuated, the following operation sequence is repeated 3 times.

| Operation sequence | Inspection location | Operation |
|--------------------|---|--|
| 1 | Oil pressure warning lamp | Blinks continuously during operation of auto active test |
| 2 | Rear window defogger | 10 seconds |
| 3 | Front wiper | LO for 5 seconds → HI for 5 seconds |
| 4 | <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp | 10 seconds |

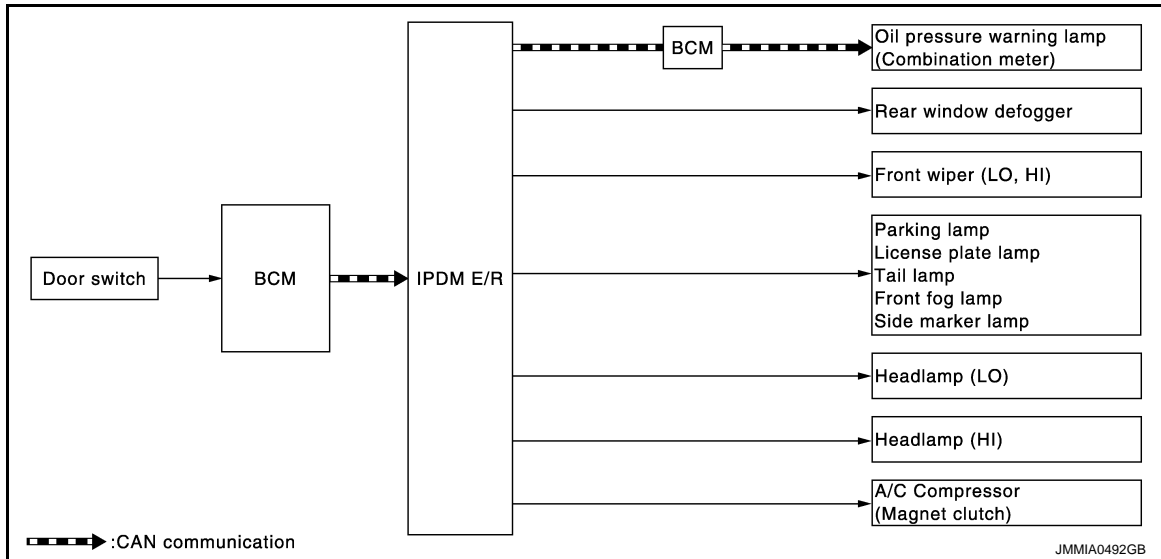
DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R]

| Operation sequence | Inspection location | Operation |
|--------------------|--------------------------------|---|
| 5 | Headlamp | LO for 10 seconds → HI ON ↔ OFF 5 times |
| 6 | A/C compressor (magnet clutch) | ON ↔ OFF 5 times |

Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test

| Symptom | Inspection contents | Possible cause |
|--|---|--|
| Rear window defogger does not operate | Perform auto active test. Does the rear window defogger operate? | YES BCM signal input circuit |
| | | NO <ul style="list-style-type: none"> • Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R |
| Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Side marker lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO) | Perform auto active test. Does the applicable system operate? | YES BCM signal input circuit |
| | | NO <ul style="list-style-type: none"> • Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R |
| A/C compressor does not operate | Perform auto active test. Does the magnet clutch operate? | YES <ul style="list-style-type: none"> • A/C auto amp. signal input circuit • CAN communication signal between A/C auto amp. and ECM • CAN communication signal between ECM and IPDM E/R |
| | | NO <ul style="list-style-type: none"> • Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R |

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R]

| Symptom | Inspection contents | | Possible cause |
|--|--|-----|--|
| Oil pressure warning lamp does not operate | Perform auto active test. Does the oil pressure warning lamp blink? | YES | <ul style="list-style-type: none"> • Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R |
| | | NO | <ul style="list-style-type: none"> • CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter |

CONSULT Function (IPDM E/R)

INFOID:000000009013003

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

| Diagnosis mode | Description |
|--------------------------|---|
| Ecu Identification | Allows confirmation of IPDM E/R part number. |
| Self Diagnostic Result | Displays the diagnosis results judged by IPDM E/R. |
| Data Monitor | Displays the real-time input/output data from IPDM E/R input/output data. |
| Active Test | IPDM E/R can provide a drive signal to electronic components to check their operations. |
| CAN Diag Support Monitor | The results of transmit/receive diagnosis of CAN communication can be read. |

SELF DIAGNOSTIC RESULT

Refer to [PCS-22. "DTC Index"](#).

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

| Monitor Item [Unit] | MAIN SIGNALS | Description |
|----------------------------------|--------------|---|
| RAD FAN REQ [1/2/3/4] | × | Displays the value of the cooling fan speed request signal received from ECM via CAN communication. |
| AC COMP REQ [Off/On] | × | Displays the status of the A/C compressor request signal received from ECM via CAN communication. |
| TAIL&CLR REQ [Off/On] | × | Displays the status of the position light request signal received from BCM via CAN communication. |
| HL LO REQ [Off/On] | × | Displays the status of the low beam request signal received from BCM via CAN communication. |
| HL HI REQ [Off/On] | × | Displays the status of the high beam request signal received from BCM via CAN communication. |
| FR FOG REQ [Off/On] | × | Displays the status of the front fog light request signal received from BCM via CAN communication. |
| FR WIP REQ [Stop/1LOW/Low/Hi] | × | Displays the status of the front wiper request signal received from BCM via CAN communication. |
| WIP AUTO STOP [STOP P/ACT P] | × | Displays the status of the front wiper auto stop signal judged by IPDM E/R. |
| WIP PROT [Off/BLOCK] | × | Displays the status of the front wiper fail-safe operation judged by IPDM E/R. |
| IGN RLY1 -REQ [Off/On] | | Displays the status of the ignition switch ON signal received from BCM via CAN communication. |

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R]

| Monitor Item [Unit] | MAIN SIG- NALS | Description |
|---|-------------------|---|
| IGN RLY [Off/On] | × | Displays the status of the ignition relay judged by IPDM E/R. |
| PUSH SW [Off/On] | | Displays the status of the push-button ignition switch judged by IPDM E/R. |
| INTER/NP SW [Off/On] | | Displays the status of the shift position judged by IPDM E/R. |
| ST RLY CONT [Off/On] | | Displays the status of the starter relay status signal received from BCM via CAN communication. |
| IHBT RLY -REQ [Off/On] | | Displays the status of the starter control relay signal received from BCM via CAN communication. |
| ST/INH RLY [Off/ ST ON/INH ON/UNKWN] | | Displays the status of the starter relay and starter control relay judged by IPDM E/R. |
| DETENT SW [Off/On] | | Displays the status of the A/T shift selector (detention switch) judged by IPDM E/R. |
| S/L RLY -REQ [Off/On] | | NOTE: The item is indicated, but not monitored. |
| S/L STATE [LOCK/UNLK/UNKWN] | | NOTE: The item is indicated, but not monitored. |
| OIL P SW [Open/Close] | | Displays the status of the oil pressure switch judged by IPDM E/R. |
| HOOD SW [Off/On] | | Displays the status of the hood switch 1 judged by IPDM E/R. |
| HL WASHER REQ [Off/On] | | Displays the status of the headlamp washer request signal received from BCM via CAN communication. |
| THFT HRN REQ [Off/On] | | Displays the status of the theft warning horn request signal received from BCM via CAN communication. |
| HORN CHIRP [Off/On] | | Displays the status of the horn reminder signal received from BCM via CAN communication. |
| HOOD SW 2 [Off/On] | | Displays the status of the hood switch 2 judged by IPDM E/R. |

ACTIVE TEST

| Test item | Operation | Description |
|------------------|-----------|--|
| CORNERING LAMP | LH | NOTE: This item is indicated, but cannot be tested. |
| | RH | |
| HORN | On | Operates horn relay for 20 ms. |
| REAR DEFOGGER | Off | OFF |
| | On | Operates the rear window defogger relay. |
| FRONT WIPER | Off | OFF |
| | Lo | Operates the front wiper relay. |
| | Hi | Operates the front wiper relay and front wiper high relay. |
| MOTOR FAN* | 1 | OFF |
| | 2 | Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module. |
| | 3 | Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module. |
| | 4 | Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module. |
| HEAD LAMP WASHER | On | Operates the headlamp washer relay for 1 second. |

DIAGNOSIS SYSTEM (IPDM E/R)

[IPDM E/R]

< SYSTEM DESCRIPTION >

| Test item | Operation | Description |
|----------------|-----------|---|
| EXTERNAL LAMPS | Off | OFF |
| | TAIL | Operates the tail lamp relay. |
| | Lo | Operates the headlamp low relay. |
| | Hi | Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals. |
| | Fog | Operates the front fog lamp relay. |

*: Operates while the engine is running.

ECU DIAGNOSIS INFORMATION

IPDM E/R

Reference Value

INFOID:000000009013004

VALUES ON THE DIAGNOSIS TOOL

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

| Monitor Item | Condition | | Value/Status |
|---------------|---|--|--------------|
| RAD FAN REQ | Engine idle speed | Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc. | 0 – 100 % |
| AC COMP REQ | Engine running | A/C switch OFF | Off |
| | | A/C switch ON (Compressor is operating) | On |
| TAIL&CLR REQ | Lighting switch OFF | | Off |
| | Lighting switch 1ST, 2ND or AUTO (Light is illuminated) | | On |
| HL LO REQ | Lighting switch OFF | | Off |
| | Lighting switch 2ND or AUTO (Light is illuminated) | | On |
| HL HI REQ | Lighting switch 2ND or AUTO (Light is illuminated) | Lighting switch other than HI and PASS | Off |
| | | Lighting switch HI or PASS | On |
| FR FOG REQ | Lighting switch 2ND or AUTO (Light is illuminated) | Front fog lamp switch OFF | Off |
| | | Front fog lamp switch ON | On |
| FR WIP REQ | Ignition switch ON | Front wiper switch OFF | Stop |
| | | Front wiper switch INT | 1LOW |
| | | Front wiper switch LO | Low |
| | | Front wiper switch HI | Hi |
| WIP AUTO STOP | Ignition switch ON | Front wiper stop position | STOP P |
| | | Any position other than front wiper stop position | ACT P |
| WIP PROT | Ignition switch ON | Front wiper operates normally. | Off |
| | | Front wiper stops at fail-safe operation. | BLOCK |
| IGN RLY1 -REQ | Ignition switch OFF or ACC | | Off |
| | Ignition switch ON | | On |
| IGN RLY | Ignition switch OFF or ACC | | Off |
| | Ignition switch ON | | On |
| PUSH SW | Release the push-button ignition switch | | Off |
| | Press the push-button ignition switch | | On |
| INTER/NP SW | Ignition switch ON | Selector lever in any position other than P or N | Off |
| | | Selector lever in P or N position | On |
| ST RLY CONT | Ignition switch ON | | Off |
| | At engine cranking | | On |

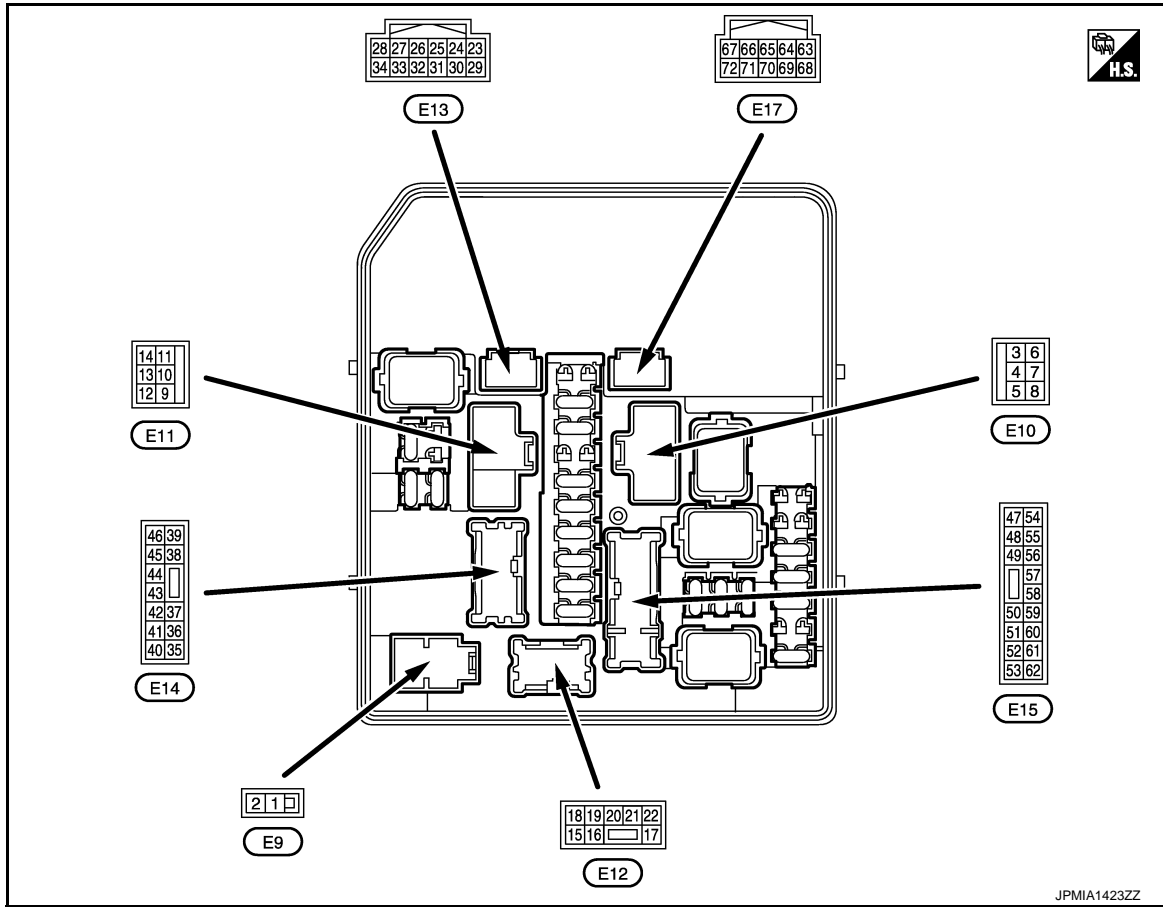
IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R]

| Monitor Item | Condition | Value/Status |
|---------------|---|-----------------|
| IHBT RLY -REQ | Ignition switch ON | Off |
| | At engine cranking | On |
| ST/INHI RLY | Ignition switch ON | Off |
| | At engine cranking | INHI ON → ST ON |
| | The status of starter relay or starter control relay cannot be recognized by the battery voltage malfunction, etc. when the starter relay is ON and the starter control relay is OFF. | UNKWN |
| DETENT SW | Ignition switch ON | Off |
| | Release the selector lever with selector lever in P position. | On |
| S/L RLY -REQ | NOTE: The item is indicated, but not monitored. | Off |
| S/L STATE | NOTE: The item is indicated, but not monitored. | UNLK |
| OIL P SW | Ignition switch OFF or ACC | Open |
| | Ignition switch ON (engine running) | |
| | Ignition switch ON (engine stopped) | Close |
| HOOD SW | Close the hood | Off |
| | Open the hood | On |
| HL WASHER REQ | Not operating | Off |
| | Headlamp washer operating | On |
| THFT HRN REQ | Not operation | Off |
| | <ul style="list-style-type: none"> • Panic alarm is activated • Theft warning alarm is activated | On |
| HORN CHIRP | Not operation | Off |
| | Door locking with Intelligent Key (horn chirp mode) | On |
| HOOD SW 2 | Close the hood | Off |
| | Open the hood | On |

TERMINAL LAYOUT



PHYSICAL VALUES

| Terminal NO. (Wire color) | | Description | | Condition | Value (Approx.) | |
|------------------------------|--------|-----------------------------|------------------|--------------------------------|---------------------------------|-----|
| + | - | Signal name | Input/ Output | | | |
| 1 (W) | Ground | Battery power supply | Input | Ignition switch OFF | Battery voltage | |
| 2 (G) | Ground | Battery power supply | Input | Ignition switch OFF | Battery voltage | |
| 3 (R) | Ground | Starter motor | Output | Ignition switch ON | 0 V | |
| | | | | At engine cranking | Battery voltage | |
| 4 (L) | Ground | Battery power supply | Input | Ignition switch OFF | Battery voltage | |
| 5 (P/L) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | 0 V | |
| | | | | Ignition switch ON | Battery voltage | |
| 7 (W/G) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | 0 V | |
| | | | | Ignition switch ON | Battery voltage | |
| 8 (W) | Ground | Battery power supply | Input | Ignition switch OFF | Battery voltage | |
| 9 (B) | Ground | Ground | — | Ignition switch ON | 0 V | |
| 14 (L) | Ground | Rear window defogger | Output | Ignition switch ON | Rear window defogger switch OFF | 0 V |
| | | | | Rear window defogger switch ON | Battery voltage | |

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PCS

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R]

| Terminal NO. (Wire color) | | Description | | Condition | | Value (Approx.) |
|------------------------------|--------|-------------------------------|------------------|---|---|--------------------|
| | | Signal name | Input/ Output | | | |
| + | - | | | | | |
| 18 (B) | Ground | Ground | — | Ignition switch ON | | 0 V |
| 19 (V) | Ground | Front fog lamp (RH) | Output | Lighting switch 2ND or AUTO (Light is illuminated) | Front fog lamp switch OFF | 0 V |
| | | | | | Front fog lamp switch ON | Battery voltage |
| 20 (W) | Ground | Front fog lamp (LH) | Output | Lighting switch 2ND or AUTO (Light is illuminated) | Front fog lamp switch OFF | 0 V |
| | | | | | Front fog lamp switch ON | Battery voltage |
| 21 (L) | Ground | Headlamp washer relay control | Output | Ignition switch ON | Headlamp washer activated | 0 V |
| | | | | | Headlamp washer deactivated | 12 V |
| 23 (GR/R) | Ground | Cranking request | Output | Select lever P or N (Ignition switch ON) | | 0 V |
| | | | | Select lever in any position other than P or N (Ignition switch ON) | | 12 V |
| | | | | Engine running | | 12 V |
| 24 (W/G) | Ground | Oil pressure switch | Input | Ignition switch ON | Engine stopped | 0 V |
| | | | | | Engine running | 12 V |
| 25 (L/Y) | Ground | Front wiper stop position | Input | Ignition switch ON | Front wiper stop position | 0 V |
| | | | | | Any position other than front wiper stop position | 12 V |
| 26 (P) | Ground | CAN-L | Input/ Output | — | | — |
| 27 (L) | Ground | CAN-H | Input/ Output | — | | — |
| 30 (R/W) | Ground | Starter relay control | Output | • Ignition switch OFF or ACC • At engine cranking | | 0 V |
| | | | | • Ignition switch ON • Engine running | | 12 V |
| 32 (LG) | Ground | Hood switch 1 | Input | Close the hood | | 12 V |
| | | | | Open the hood | | 0 V |
| 33 (R) | Ground | Alternator control | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | 6 V |
| 34 (G) | Ground | Horn relay control | Output | The horn is deactivated | | Battery voltage |
| | | | | The horn is activated | | 0 V |
| 35 (W) | Ground | ECM relay power supply | Output | Ignition switch OFF (More than a few seconds after turning ignition switch OFF) | | 0 V |
| | | | | • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) | | Battery voltage |
| 36 (V) | Ground | ECM relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 37 (L) | Ground | Parking lamp (RH) | Output | Ignition switch ON | Lighting switch OFF | 0 V |
| | | | | | Lighting switch 1ST | Battery voltage |

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R]

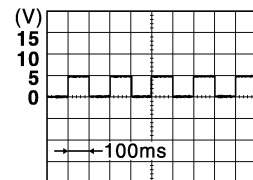
| Terminal NO. (Wire color) | | Description | | Condition | | Value (Approx.) | |
|------------------------------|--------|---|------------------|--|---|--------------------|-----|
| | | Signal name | Input/ Output | | | | |
| + | - | | | | | | |
| 38 (Y) | Ground | Tail lamp (RH) | Output | Ignition switch ON | Lighting switch OFF | 0 V | A |
| | | | | | Lighting switch 1ST | Battery voltage | B |
| 39 (L/B) | Ground | Front wiper HI | Output | Ignition switch ON | Front wiper switch OFF | 0 V | C |
| | | | | | Front wiper switch LO | 9 V | |
| | | | | | Front wiper switch HI | Battery voltage | |
| 41 (L/G) | Ground | ECM relay control | Output | | Ignition switch OFF (More than a few seconds after turning ignition switch OFF) | Battery voltage | D |
| | | | | | <ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) | 0 - 1.5 V | E |
| 42 (L) | Ground | Battery power supply | Output | | Ignition switch OFF (More than a few seconds after turning ignition switch OFF) | 0 V | F |
| | | | | | <ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) | Battery voltage | G |
| 43 (LG) | Ground | Parking lamp (LH) | Output | Ignition switch ON | Lighting switch OFF | 0 V | H |
| | | | | | Lighting switch 1ST | Battery voltage | |
| 44 (L/W) | Ground | Tail lamp (LH), license plate lamp | Output | Ignition switch ON | Lighting switch OFF | 0 V | I |
| | | | | | Lighting switch 1ST | Battery voltage | |
| 45 (Y/R) | Ground | Front wiper LO | Output | Ignition switch ON | Front wiper switch OFF | 0 V | J |
| | | | | | Front wiper switch LO | Battery voltage | |
| 48 (BR) | Ground | P/N position | Input | | Select lever in any position other than P or N (Ignition switch ON) | 0 V | K |
| | | | | | Select lever P or N (Ignition switch ON) | 12 V | |
| 49 (R) | Ground | Headlamp HI (RH) | Output | Lighting switch 2ND or AUTO (Light is illuminated) | Lighting switch other than HI and PASS | 0 V | L |
| | | | | | <ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS | Battery voltage | |
| 50 (LG/B) | Ground | Headlamp HI (LH) | Output | Lighting switch 2ND or AUTO (Light is illuminated) | Lighting switch other than H and PASS | 0 V | PCS |
| | | | | | <ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS | Battery voltage | |
| 51 (BR/Y) | Ground | Headlamp LO (LH) | Output | | Lighting switch OFF | 0 V | N |
| | | | | | Lighting switch 2ND or AUTO (light is illuminated) | Battery voltage | |
| 52 (W) | Ground | Headlamp LO (RH) | Output | | Lighting switch OFF | 0 V | O |
| | | | | | Lighting switch 2ND or AUTO (light is illuminated) | Battery voltage | |
| 55 (O) | Ground | Throttle control motor relay power supply | Output | | Ignition switch OFF (More than a few seconds after turning ignition switch OFF) | 0 V | P |
| | | | | | <ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) | Battery voltage | |

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R]

| Terminal NO. (Wire color) | | Description | | Condition | | Value (Approx.) |
|------------------------------|--------|---------------------------------------|------------------|---|--|---|
| | | Signal name | Input/ Output | | | |
| + | - | | | | | |
| 56 (L) | Ground | A/C compressor power supply | Output | Engine running | A/C switch OFF | 0 V |
| | | | | | A/C switch ON (A/C compressor is operating) | Battery voltage |
| 57 (V) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 58 (BR/R) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 59 (W/B) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 60 (V/R) | Ground | Throttle control motor relay control | Output | Ignition switch ON → OFF | | 0 - 1.0 V ↓ Battery voltage ↓ 0 V |
| | | | | Ignition switch ON | | 0 - 1.0 V |
| 61 (W) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 62 (SB) | Ground | Ignition relay power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 64 (G/Y) | Ground | A/T shift selector (detention switch) | Input | Ignition switch ON | Select lever P | 0 V |
| | | | | | Select lever in any position other than P | 12 V |
| 66 (SB) | Ground | Push-button ignition switch | Input | Press the push-button ignition switch | | 0 V |
| | | | | Release the push-button ignition switch | | 12 V |
| 68 (O) | Ground | Ignition relay monitor | Input | Ignition switch OFF or ACC | | 12 V |
| | | | | Ignition switch ON | | 0 V |
| 69 (W/B) | Ground | Ignition power supply | Output | Ignition switch OFF or ACC | | 0 V |
| | | | | Ignition switch ON | | Battery voltage |
| 71 (BR) | Ground | Hood switch 2 | Input | Close the hood | | 12 V |
| | | | | Open the hood | | 0 V |
| 72 (Y/R) | Ground | Cooling fan control | Output | Engine running | OFF | 5 V |
| | | | | | ACC | 0 V |
| | | | | | ON | |



JMMIA0404GB

2.5 V

Fail-safe

INFOID:000000009013005

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

| Control part | Fail-safe operation |
|----------------|---|
| Cooling fan | <ul style="list-style-type: none"> • Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. • Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. |
| A/C compressor | A/C relay OFF |
| Alternator | Transmits the power generation command signal (PWM signal) 0% |

If No CAN Communication Is Available With BCM

| Control part | Fail-safe operation |
|---|---|
| Headlamp | <ul style="list-style-type: none"> • Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF |
| <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Illumination • Tail lamp • Side marker lamp | <ul style="list-style-type: none"> • Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF |
| Front wiper motor | <ul style="list-style-type: none"> • The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Return automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stops in the other position than stop position. |
| Front fog lamp | Front fog lamp relay OFF |
| Horn | Horn OFF |
| Ignition relay | The status just before activation of fail-safe is maintained. |
| Starter motor | Starter control relay OFF |

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

| Voltage judgment | | IPDM E/R judgment | Operation |
|-----------------------------|-------------------------------------|---------------------------|--|
| Ignition relay contact side | Ignition relay excitation coil side | | |
| ON | ON | Ignition relay ON normal | — |
| OFF | OFF | Ignition relay OFF normal | — |
| ON | OFF | Ignition relay ON stuck | <ul style="list-style-type: none"> • Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes |
| OFF | ON | Ignition relay OFF stuck | Detects DTC “B2099: IGN RELAY OFF” |

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal. When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

| Ignition switch | Front wiper switch | Front wiper stop position signal |
|-----------------|--------------------|--|
| ON | OFF | The front wiper stop position signal (stop position) cannot be input for 10 seconds. |
| | ON | The front wiper stop position signal does not change for 10 seconds. |

NOTE:

This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:000000009013006

NOTE:

- The details of time display are as follows.
 - CRNT: A malfunction is detected now.
 - PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame data).
 - The number is 0 when is detected now.
 - The number increases like 1 → 2 ... 38 → 39 after returning to the normal condition whenever IGN OFF → ON.
 - The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

×: Applicable


| CONSULT display | Fail-safe | Refer to |
|--|-----------|-------------------------|
| No DTC is detected. further testing may be required. | — | — |
| U1000: CAN COMM CIRCUIT | × | PCS-26 |
| B2098: IGN RELAY ON | × | PCS-27 |
| B2099: IGN RELAY OFF | — | PCS-28 |
| B209F: CRANK REQ CIR OPEN | — | SEC-90 |
| B20A0: CRANK REQ CIR SHORT | — | SEC-92 |
| B210B: START CONT RLY ON | — | SEC-94 |
| B210C: START CONT RLY OFF | — | SEC-95 |
| B210D: STARTER RELAY ON | — | SEC-96 |
| B210E: STARTER RELAY OFF | — | SEC-97 |
| B210F: INTRLCK/PNP SW ON | — | SEC-99 |
| B2110: INTRLCK/PNP SW OFF | — | SEC-101 |

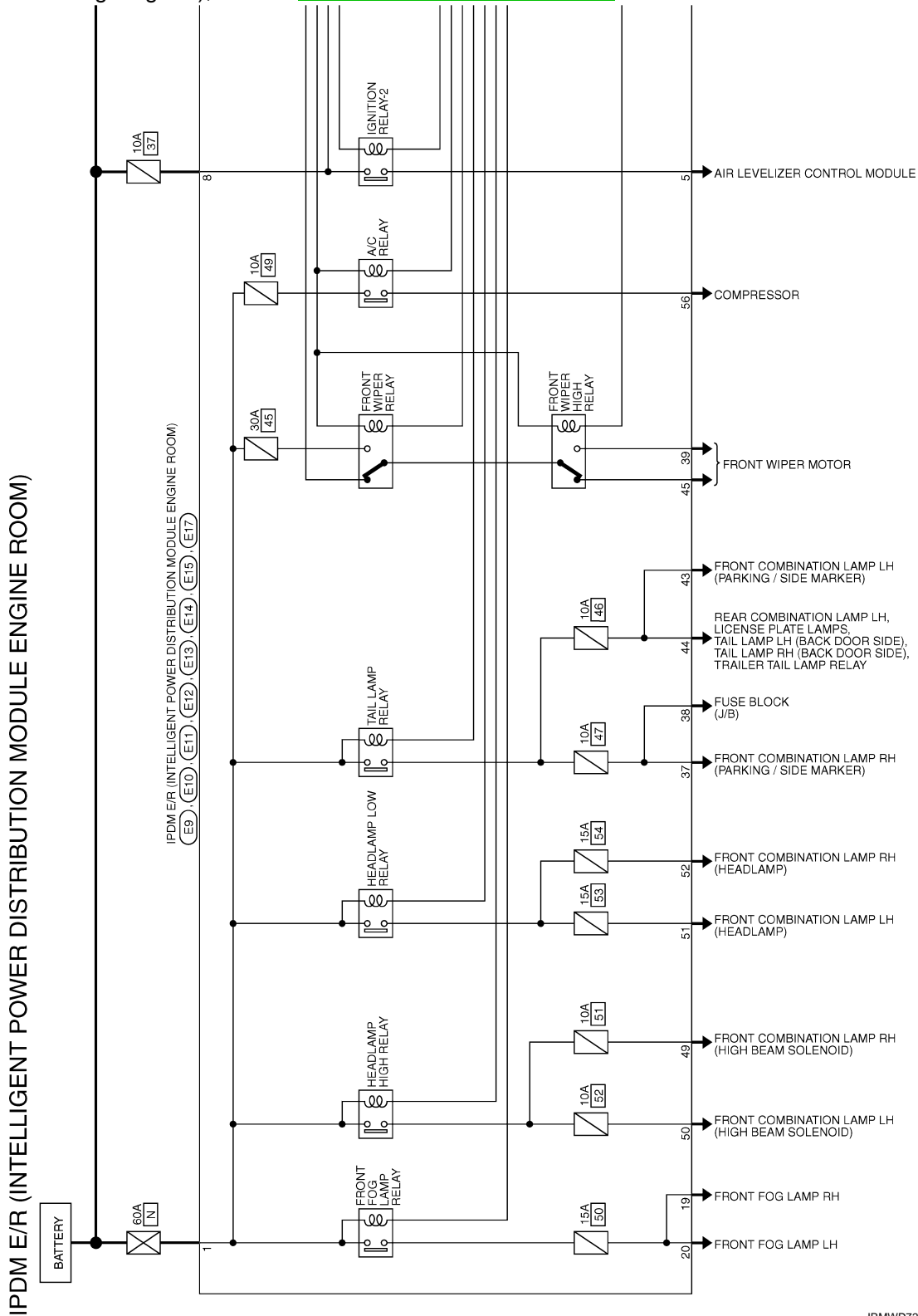
WIRING DIAGRAM

IPDM E/R

Wiring Diagram

INFOID:000000009013007

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12. "Connector Information"](#).

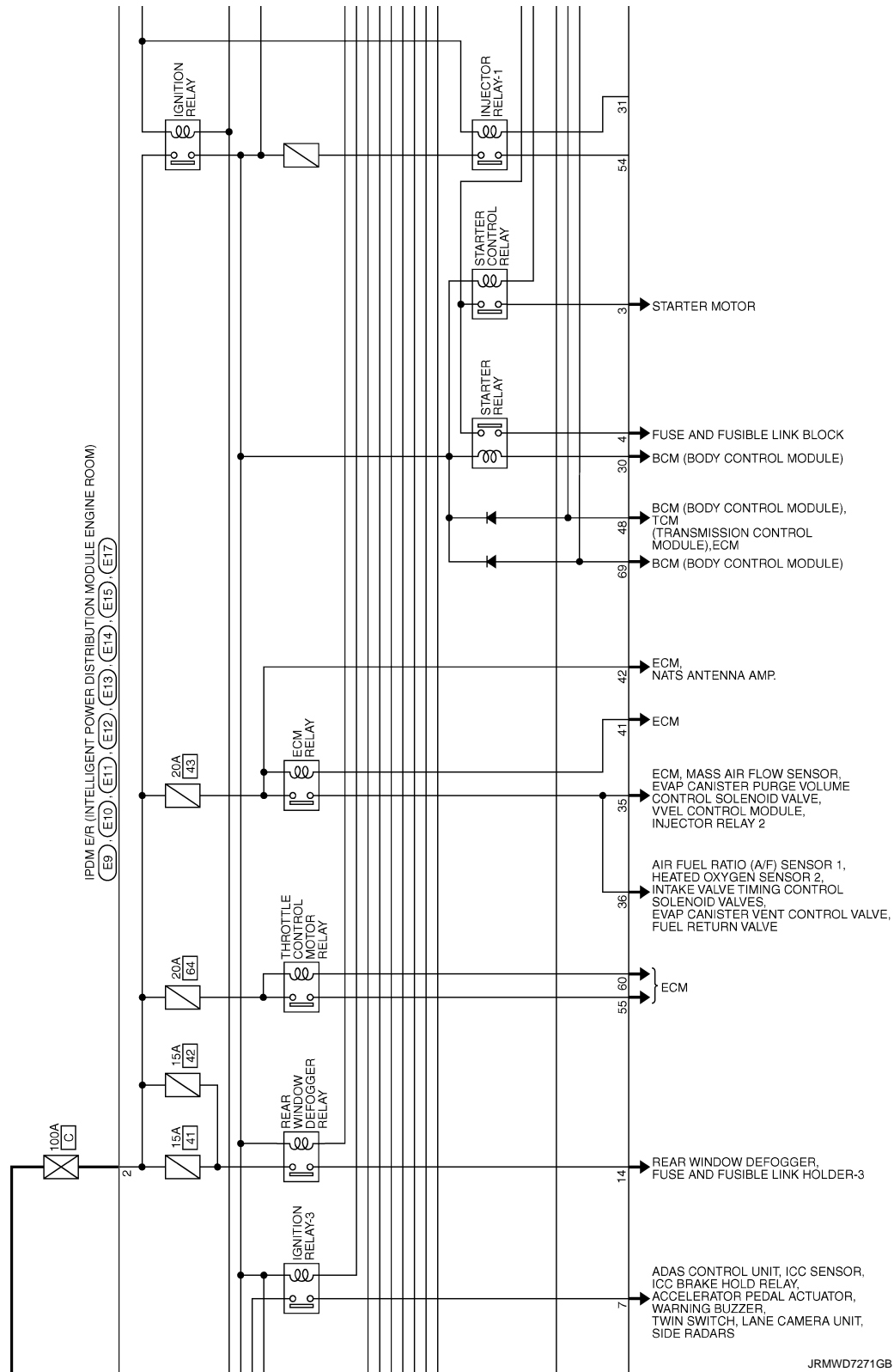


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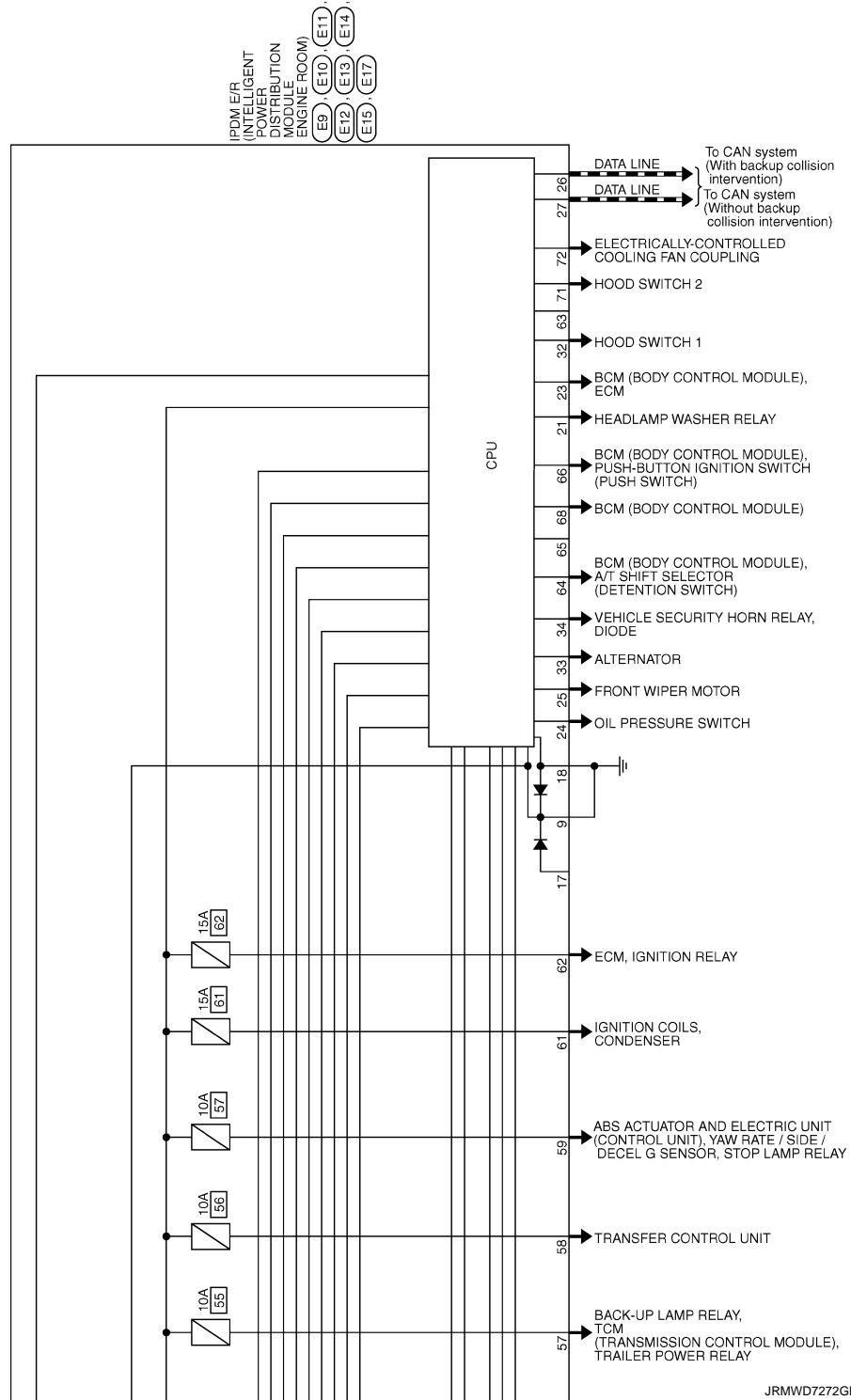
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DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000009013008

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, 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 Signal Chart. Refer to [LAN-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

DTC Logic

INFOID:000000009013009

DTC DETECTION LOGIC

| DTC | CONSULT display description | DTC Detection Condition | Possible cause |
|-------|-----------------------------|--|--------------------------|
| U1000 | CAN COMM CIRCUIT | When IPDM E/R cannot communicate CAN communication signal continuously for 2 seconds or more | CAN communication system |

Diagnosis Procedure

INFOID:000000009013010

1. PERFORM SELF DIAGNOSTIC

1. Turn the ignition switch ON and wait for 2 seconds or more.
2. Check "Self Diagnostic Result" of IPDM E/R.

Is DTC "U1000" displayed?

- YES >> Refer to [LAN-22, "Trouble Diagnosis Flow Chart"](#).
 NO >> Refer to [GI-43, "Intermittent Incident"](#).

B2098 IGNITION RELAY ON STUCK

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R]

B2098 IGNITION RELAY ON STUCK

Description

INFOID:000000009013011

- IPDM E/R operates the ignition relay when it receives an ignition switch ON signal from BCM via CAN communication.
- Turn the ignition relay OFF by pressing the push-button ignition switch once when the vehicle speed is 4 km/h (2.5 MPH) or less.
- Turn the ignition relay OFF with the following operation when the vehicle speed is more than 4 km/h (2.5 MPH) or when an abnormal condition occurs in CAN communication from the combination meter (Emergency OFF)
 - Press and hold the push-button ignition switch for 2 seconds or more.
 - Press the push-button ignition switch 3 times within 1.5 seconds.

NOTE:

The ignition relay does not turn ON for 3 seconds after emergency OFF even if the push-button ignition switch is pressed.

DTC Logic

INFOID:000000009013012

DTC DETECTION LOGIC

| DTC | CONSULT display description | DTC Detection Condition | Possible causes |
|-------|-----------------------------|---|----------------------------|
| B2098 | IGN RELAY ON | The ignition relay ON is detected for 1 second at ignition switch OFF (CPU monitors the status at the contact and excitation coil circuits of the ignition relay inside it) | Ignition relay malfunction |

Diagnosis Procedure

INFOID:000000009013013

1. PERFORM SELF DIAGNOSIS

1. Turn the ignition switch ON.
2. Erase "Self Diagnostic Result" of IPDM E/R.
3. Turn the ignition switch OFF, and wait for 1 second or more.
4. Turn the ignition switch ON. Check "Self Diagnostic Result" again.

Is DTC "B2098" displayed?

- YES >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation"](#).
- NO >> Refer to [GI-43, "Intermittent Incident"](#).

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B2099 IGNITION RELAY OFF STUCK

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R]

B2099 IGNITION RELAY OFF STUCK

Description

INFOID:000000009013014

- IPDM E/R operates the ignition relay when it receives an ignition switch ON signal from BCM via CAN communication.
- Turn the ignition relay OFF by pressing the push-button ignition switch once when the vehicle speed is 4 km/h (2.5 MPH) or less.
- Turn the ignition relay OFF with the following operation when the vehicle speed is more than 4 km/h (2.5 MPH) or when an abnormal condition occurs in CAN communication from the combination meter (Emergency OFF)
 - Press and hold the push-button ignition switch for 2 seconds or more.
 - Press the push-button ignition switch 3 times within 1.5 seconds.

NOTE:

The ignition relay does not turn ON for 3 seconds after emergency OFF even if the push-button ignition switch is pressed.

DTC Logic

INFOID:000000009013015

DTC DETECTION LOGIC

| DTC | CONSULT display description | DTC Detection Condition | Possible causes |
|-------|-----------------------------|---|----------------------------|
| B2099 | IGN RELAY OFF | The ignition relay OFF is detected for 1 second at ignition switch ON (CPU monitors the status at the contact and excitation coil circuits of the ignition relay inside it) | Ignition relay malfunction |

NOTE:

When IPDM E/R power supply voltage is low (Approx. 7 - 8 V for about 1 second), the "DTC: B2099" may be detected.

Diagnosis Procedure

INFOID:000000009013016

1. PERFORM SELF DIAGNOSIS

1. Turn the ignition switch ON.
2. Erase "Self Diagnostic Result".
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON. Check "Self Diagnostic Result" again.

Is DTC "B2099" displayed?

- YES >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation"](#).
- NO >> Refer to [GI-43, "Intermittent Incident"](#).

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000009013017

1. CHECK FUSES AND FUSIBLE LINK

Check that the following IPDM E/R fuses or fusible links are not blown.

| Signal name | Fuses and fusible link No. |
|----------------------|----------------------------|
| Battery power supply | C (100 A) |
| | N (60 A) |
| | 37 (10 A) |

Is the fuse fusing?

- YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.
 NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

- Turn the ignition switch OFF.
- Disconnect IPDM E/R connector.
- Check voltage between IPDM E/R harness connector and the ground.

| (+) | | (-) | Voltage (Approx.) |
|-----------|----------|--------|-------------------|
| IPDM E/R | | | |
| Connector | Terminal | Ground | Battery voltage |
| E9 | 1 | | |
| | 2 | | |
| E10 | 8 | | |

Is the measurement value normal?

- YES >> GO TO 3.
 NO >> Repair the harness or connector.

3. CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

| IPDM E/R | | Ground | Continuity |
|-----------|----------|--------|------------|
| Connector | Terminal | | |
| E11 | 9 | | Existed |
| E12 | 18 | | |

Does continuity exist?

- YES >> INSPECTION END
 NO >> Repair the harness or connector.

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REMOVAL AND INSTALLATION

IPDM E/R

Removal and Installation

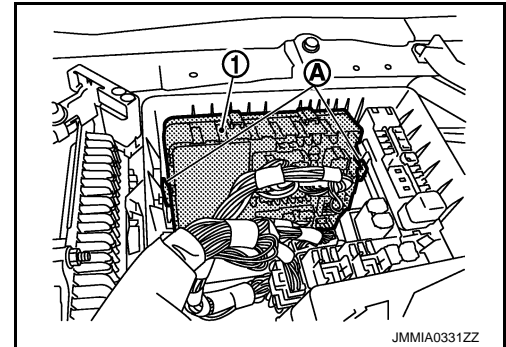
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CAUTION:

IPDM E/R integrated relays are not serviceable parts, and must not be removed from the unit.

REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove the IPDM E/R cover A.
3. Remove the IPDM E/R (1) while pressing the pawls (A).



4. Disconnect the harness connector and then remove the IPDM E/R.

INSTALLATION

Install in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:000000009013019

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. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 3 minutes before performing any service.

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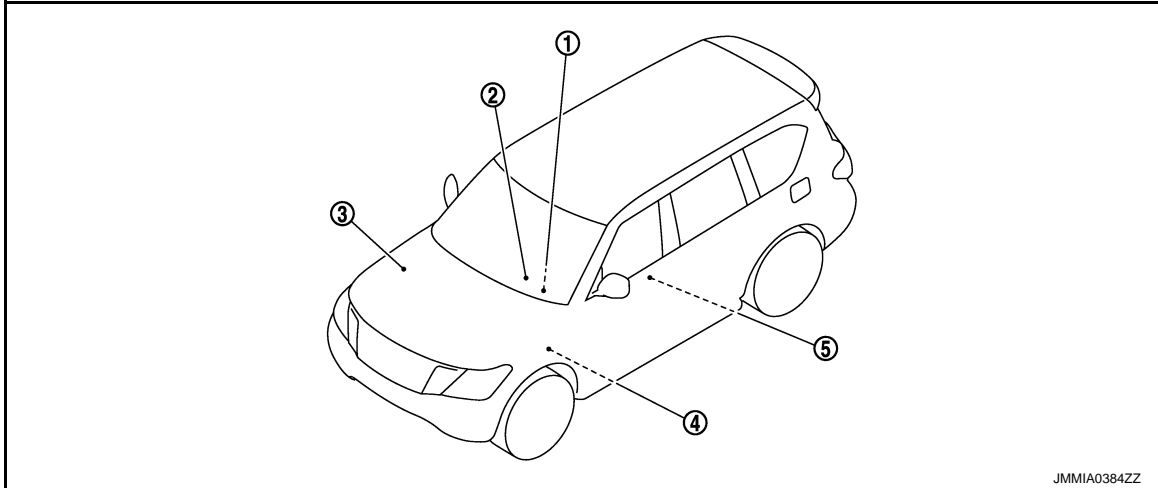


SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000009013020



JMMIA0384ZZ

- | | | |
|--|--|--|
| <p>1. BCM Refer to BCS-4, "BODY CONTROL SYSTEM : Component Parts Location".</p> <p>4. Stop lamp switch</p> | <p>2. Push-button ignition switch</p> <p>5. TCM Refer to TM-10, "A/T CONTROL SYSTEM : Component Parts Location".</p> | <p>3. IPDM E/R Refer to PCS-4, "Component Parts Location".</p> |
|--|--|--|

Component Description

INFOID:000000009013021

| BCM | Reference |
|------------------------------------|------------------------|
| BCM | PCS-32 |
| Ignition relay (Built-in IPDM E/R) | PCS-32 |
| Ignition relay-1 | PCS-33 |
| Accessory relay | PCS-33 |
| Blower relay | PCS-33 |
| Push-button ignition switch | PCS-33 |
| Stop lamp switch | SEC-8 |
| TCM (Transmission range switch) | SEC-8 |

BCM

INFOID:000000009013022

BCM controls the various electrical components and simultaneously supplies power according to the power supply position.
BCM checks the power supply position internally.

Ignition Relay

INFOID:000000009013023

BCM turns ON the following relays to supply ignition power supply or ignition switch ON signal to each ECU when the ignition switch is turned ON.

- Ignition relay-1
- Ignition relay (inside IPDM E/R)
- Blower relay

COMPONENT PARTS

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

BCM compares following status comparing.

- Ignition relay-1 control signal, and power supply position judged by BCM
- Ignition relay (inside IPDM E/R) control request, and Ignition relay (inside IPDM E/R) status

A

Accessory Relay

INFOID:000000009013024

B

BCM turns ON the accessory relays to supply accessory power supply or ignition switch ACC signal to each ECU when the ignition switch is turned ACC or ON.

BCM compares status of accessory relay control signal, and power supply position judged by BCM.

C

Blower Relay

INFOID:000000009013025

BCM turns ON the following relays to supply ignition power supply or ignition switch ON signal to each ECU when the ignition switch is turned ON.

- Ignition relay-1
- Ignition relay (inside IPDM E/R)
- Blower relay

D

E

BCM compares status of blower relay control signal, and power supply position judged by BCM.

Push-Button Ignition Switch

INFOID:000000009013026

F

BCM transmits the change in the power supply position with the push-button ignition switch to IPDM E/R via CAN communication line. IPDM E/R transmits the power supply position status via CAN communication line to BCM.

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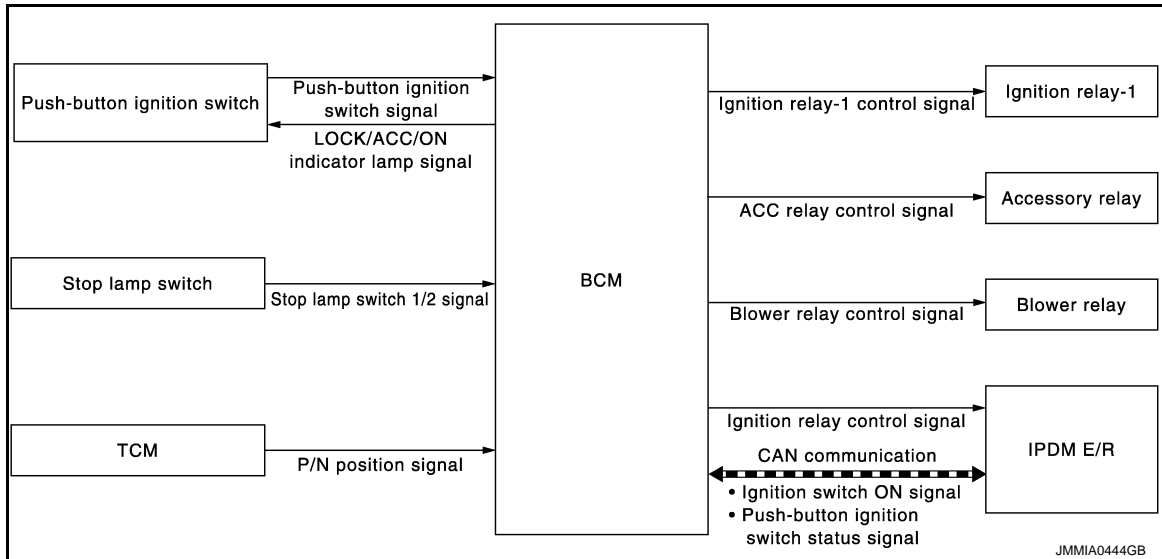
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SYSTEM

POWER DISTRIBUTION SYSTEM

POWER DISTRIBUTION SYSTEM : System Diagram

INFOID:000000009013027



POWER DISTRIBUTION SYSTEM : System Description

INFOID:000000009013028

SYSTEM DESCRIPTION

- PDS (POWER DISTRIBUTION SYSTEM) is the system that BCM controls with the operation of the push-button ignition switch and performs the power distribution to each power circuit. This system is used instead of the mechanical power supply changing mechanism with the operation of the conventional key cylinder.
- The push-button ignition switch can be operated when Intelligent Key is in the following condition. Refer to Engine Start Function for details.
 - Intelligent Key is in the detection area of the inside key antenna.
 - Intelligent Key backside is contacted to push-button ignition switch.
- The push-button ignition switch operation is input to BCM as a signal. BCM changes the power supply position according to the status and operates the following relays to supply power to each power circuit.
 - Ignition relay (inside IPDM E/R)
 - Ignition relay-1
 - ACC relay
 - Blower relay

NOTE:

- The engine switch operation changes due to the conditions of brake pedal, selector lever and vehicle speed.
- The power supply position can be confirmed with the lighting of the indicators near the push-button ignition switch.

BATTERY SAVER SYSTEM

When all the following conditions are met for 60 minutes, the battery saver system will cut off the power supply to prevent battery discharge.

- The ignition switch is in the ACC position
- All doors are closed
- Selector lever is in the P position

Reset Condition of Battery Saver System

In order to prevent the battery from discharging, the battery saver system will cut off the power supply when all doors are closed, the selector lever is on P position and the ignition switch is left on ACC position for 1 hour. If any of the following conditions are met the battery saver system is released and the steering will change automatically to lock position from OFF position.

- Opening any door
- Operating with door request switch on door lock
- Operating with Intelligent Key on door lock

Press push-button ignition switch and ignition switch will change to ACC position from OFF position.

SYSTEM

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

POWER SUPPLY POSITION CHANGE TABLE BY PUSH-BUTTON IGNITION SWITCH OPERATION

The power supply position changing operation can be performed with the following operations.

NOTE:

- When an Intelligent Key is within the detection area of inside key antenna and when Intelligent Key backside is contacted to push-button ignition switch, it is equivalent to the operations below.
- When starting the engine, the BCM monitors under the engine start conditions,
 - Brake pedal operating condition
 - Selector lever position
 - Vehicle speed

Vehicle speed: less than 4 km/h (2.5 MPH)

| Power supply position | Engine start/stop condition | | Push-button ignition switch operation frequency |
|--|-----------------------------|---------------------------------|---|
| | Selector lever position | Brake pedal operation condition | |
| OFF → ACC | — | Not depressed | 1 |
| OFF → ACC → ON | — | Not depressed | 2 |
| OFF → ACC → ON → OFF | — | Not depressed | 3 |
| OFF → START ACC → START ON → START | P or N position | Depressed | 1 |
| Engine is running → OFF | — | — | 1 |

Vehicle speed: 4 km/h (2.5 MPH) or more

| Power supply position | Engine start/stop condition | | Push-button ignition switch operation frequency |
|---|-----------------------------|---------------------------------|---|
| | Selector lever position | Brake pedal operation condition | |
| Engine is running → ACC | — | — | Emergency stop operation |
| Engine stall return operation while driving | N position | Not depressed | 1 |

Emergency stop operation

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times or more within 1.5 seconds.

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DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000009325298

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

| Diagnosis mode | Function Description |
|--------------------------|---|
| Work Support | Changes the setting for each system function. |
| Self Diagnostic Result | Displays the diagnosis results judged by BCM. Refer to BCS-57, "DTC Index" . |
| CAN Diag Support Monitor | Monitors the reception status of CAN communication viewed from BCM. |
| Data Monitor | The BCM input/output signals are displayed. |
| Active Test | The signals used to activate each device are forcibly supplied from BCM. |
| Ecu Identification | The BCM part number is displayed. |
| Configuration | <ul style="list-style-type: none"> Read and save the vehicle specification. Write the vehicle specification when replacing BCM. |

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

×: Applicable item

| System | Sub system selection item | Diagnosis mode | | |
|---|---------------------------|----------------|--------------|-------------|
| | | Work Support | Data Monitor | Active Test |
| Door lock | DOOR LOCK | × | × | × |
| Rear window defogger | REAR DEFOGGER | | × | × |
| Warning chime | BUZZER | | × | × |
| Interior room lamp timer | INT LAMP | × | × | × |
| Exterior lamp | HEAD LAMP | × | × | × |
| Wiper and washer | WIPER | × | × | × |
| Turn signal and hazard warning lamps | FLASHER | × | × | × |
| — | AIR CONDITONER* | | × | × |
| <ul style="list-style-type: none"> Intelligent Key system Engine start system | INTELLIGENT KEY | × | × | × |
| Combination switch | COMB SW | | × | |
| Body control system | BCM | × | | |
| IVIS | IMMU | × | × | × |
| Interior room lamp battery saver | BATTERY SAVER | × | × | × |
| Back door | TRUNK | | × | |
| Vehicle security system | THEFT ALM | × | × | × |
| RAP system | RETAINED PWR | | × | |
| Signal buffer system | SIGNAL BUFFER | | × | × |
| — | AIR PRESSURE MONITOR* | × | × | × |

*: This item is indicated, but not used.

FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

| CONSULT screen item | Indication/Unit | Description | |
|---------------------|---|---|--|
| Vehicle Speed | km/h | Vehicle speed of the moment a particular DTC is detected | |
| Odo/Trip Meter | km | Total mileage (Odometer value) of the moment a particular DTC is detected | |
| Vehicle Condition | SLEEP>LOCK | Power position status of the moment a particular DTC is detected | While turning BCM status from low power consumption mode to normal mode (Power supply position is "LOCK") |
| | SLEEP>OFF | | While turning BCM status from low power consumption mode to normal mode (Power supply position is "OFF".) |
| | LOCK>ACC | | While turning power supply position from "LOCK" to "ACC" |
| | ACC>ON | | While turning power supply position from "ACC" to "IGN" |
| | RUN>ACC | | While turning power supply position from "RUN" to "ACC" (Vehicle is stopping and selector lever is except P position.) |
| | CRANK>RUN | | While turning power supply position from "CRANKING" to "RUN" (From cranking up the engine to run it) |
| | RUN>URGENT | | While turning power supply position from "RUN" to "ACC" (Emergency stop operation) |
| | ACC>OFF | | While turning power supply position from "ACC" to "OFF" |
| | OFF>LOCK | | While turning power supply position from "OFF" to "LOCK" |
| | OFF>ACC | | While turning power supply position from "OFF" to "ACC" |
| | ON>CRANK | | While turning power supply position from "IGN" to "CRANKING" |
| | OFF>SLEEP | | While turning BCM status from normal mode (Power supply position is "OFF".) to low power consumption mode |
| | LOCK>SLEEP | | While turning BCM status from normal mode (Power supply position is "LOCK".) to low power consumption mode |
| | LOCK | | Power supply position is "LOCK" (Ignition switch OFF with steering is locked.) |
| | OFF | | Power supply position is "OFF" (Ignition switch OFF with steering is unlocked.) |
| | ACC | | Power supply position is "ACC" (Ignition switch ACC) |
| ON | Power supply position is "IGN" (Ignition switch ON with engine stopped) | | |
| ENGINE RUN | Power supply position is "RUN" (Ignition switch ON with engine running) | | |
| CRANKING | Power supply position is "CRANKING" (At engine cranking) | | |
| IGN Counter | 0 - 39 | <p>The number of times that ignition switch is turned ON after DTC is detected</p> <ul style="list-style-type: none"> • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39. | |

INTELLIGENT KEY

INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)

INFOID:000000009013030

WORK SUPPORT

| Monitor item | Description |
|----------------------|---|
| INSIDE ANT DIAGNOSIS | This function allows inside key antenna self-diagnosis |
| LOCK/UNLOCK BY I-KEY | <p>Door lock/unlock function by door request switch mode can be changed to operation in this mode</p> <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

| Monitor item | Description |
|--------------------------|--|
| ENGINE START BY I-KEY | Engine start function mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| TRUNK/GLASS HATCH OPEN | Buzzer reminder function mode by back door opener switch can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| PANIC ALARM SET | Panic alarm button pressing time on Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • MODE 1: 0.5 sec • MODE 2: Non-operation • MODE 3: 1.5 sec |
| TRUNK OPEN DELAY | Back door open button pressing to Intelligent Key button can be selected as per the following in this mode <ul style="list-style-type: none"> • MODE 1: Press and hold • MODE 2: Press twice • MODE 3: Press and hold, or press twice |
| LO- BATT OF KEY FOB WARN | Intelligent Key low battery warning mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| ANTI KEY LOCK IN FUNCTI | Key reminder function mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| HAZARD ANSWER BACK | Hazard reminder function mode by door request switch and Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • Lock Only: Door lock operation only • Unlock Only: Door unlock operation only • Lock/Unlock: Lock and unlock operation • Off: Non-operation |
| ANS BACK I-KEY LOCK | Buzzer reminder function (lock operation) mode by door request switch can be selected from the following with this mode <ul style="list-style-type: none"> • Horn Chirp: Sound horn • Buzzer: Sound Intelligent Key warning buzzer • Off: Non-operation |
| ANS BACK I-KEY UNLOCK | Buzzer reminder function (unlock operation) mode by door request switch can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| SHORT CRANKING OUTPUT | Starter motor can operate during the times below <ul style="list-style-type: none"> • 70 msec • 100 msec • 200 msec |
| CONFIRM KEY FOB ID | It can be checked whether Intelligent Key ID code is registered or not in this mode |
| AUTO LOCK SET | Auto door lock operation time can be changed in this mode <ul style="list-style-type: none"> • MODE 1: OFF • MODE 2: 30 sec • MODE 3: 1 minute • MODE 4: 2 minutes • MODE 5: 3 minutes • MODE 6: 4 minutes • MODE 7: 5 minutes |
| HORN WITH KEYLESS LOCK | Horn reminder function mode by Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

| Monitor item | Description |
|----------------------|--|
| PW DOWN SET | Unlock button pressing time on Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • MODE 1: 3 sec • MODE 2: Non-operation • MODE 3: 5 sec |
| WELCOME LIGHT SELECT | Welcome light function mode can be selected from the following with this mode <ul style="list-style-type: none"> • Puddle/Outside Handle • Room lamp • Head & Tail Lamps (this item is displayed, but cannot be used) • Heart Beat |
| WELCOME LIGHT OP SET | Welcome light function mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |

SELF-DIAG RESULT

Refer to [BCS-57, "DTC Index"](#).

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

| Monitor Item | Condition |
|----------------|--|
| REQ SW -DR | Indicates [On/Off] condition of door request switch (driver side) |
| REQ SW -AS | Indicates [On/Off] condition of door request switch (passenger side) |
| REQ SW -BD/TR | Indicates [On/Off] condition of back door request switch |
| PUSH SW | Indicates [On/Off] condition of push-button ignition switch |
| CLUTCH SW | NOTE: This item is displayed, but cannot be monitored |
| BRAKE SW 1 | Indicates [On/Off]* condition of stop lamp switch power supply |
| BRAKE SW 2 | Indicates [On/Off] condition of stop lamp switch |
| DETE/CANCL SW | Indicates [On/Off] condition of P position |
| SFT PN/N SW | Indicates [On/Off] condition of P or N position |
| S/L -LOCK | NOTE: This item is displayed, but cannot be monitored |
| S/L -UNLOCK | NOTE: This item is displayed, but cannot be monitored |
| S/L RELAY -F/B | NOTE: This item is displayed, but cannot be monitored |
| UNLK SEN -DR | Indicates [On/Off] condition of driver door UNLOCK status |
| PUSH SW -IPDM | Indicates [On/Off] condition of push-button ignition switch |
| IGN RLY1 -F/B | Indicates [On/Off] condition of ignition relay 1 |
| DETE SW -IPDM | Indicates [On/Off] condition of P position |
| SFT PN -IPDM | Indicates [On/Off] condition of P or N position |
| SFT P -MET | Indicates [On/Off] condition of P position |
| SFT N -MET | Indicates [On/Off] condition of N position |
| ENGINE STATE | Indicates [Stop/Stall/Crank/Run] condition of engine states |
| S/L LOCK-IPDM | NOTE: This item is displayed, but cannot be monitored |
| S/L UNLK-IPDM | NOTE: This item is displayed, but cannot be monitored |
| S/L RELAY-REQ | NOTE: This item is displayed, but cannot be monitored |

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DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

| Monitor Item | Condition |
|---------------|---|
| VEH SPEED 1 | Display the vehicle speed signal received from combination meter by numerical value [Km/h] |
| VEH SPEED 2 | Display the vehicle speed signal received from ABS or VDC or TCM by numerical value [Km/h] |
| DOOR STAT-DR | Indicates [LOCK/READY/UNLK] condition of unlock sensor |
| DOOR STAT-AS | Indicates [LOCK/READY/UNLK] condition of passenger side door status |
| ID OK FLAG | Indicates [Set/Reset] condition of key ID |
| PRMT ENG STRT | Indicates [Set/Reset] condition of engine start possibility |
| PRMT RKE STRT | NOTE: This item is displayed, but cannot be monitored |
| TRNK/HAT MNTR | NOTE: This item is displayed, but cannot be monitored |
| RKE-LOCK | Indicates [On/Off] condition of LOCK signal from Intelligent Key |
| RKE-UNLOCK | Indicates [On/Off] condition of UNLOCK signal from Intelligent Key |
| RKE-TR/BD | NOTE: This item is displayed, but cannot be monitored |
| RKE-PANIC | Indicates [On/Off] condition of PANIC button of Intelligent Key |
| RKE-MODE CHG | Indicates [On/Off] condition of MODE CHANGE signal from Intelligent Key |
| RKE OPE COUN1 | When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing |
| RKE OPE COUN2 | NOTE: This item is displayed, but cannot be monitored |

*: OFF is displayed when brake pedal is depressed while brake switch power supply is OFF.

ACTIVE TEST

| Test item | Description |
|----------------|--|
| BATTERY SAVER | This test is able to check interior room lamp operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| OUTSIDE BUZZER | This test is able to check Intelligent Key warning buzzer operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| INSIDE BUZZER | This test is able to check warning chime in combination meter operation <ul style="list-style-type: none"> • Take Out: Take away warning chime sounds when CONSULT screen is touched • Key: Key warning chime sounds when CONSULT screen is touched • Knob: OFF position warning chime sounds when CONSULT screen is touched • Off: Non-operation |
| INDICATOR | This test is able to check warning lamp operation <ul style="list-style-type: none"> • KEY ON: "KEY" Warning lamp illuminates when CONSULT screen is touched • KEY IND: "KEY" Warning lamp blinks when CONSULT screen is touched • Off: Non-operation |
| INT LAMP | This test is able to check interior room lamp operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| LCD | This test is able to check meter display information <ul style="list-style-type: none"> • Engine start information displays when "BP N" on CONSULT screen is touched • Engine start information displays when "BP I" on CONSULT screen is touched • Key ID warning displays when "ID NG" on CONSULT screen is touched • ROTAT: This item is displayed, but cannot be monitored • P position warning displays when "SFT P" on CONSULT screen is touched • INSR: This item is displayed, but cannot be monitored • BATT: This item is displayed, but cannot be monitored • Take away through window warning displays when "NO KY" on CONSULT screen is touched • Take away warning display when "OUTKEY" on CONSULT screen is touched • OFF position warning display when "LK WN" on CONSULT screen is touched |

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

| Test item | Description |
|------------------|--|
| FLASHER | This test is able to check security hazard lamp operation The hazard lamps are activated after "LH/RH/Off" on CONSULT screen is touched |
| P RANGE | This test is able to check A/T shift selector power supply <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| ENGINE SW ILLUMI | This test is able to check push-button ignition switch illumination operation Push-ignition switch illumination illuminates when "ON" on CONSULT screen is touched |
| LOCK INDICATOR | This test is able to check LOCK indicator (push-button ignition switch) operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| ACC INDICATOR | This test is able to check ACC indicator (push-button ignition switch) operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| IGNITION ON IND | This test is able to check ON indicator (push-button ignition switch) operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| HORN | This test is able to check horn operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation |
| TRUNK/BACK DOOR | NOTE: This item is displayed, but cannot be used |

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ECU DIAGNOSIS INFORMATION

BCM

List of ECU Reference

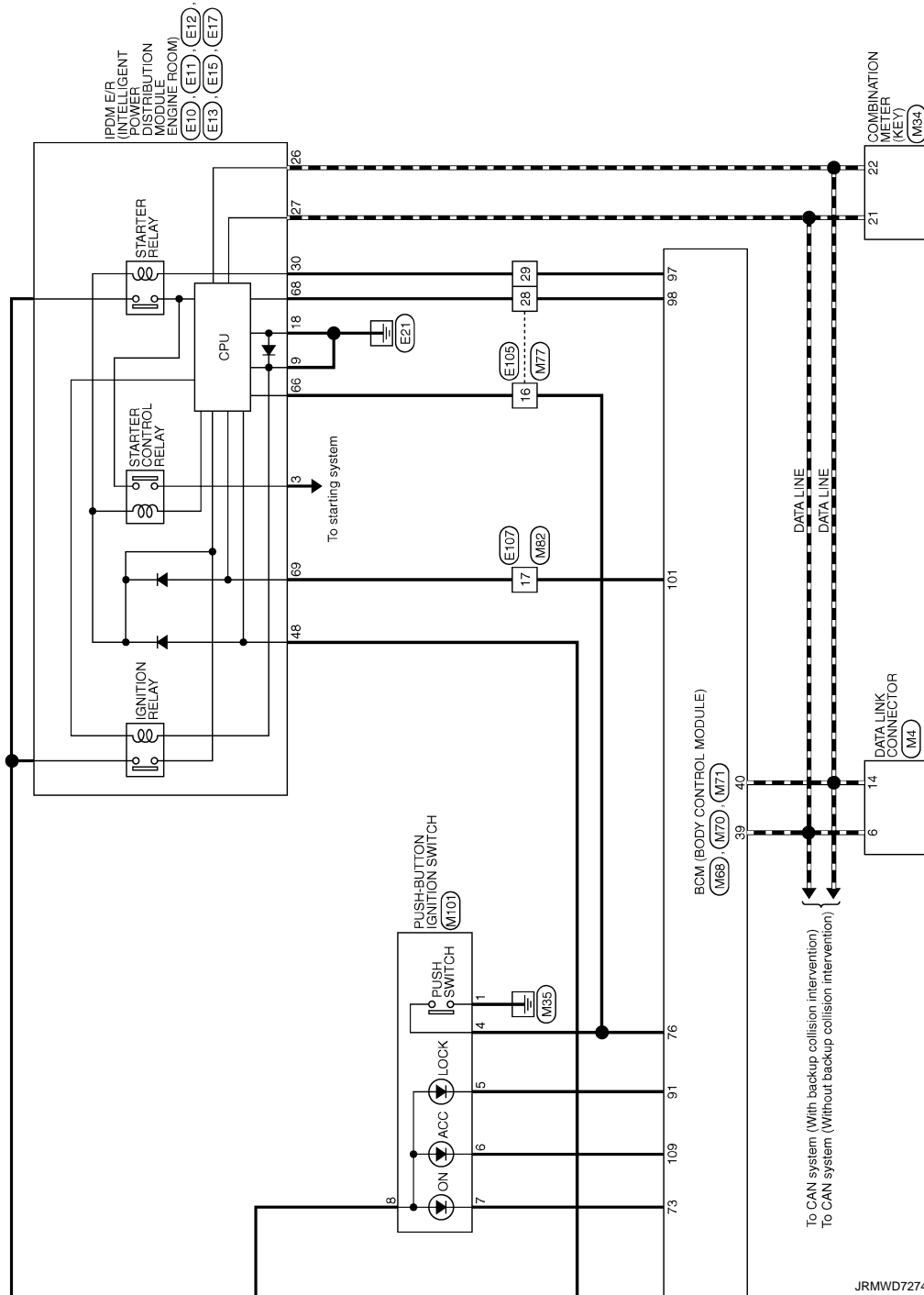
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| ECU | Reference |
|-----|---|
| BCM | BCS-35, "Reference Value" |
| | BCS-56, "Fail-safe" |
| | BCS-57, "DTC Inspection Priority Chart" |
| | BCS-57, "DTC Index" |

POWER DISTRIBUTION SYSTEM

< WIRING DIAGRAM >

[POWER DISTRIBUTION SYSTEM]



JRMWD7274GB

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[POWER DISTRIBUTION SYSTEM]

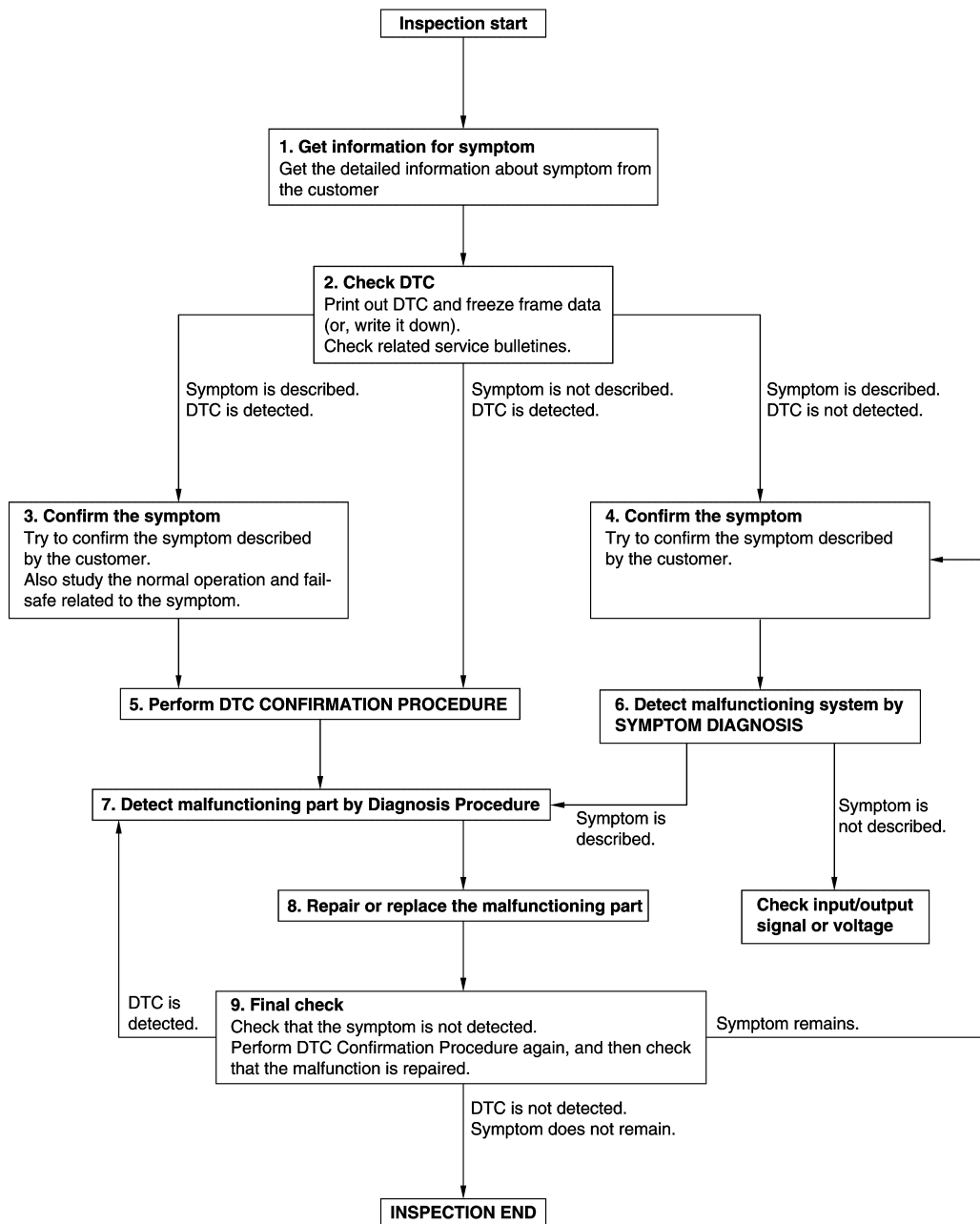
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

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OVERALL SEQUENCE



DETAILED FLOW

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DIAGNOSIS AND REPAIR WORK FLOW

[POWER DISTRIBUTION SYSTEM]

< BASIC INSPECTION >

1. GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the function that is malfunctioning.

>> GO TO 2.

2. CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC and freeze frame data (Print them out using CONSULT.)
 - Erase DTC.
 - Study the relationship between the cause detected by DTC and the symptom described by the customer.
3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail-safe related to the symptom.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time.

If two or more DTCs are detected, refer to [BCS-57, "DTC Inspection Priority Chart"](#), and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIRMATION PROCEDURE.

Is DTC detected?

YES >> GO TO 7.

NO >> Check according to [GI-43, "Intermittent Incident"](#).

6. DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

Is the symptom described?

YES >> GO TO 7.

NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

7. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

DIAGNOSIS AND REPAIR WORK FLOW

[POWER DISTRIBUTION SYSTEM]

< BASIC INSPECTION >

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.

NO >> Check according to [GI-43. "Intermittent Incident"](#).

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
3. Check DTC. If DTC is detected, erase it.

>> GO TO 9.

9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.

When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.

YES-2 >> Symptom remains: GO TO 4.

NO >> Before returning the vehicle to the customer, always erase DTC.

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PCS

B2614 ACC RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

DTC/CIRCUIT DIAGNOSIS

B2614 ACC RELAY CIRCUIT

DTC Logic

INFOID:000000009013034

DTC DETECTION LOGIC

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|---|--|
| B2614 | BCM | An immediate operation of accessory relay is requested by BCM, but there is no response for more than 2 second. | <ul style="list-style-type: none"> • Harness or connectors (Accessory relay circuit is open or shorted) • BCM • Accessory relay |

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn the power supply position to ACC under the following conditions, and wait for 2 second or more.
 - Selector lever is in the P position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-48, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013035

1.CHECK ACCESSORY RELAY POWER SUPPLY-1

1. Turn ignition switch OFF.
2. Disconnect accessory relay.
3. Check voltage between accessory relay harness connector and ground.

| (+) | (-) | Condition | Voltage (V) (Approx.) |
|-----------------------------|--------|-----------------|--------------------------|
| Accessory relay Terminal | | | |
| 1 | Ground | Ignition switch | 0 |
| | | | ACC or ON |

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> GO TO 2.

2.CHECK ACCESSORY RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between accessory relay harness connector and BCM harness connector.

| Accessory relay Terminal | BCM | | Continuity |
|-----------------------------|-----------|----------|------------|
| | Connector | Terminal | |
| 1 | M71 | 96 | Existed |

4. Check continuity between accessory relay harness connector and ground.

B2614 ACC RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

| | | |
|-----------------|--------|-------------|
| Accessory relay | Ground | Continuity |
| Terminal | | |
| 1 | | Not existed |

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).
NO >> Repair or replace harness.

3.CHECK ACCESSORY RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between accessory relay harness connector and ground.

| | | |
|-----------------|--------|------------|
| Accessory relay | Ground | Continuity |
| Terminal | | |
| 2 | | Existed |

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair accessory relay ground circuit.

4.CHECK ACCESSORY RELAY POWER SUPPLY CIRCUIT-2

1. Turn ignition switch ACC.
2. Check voltage between accessory relay harness connector and ground.

| | | |
|-----------------|--------|--------------------------|
| (+) | (-) | Voltage (V) (Approx.) |
| Accessory relay | | |
| Terminal | | |
| 5 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 5.
NO >> Check continuity open or short between accessory relay and battery.

5.CHECK ACCESSORY RELAY

Refer to [PCS-49, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 6.
NO >> Replace accessory relay.

6.CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000009013036

1.CHECK ACCESSORY RELAY

1. Turn ignition switch OFF.
2. Remove accessory relay.

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PCS

B2614 ACC RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

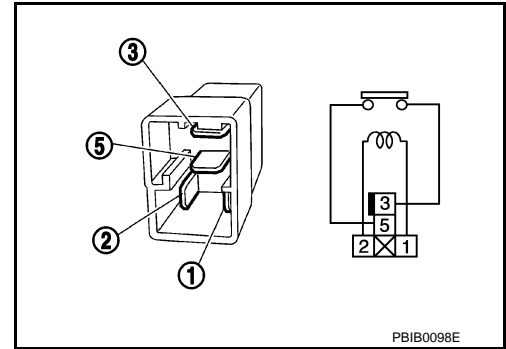
3. Check the continuity between accessory relay terminals.

| Terminals | Condition | Continuity |
|-----------|--|-------------|
| 3 and 5 | 12 V direct current supply between terminals 1 and 2 | Existed |
| | No current supply | Not existed |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accessory relay



B2615 BLOWER RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B2615 BLOWER RELAY CIRCUIT

DTC Logic

INFOID:000000009013037

DTC DETECTION LOGIC

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|---|--|
| B2615 | BCM | BCM detects a difference of signal for 1 second or more between the following items. <ul style="list-style-type: none"> Blower relay ON/OFF request Blower relay feedback | <ul style="list-style-type: none"> Harness or connectors (Blower relay circuit is open or shorted) BCM Blower relay |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON under the following conditions, and wait for 1 second or more.
 - Selector lever is in the P position
 - Do not depress brake pedal
- Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-51. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013038

1. CHECK BLOWER RELAY POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect blower relay.
- Check voltage between blower relay harness connector and ground.

| (+) | (-) | Condition | Voltage (V) (Approx.) |
|--------------------------|--------|-----------------|--------------------------|
| Blower relay Terminal | | | |
| 1 | Ground | Ignition switch | 0 |
| | | | 12 |

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK BLOWER RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connector.
- Check continuity between blower relay harness connector and BCM harness connector.

| Blower relay Terminal | BCM | | Continuity |
|--------------------------|-----------|----------|------------|
| | Connector | Terminal | |
| 1 | M71 | 106 | Existed |

- Check continuity between blower relay harness connector and ground.

| Blower relay Terminal | Ground | Continuity |
|--------------------------|--------|-------------|
| 1 | | |
| 1 | | Not existed |

Is the inspection result normal?

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PCS

B2615 BLOWER RELAY CIRCUIT

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> GO TO 6.
 NO >> Repair or replace harness.

3.CHECK BLOWER RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower relay harness connector and ground.

| Blower relay Terminal | Ground | Continuity |
|--------------------------|--------|------------|
| 2 | | Existed |

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Repair blower relay ground circuit.

4.CHECK BLOWER RELAY POWER SUPPLY CIRCUIT-2

1. Turn ignition switch ON or ACC.
2. Check voltage between blower relay harness connector and ground.

| (+) Blower relay Terminal | (-) Ground | Voltage (V) (Approx.) |
|---------------------------------|---------------|--------------------------|
| 5 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 5.
 NO >> Check continuity open or short between blower relay and battery.

5.CHECK BLOWER RELAY

Refer to [PCS-52, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 6.
 NO >> Replace blower relay.

6.CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000009013039

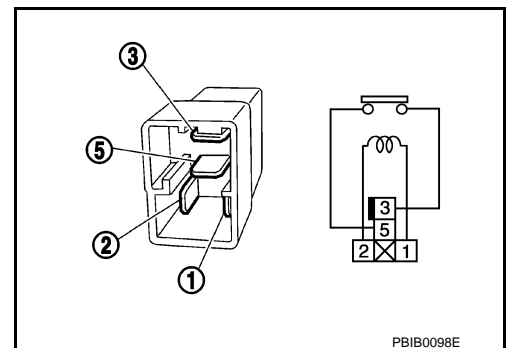
1.CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove blower relay.
3. Check the continuity between blower relay terminals.

| Terminals | Condition | Continuity |
|-----------|--|-------------|
| 3 and 5 | 12 V direct current supply between terminals 1 and 2 | Existed |
| | No current supply | Not existed |

Is the inspection result normal?

- YES >> INSPECTION END
 NO >> Replace blower relay



PBIB0098E

B2616 IGNITION RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B2616 IGNITION RELAY CIRCUIT

DTC Logic

INFOID:000000009013040

DTC DETECTION LOGIC

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|---|--|
| B2616 | BCM | An immediate operation of ignition relay-1 is requested by BCM, but there is no response for more than 1 second | <ul style="list-style-type: none"> Harness or connectors (Ignition relay-1 circuit is open or shorted) BCM Ignition relay-1 |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON under the following conditions, and wait for 1 second or more.
 - Selector lever is in the P position
 - Do not depress brake pedal
- Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-53. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013041

1. CHECK IGNITION RELAY-1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect ignition relay-1.
- Check voltage between ignition relay-1 harness connector and ground.

| (+) | (-) | Condition | Voltage (V) (Approx.) |
|------------------------------|--------|-----------------|--------------------------|
| Ignition relay-1 Terminal | | | |
| 2 | Ground | Ignition switch | 0 |
| | | | 12 |

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> GO TO 2.

2. CHECK IGNITION RELAY-1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connector.
- Check continuity between ignition relay-1 harness connector and BCM harness connector.

| Ignition relay-1 Terminal | BCM | | Continuity |
|------------------------------|-----------|----------|------------|
| | Connector | Terminal | |
| 2 | M71 | 99 | Existed |

- Check continuity between ignition relay-1 harness connector and ground.

| Ignition relay-1 Terminal | Ground | Continuity |
|------------------------------|--------|-------------|
| 2 | | Not existed |

Is the inspection result normal?

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B2616 IGNITION RELAY CIRCUIT

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).
 NO >> Repair or replace harness.

3.CHECK IGNITION RELAY-1 GROUND CIRCUIT

- Turn ignition switch OFF.
- Check continuity between ignition relay-1 harness connector and ground.

| Ignition relay-1 | Ground | Continuity |
|------------------|--------|------------|
| Terminal | | |
| 1 | | Existed |

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Repair ignition relay-1 ground circuit.

4.CHECK IGNITION RELAY-1 POWER SUPPLY CIRCUIT-2

- Turn ignition switch ON.
- Check voltage between ignition relay-1 harness connector and ground.

| (+) | (-) | Voltage (V) (Approx.) |
|------------------|--------|--------------------------|
| Ignition relay-1 | | |
| Terminal | | |
| 5 | Ground | Battery voltage |

Is the inspection result normal?

- YES >> GO TO 5.
 NO >> Check continuity open or short between ignition relay-1 and battery.

5.CHECK IGNITION RELAY-1

Refer to [PCS-54, "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 6.
 NO >> Replace ignition relay-1.

6.CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000009013042

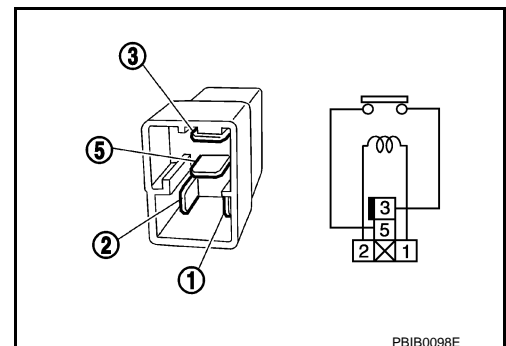
1.CHECK IGNITION RELAY-1

- Turn ignition switch OFF.
- Remove ignition relay-1.
- Check the continuity between ignition relay-1 terminals.

| Terminals | Condition | Continuity |
|-----------|--|-------------|
| 3 and 5 | 12 V direct current supply between terminals 1 and 2 | Existed |
| | No current supply | Not existed |

Is the inspection result normal?

- YES >> INSPECTION END
 NO >> Replace Ignition relay-1.



PBIB0098E

B2618 BCM

DTC Logic

INFOID:000000009013043

DTC DETECTION LOGIC

NOTE:

- If DTC B2618 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [BCS-70, "DTC Logic"](#).
- If DTC B2618 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [BCS-71, "DTC Logic"](#).

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|--|----------------|
| B2618 | BCM | An immediate operation of ignition relay (IPDM E/R) is requested by BCM, but there is no response for more than 1 second | BCM |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.
 - Selector lever is in the P or N position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-55, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013044

1. INSPECTION START

1. Turn ignition switch ON.
2. Select "Self-diagnosis result" of BCM with CONSULT.
3. Touch "ERASE".
4. Perform DTC Confirmation Procedure.
See [PCS-55, "DTC Logic"](#).

Is the 1st trip DTC B2618 displayed again?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#)
- NO >> INSPECTION END

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PCS

B261A PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B261A PUSH-BUTTON IGNITION SWITCH

DTC Logic

INFOID:000000009013045

DTC DETECTION LOGIC

NOTE:

- If DTC B261A is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [BCS-70, "DTC Logic"](#).
- If DTC B261A is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [BCS-71, "DTC Logic"](#).

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|--|--|
| B261A | PUSH-BTN IGN SW | BCM detects a difference of signal for 1 second or more between the following items. <ul style="list-style-type: none"> • Push-button ignition switch signal • Push-button ignition switch status signal (CAN) | <ul style="list-style-type: none"> • Harness or connectors (Push-button ignition switch circuit is open or shorted.) • BCM • IPDM E/R |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Press the push-button ignition switch under the following conditions, and wait for 1 second or more.
 - Selector lever is in the P or N position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-56, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013046

1. CHECK IGNITION SWITCH OUTPUT SIGNAL (PUSH-BUTTON IGNITION SWITCH)

1. Disconnect push-button ignition switch connector and IPDM E/R connector.
2. Check voltage between push-button ignition switch harness connector and ground.

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------------------------|----------|--------|--------------------------|
| Push-button ignition switch | | | |
| Connector | Terminal | Ground | 12 |
| M101 | 4 | | |

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (BCM)

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

| BCM | | Push-button ignition switch | | Continuity |
|-----------|----------|-----------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| M71 | 100 | M101 | 4 | Existed |

3. Check continuity between push-button ignition switch harness connector and ground.

| Push-button ignition switch | | Ground | Continuity |
|-----------------------------|----------|--------|-------------|
| Connector | Terminal | | |
| M101 | 4 | | Not existed |

B261A PUSH-BUTTON IGNITION SWITCH

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).

NO >> Repair or replace harness.

3. CHECK IGNITION SWITCH OUTPUT SIGNAL (IPDM E/R)

Check voltage between IPDM E/R harness connector and ground.

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------|----------|--------|--------------------------|
| IPDM E/R | | | |
| Connector | Terminal | | |
| E17 | 66 | Ground | 12 |

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> GO TO 4.

4. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (IPDM E/R)

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector and push-button ignition switch harness connector.

| IPDM E/R | | Push-button ignition switch | | Continuity |
|-----------|----------|-----------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| E17 | 66 | M101 | 4 | Existed |

3. Check continuity between push-button ignition switch harness connector and ground.

| Push-button ignition switch | | Ground | Continuity |
|-----------------------------|----------|--------|-------------|
| Connector | Terminal | | |
| M101 | 4 | | Not existed |

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness.

5. CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

>> INSPECTION END

PCS

B26F1 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B26F1 IGNITION RELAY

DTC Logic

INFOID:000000009013047

DTC DETECTION LOGIC

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|--|---|
| B26F1 | IGN RELAY OFF | BCM transmits the ignition relay control signal (ON: 0 V) or ignition switch ON signal (ON) (CAN), but does not receives ignition switch ON signal (ON) (CAN) from IPDM E/R. | <ul style="list-style-type: none">• Harness or connectors (Ignition relay circuit is open)• BCM• IPDM E/R |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more.
 - Selector lever is in the P or N position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-58, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013048

1. CHECK IPDM E/R SELF-DIAGNOSTIC RESULT

1. Turn ignition switch ON.
2. Erase the DTC of IPDM E/R.
3. Turn ignition switch OFF.
4. Turn ignition switch ON and check the DTC again.

Is DTC detected?

- YES >> Repair or replace the malfunctioning part. Refer to [PCS-22, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL

Check voltage between BCM harness connector and ground.

| (+) | | (-) | Condition | | Voltage (V) (Approx.) |
|-----------|----------|--------|-----------------|----|--------------------------|
| BCM | | | | | |
| Connector | Terminal | Ground | Ignition switch | ON | 0 |
| M71 | 98 | | | | |

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).

3. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM and IPDM connectors.
3. Check continuity between BCM harness connector and IPDM E/R harness connector.

| BCM | | IPDM E/R | | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| M71 | 98 | E17 | 68 | Existed |

Is the inspection result normal?

- YES >> Replace IPDM E/R.

B26F1 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

NO >> Repair or replace harness.

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B26F2 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B26F2 IGNITION RELAY

DTC Logic

INFOID:000000009013049

DTC DETECTION LOGIC

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|--|--|
| B26F2 | IGN RELAY ON | BCM transmits the ignition relay control signal (OFF: 12 V) or ignition switch ON signal (OFF) (CAN), but does not receives ignition switch ON signal (OFF) (CAN) from IPDM E/R. | <ul style="list-style-type: none"> • Harness or connectors (Ignition relay circuit is short) • BCM • IPDM E/R |

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more.
 - Selector lever is in the P or N position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-60, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013050

1. CHECK IPDM E/R SELF-DIAGNOSTIC RESULT

1. Turn ignition switch ON.
2. Erase the DTC of IPDM E/R.
3. Turn ignition switch OFF.
4. Turn ignition switch ON and check the DTC again.

Is DTC detected?

- YES >> Repair or replace the malfunctioning part. Refer to [PCS-22, "DTC Index"](#).
 NO >> GO TO 2.

2. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL

1. Turn ignition switch OFF.
2. Check voltage between IPDM E/R harness connector and ground.

| (+) | | (-) | Condition | | Voltage (V) (Approx.) |
|-----------|----------|--------|-----------------|------------|--------------------------|
| IPDM E/R | | | | | |
| Connector | Terminal | Ground | Ignition switch | OFF or ACC | 12 |
| E17 | 68 | | | | |

Is the inspection result normal?

- YES >> Replace IPDM E/R.
 NO >> GO TO 3.

3. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT - 1

1. Disconnect BCM and IPDM E/R connectors.
2. Check continuity between IPDM E/R harness connector and ground.

| IPDM E/R | | Ground | Continuity |
|-----------|----------|--------|-------------|
| Connector | Terminal | | |
| E17 | 68 | | Not existed |

Is the inspection result normal?

- YES >> GO TO 4.

B26F2 IGNITION RELAY

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace harness.

4. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT - 2

1. Connect IPDM E/R connectors.
2. Check voltage between IPDM E/R harness connector and ground.

| (+) | | (-) | Condition | | Voltage (V) (Approx.) |
|-----------|----------|--------|-----------------|------------|--------------------------|
| IPDM E/R | | | | | |
| Connector | Terminal | | | | |
| E17 | 68 | Ground | Ignition switch | OFF or ACC | 12 |

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).

NO >> Replace IPDM E/R.

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B26F6 BCM**DTC Logic**

INFOID:000000009013051

DTC DETECTION LOGIC**NOTE:**

- If DTC B26F6 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [BCS-70, "DTC Logic"](#).
- If DTC B26F6 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [BCS-71, "DTC Logic"](#).

| DTC No. | Trouble diagnosis name | DTC detecting condition | Possible cause |
|---------|------------------------|---|----------------|
| B26F6 | BCM | Ignition relay ON signal is not transmitted from IPDM E/R when BCM turns ignition relay ON. | BCM |

DTC CONFIRMATION PROCEDURE**1. PERFORM DTC CONFIRMATION PROCEDURE**

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.
 - Selector lever is in the P or N position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-62, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000009013052

1. INSPECTION START

1. Turn ignition switch ON.
2. Select "Self-diagnosis result" of BCM with CONSULT.
3. Touch "ERASE".
4. Perform DTC Confirmation Procedure.
See [PCS-62, "DTC Logic"](#).

Is DTC detected?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#)
 NO >> INSPECTION END

PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH

Component Function Check

INFOID:000000009013053

1.CHECK FUNCTION

1. Select "PUSH SW" in "Data Monitor" of BCM with CONSULT.
2. Check the push-button ignition switch signal under the following conditions.

| Test item | Condition | Status |
|-----------|--|--------|
| PUSH SW | Push-button ignition switch is pressed | ON |
| | Push-button ignition switch is not pressed | OFF |

Is the indication normal?

- YES >> INSPECTION END.
NO >> Go to [PCS-63, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009013054

1.CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL 1

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector and IPDM E/R connector.
3. Check voltage between push-button ignition switch harness connector and ground.

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------|----------|--------|--------------------------|
| Connector | Terminal | | |
| M101 | 4 | Ground | 12 |

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT 1

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

| BCM | | Push-button ignition switch | | Continuity |
|-----------|----------|-----------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| M71 | 100 | M101 | 4 | Existed |

3. Check continuity between BCM harness connector and ground.

| BCM | | Ground | Continuity |
|-----------|----------|--------|-------------|
| Connector | Terminal | | |
| M71 | 100 | | Not existed |

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).
NO >> Repair or replace harness.

3.CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL 2

Check voltage between IPDM E/R harness connector and ground.

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PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------|----------|--------|--------------------------|
| IPDM E/R | | | |
| Connector | Terminal | Ground | Battery voltage |
| E17 | 66 | | |

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT 2

1. Disconnect BCM connector.
2. Check continuity between IPDM E/R harness connector and push-button ignition switch harness connector.

| IPDM E/R | | Push-button ignition switch | | Continuity |
|-----------|----------|-----------------------------|----------|------------|
| Connector | Terminal | Connector | Terminal | |
| E17 | 66 | M101 | 4 | Existed |

3. Check continuity between IPDM E/R harness connector and ground.

| IPDM E/R | | Ground | Continuity |
|-----------|----------|--------|-------------|
| Connector | Terminal | | |
| E17 | 66 | | Not existed |

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness.

5.CHECK PUSH-BUTTON IGNITION SWITCH GROUND CIRCUIT

Check continuity between push-button ignition switch harness connector and ground.

| Push-button ignition switch | | Ground | Continuity |
|-----------------------------|----------|--------|------------|
| Connector | Terminal | | |
| M101 | 1 | | Existed |

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness.

6.CHECK PUSH-BUTTON IGNITION SWITCH

Refer to [PCS-64, "Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace push-button ignition switch.

7.CHECK INTERMITTENT INCIDENT

Refer to [GI-43, "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000009013055

1.CHECK PUSH-BUTTON IGNITION SWITCH

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector.
3. Check continuity between push-button ignition switch terminals.

PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

| Push-button ignition switch | | Condition | Continuity |
|-----------------------------|---|-------------|-------------|
| Terminal | | | |
| 4 | 1 | Pressed | Existed |
| | | Not pressed | Not existed |

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace push-button ignition switch.

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PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

Description

INFOID:000000009013056

Push-button ignition switch changes the power supply position.
BCM maintains the power supply position status.
BCM changes the power supply position with the operation of the push-button ignition switch.

Component Function Check

INFOID:000000009013057

1.CHECK FUNCTION

Check push-button ignition switch ("LOCK INDICATOR", "ACC INDICATOR" and "IGNITION ON IND") in Active Test of BCM with CONSULT.

| Test item | | Description | |
|----------------------------------|-----|--------------------|---------------------|
| LOCK INDICATOR | ON | Position indicator | Illuminates |
| ACC INDICATOR IGNITION ON IND | OFF | | Does not illuminate |

Is the inspection result normal?

- YES >> INSPECTION END.
NO >> Refer to [PCS-66, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000009013058

1.CHECK PUSH-BUTTON IGNITION SWITCH INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector.
3. Check voltage between push-button ignition switch harness connector and ground.

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------------------------|----------|--------|--------------------------|
| Push-button ignition switch | | | |
| Connector | Terminal | Ground | Battery voltage |
| M101 | 8 | | |

Is the inspection normal?

- YES >> GO TO 2.
NO-1 >> Check 10 A fuse [No.10, located in fuse block (J/B)].
NO-2 >> Check harness for open or short between push-button ignition switch and fuse.

2.CHECK BCM INPUT

1. Connect push-button ignition switch connector.
2. Disconnect BCM connector.
3. Check voltage between BCM connector and ground.

| (+) | | (-) | Voltage (V) (Approx.) |
|-----------|----------|--------|--------------------------|
| BCM | | | |
| Connector | Terminal | Ground | Battery voltage |
| M101 | 73 | | |
| | 91 | | |
| | 109 | | |

Is the inspection normal?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).
NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT

1. Disconnect push-button ignition switch connector.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

| Indicator | BCM | | Push-button ignition switch | | Continuity |
|-----------|-----------|----------|-----------------------------|----------|------------|
| | Connector | Terminal | Connector | Terminal | |
| LOCK | M71 | 91 | M101 | 5 | Existed |
| ACC | | 109 | | 6 | |
| ON | | 73 | | 7 | |

3. Check continuity between BCM harness connector and ground.

| Indicator | BCM | | Ground | Continuity |
|-----------|-----------|----------|--------|-------------|
| | Connector | Terminal | | |
| LOCK | M71 | 91 | Ground | Not existed |
| ACC | | 109 | | |
| ON | | 73 | | |

Is the inspection normal?

- YES >> Replace push-button ignition switch.
- NO >> Repair or replace harness.

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PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

SYMPTOM DIAGNOSIS

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

Description

INFOID:000000009013059

Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.

NOTE:

The engine start function, door lock function, power distribution system, and NATS-IVIS/NVIS in the Intelligent Key system are closely related to each other regarding control. The vehicle security function can operate only when the door lock and power distribution system are operating normally.

Conditions of Vehicle (Operating Conditions)

- “ENGINE START BY I-KEY” in “WORK SUPPORT” is ON when setting on CONSULT.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:000000009013060

1.PERFORM WORK SUPPORT

Perform “INSIDE ANT DIAGNOSIS” on Work Support of “INTELLIGENT KEY”.

Refer to [PCS-37, "INTELLIGENT KEY : CONSULT Function \(BCM - INTELLIGENT KEY\)".](#)

>> GO TO 2.

2.PERFORM SELF-DIAGNOSIS RESULT

Perform Self-Diagnosis Result of “BCM”.

Is DTC detected?

YES >> Refer to [BCS-57, "DTC Index".](#)

NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH

Check push-button ignition switch.

Refer to [PCS-63, "Component Function Check".](#)

Is the operation normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection normal?

YES >> Check intermittent incident. Refer to [GI-43, "Intermittent Incident".](#)

NO >> GO TO 1.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

< SYMPTOM DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

Description

INFOID:000000009013061

- Before performing the diagnosis in the following table, check “Work Flow”. Refer to [PCS-45, "Work Flow"](#).
- Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.

Conditions of Vehicle (Operating Conditions)

- “ENGINE START BY I-KEY” in “WORK SUPPORT” is ON when setting on CONSULT.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:000000009013062

1. CHECK PUSH-BUTTON IGNITION SWITCH INDICATOR

Check push-button ignition switch indicator.

Refer to [PCS-66, "Component Function Check"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2. CONFIRM THE OPERATION

Confirm the operation again.

Is the result normal?

YES >> Check intermittent incident. Refer to [GI-43, "Intermittent Incident"](#).

NO >> GO TO 1.

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PUSH-BUTTON IGNITION SWITCH

< REMOVAL AND INSTALLATION >

[POWER DISTRIBUTION SYSTEM]

REMOVAL AND INSTALLATION


PUSH-BUTTON IGNITION SWITCH

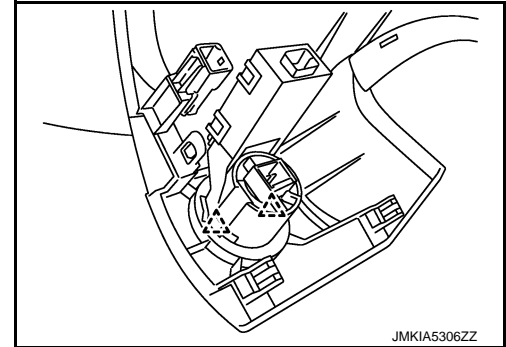
Removal and Installation

INFOID:000000009013063

REMOVAL

1. Remove the cluster lid A. Refer to [JP-13. "Removal and Installation"](#).
2. Disengage the push-button ignition switch fixing pawl and then remove push-button ignition switch.

 : Pawl



INSTALLATION

Install in the reverse order of removal.