

VSP

SECTION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP)

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PRECAUTIONS

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PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

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OPERATION PROHIBITION

WARNING:

- Parts with strong magnet is used in this vehicle.
- Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.

NORMAL CHARGE PRECAUTION

WARNING:

- If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.
- As radiated electromagnetic wave generated by PDM (Power Delivery Module) at normal charge operation may affect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not approach motor room [PDM (Power Delivery Module)] at the hood-opened condition during normal charge operation.

PRECAUTION AT TELEMATICS SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.

PRECAUTION AT INTELLIGENT KEY SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of Intelligent Key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of Intelligent Key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before Intelligent Key use.

Point to Be Checked Before Starting Maintenance Work

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The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work.

NOTE:

If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

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

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The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS

PRECAUTIONS

< PRECAUTION >

system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

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

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

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

Precautions for Removing Battery Terminal

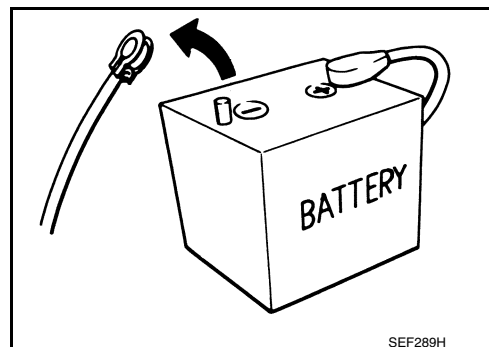
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- When removing the 12V battery terminal, turn OFF the power switch and wait at least 5 minutes.

NOTE:

ECU may be active for several minutes after the power switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- Always disconnect the battery terminal within 60 minutes after turning OFF the power switch. Even when the power switch is OFF, the 12V battery automatic charge control may automatically start after a lapse of 60 minutes from power switch OFF.
- Disconnect 12V battery terminal according to the following steps.



WORK PROCEDURE

1. Check that EVSE is not connected.

NOTE:

If EVSE is connected, the air conditioning system may be automatically activated by the timer A/C function.

2. Turn the power switch OFF → ON → OFF. Get out of the vehicle. Close all doors (including back door).
3. Check that the charge status indicator lamp does not blink and wait for 5 minutes or more.

NOTE:

If the battery is removed within 5 minutes after the power switch is turned OFF, plural DTCs may be detected.

4. Remove 12V battery terminal within 60 minutes after turning the power switch OFF → ON → OFF.

CAUTION:

- After all doors (including back door) are closed, if a door (including back door) is opened before battery terminals are disconnected, start over from Step 1.
- After turning the power switch OFF, if "Remote A/C" is activated by user operation, stop the air conditioner and start over from Step 1.

NOTE:

Once the power switch is turned ON → OFF, the 12V battery automatic charge control does not start for approximately 1 hour.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the power switch.

NOTE:

PRECAUTIONS

< PRECAUTION >

If the power switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

The removal of 12V battery may cause a DTC detection error.

PREPARATION

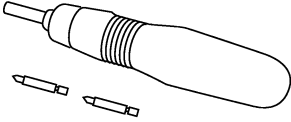
< PREPARATION >

PREPARATION

PREPARATION

Commercial Service Tools

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Tool name	Description
Power tool	Loosening screws
 PBIC0191E	

COMPONENT PARTS

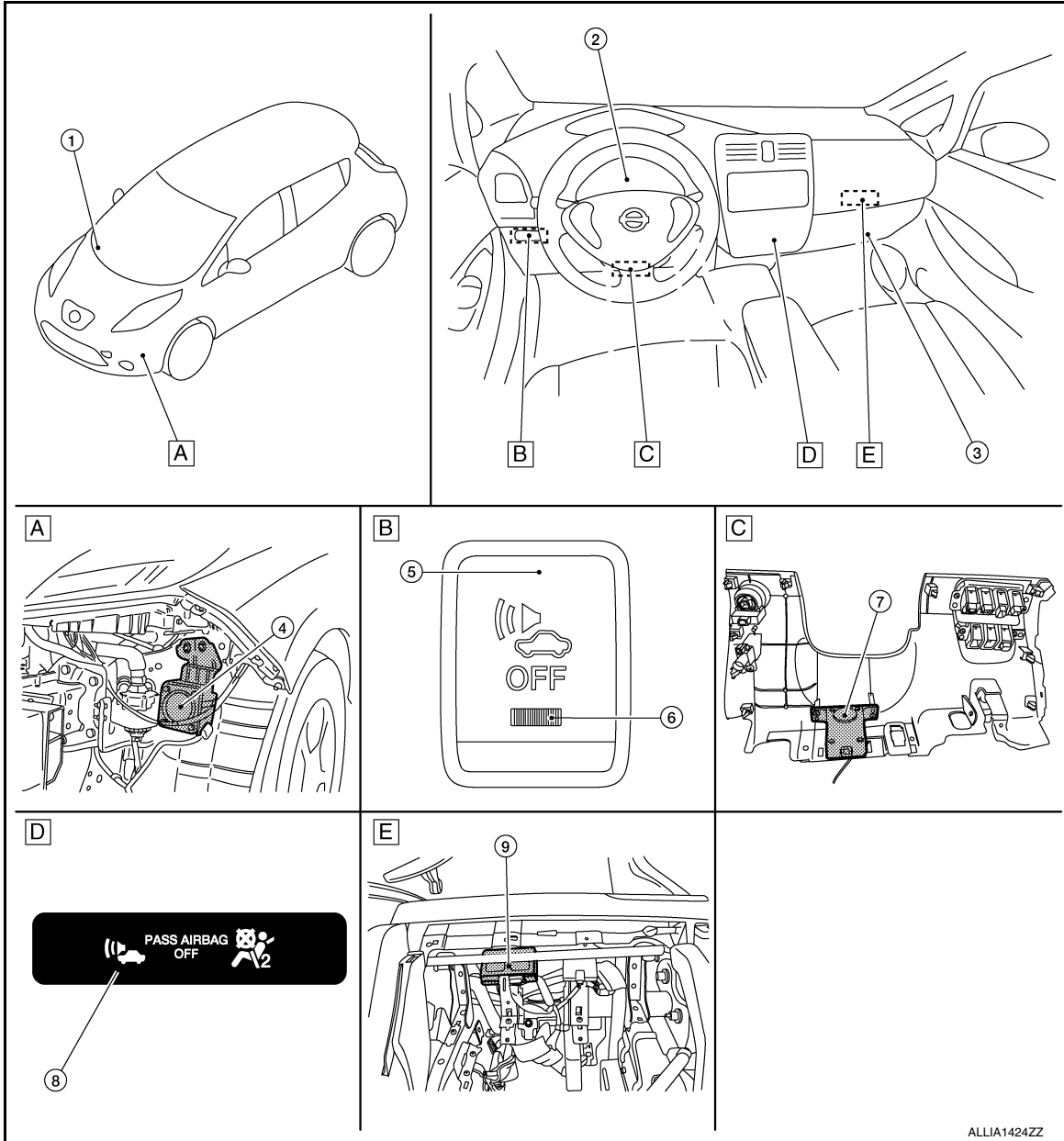
< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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- | | | |
|--------------------------------------|---|---|
| A Left inside of front bumper | B Instrument lower panel LH (Mexico) | C Instrument lower panel LH reverse side |
| D Cluster lid C | E Inside glove box cover assembly | |

COMPONENT PARTS

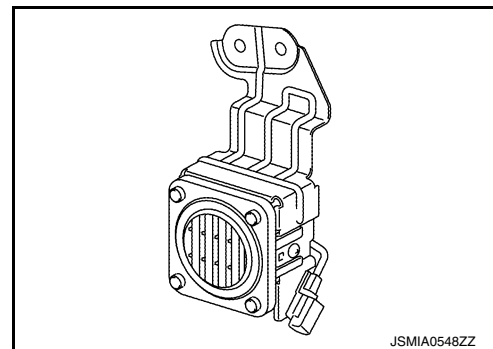
< SYSTEM DESCRIPTION >

	Component	Description
①	BCM	<ul style="list-style-type: none"> Transmits the stop lamp switch signal to the VSP control unit via the CAN communication. Outputs the power switch signal to the VSP control unit. Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
②	Combination meter	<ul style="list-style-type: none"> Transmits the following signals to the VSP control unit via the CAN communication. <ul style="list-style-type: none"> Vehicle speed signal Sound set request signal Sound signal Sets the sound type of the start up sound function.
③	VCM	<ul style="list-style-type: none"> Transmits the following signals to the VSP control unit via the CAN communication. <ul style="list-style-type: none"> READY to drive indicator lamp request signal Charge sound request signal Shift position signal Refer to EVC-15, "Component Parts Location" for detailed installation location.
④	Approaching vehicle sound for pedestrians (VSP) speaker	Refer to VSP-9, "Approaching Vehicle Sound For Pedestrians (VSP) Speaker" .
⑤	VSP OFF switch (Mexico)	Refer to VSP-10, "Approaching Vehicle Sound For Pedestrians (VSP) OFF Switch" .
⑥	VSP OFF indicator (Mexico)	Refer to VSP-10, "Approaching Vehicle Sound For Pedestrian (VSP) OFF Indicator" .
⑦	Start up sound speaker	Refer to VSP-9, "Start Up Sound Speaker" .
⑧	Approaching vehicle sound for pedestrians (VSP) warning lamp	Refer to VSP-10, "Approaching Vehicle Sound For Pedestrians (VSP) Warning Lamp" .
⑨	Approaching vehicle sound for pedestrians (VSP) control unit	Refer to VSP-10, "Approaching Vehicle Sound For Pedestrians (VSP) Control Unit" .

Approaching Vehicle Sound For Pedestrians (VSP) Speaker

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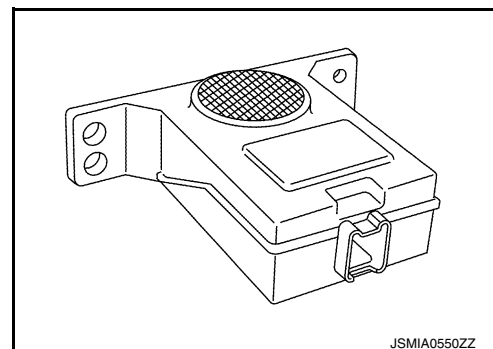
- The VSP speaker is located on the left inside of the front bumper.
- The VSP speaker outputs the approaching vehicle sound for pedestrians (VSP) and charge sound according to the VSP speaker signal from the VSP control unit.



Start Up Sound Speaker

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- The start up sound speaker is located on the reverse side of instrument lower panel LH.
- The start up sound speaker outputs the start up sound according to the start up sound speaker signal from the VSP control unit.



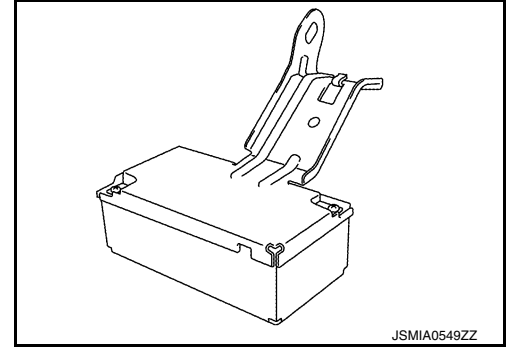
COMPONENT PARTS

< SYSTEM DESCRIPTION >

Approaching Vehicle Sound For Pedestrians (VSP) Control Unit

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- The VSP control unit is located inside the glove box cover assembly.
- The VSP control unit contains 2 power amplifiers for the VSP speaker and start up sound speaker.
- The VSP control unit controls the following systems according to the signals from each unit via CAN communication and the signals from switches.
 - VSP system
 - Start up sound system
 - Charging sound system
- When the VSP control unit judges that VSP system and charge sound system operation is necessary, it outputs the VSP speaker signal to the VSP speaker.
- When the VSP control unit judges that operation of the start up sound system is necessary, it outputs the start up sound speaker signal to the start up sound speaker.



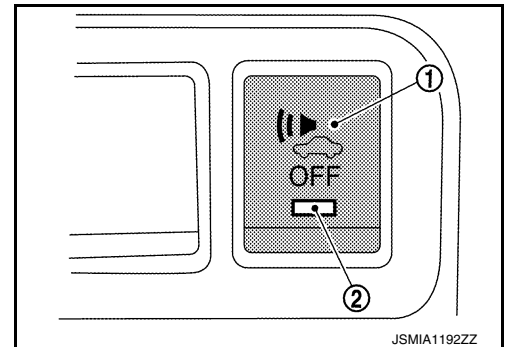
Approaching Vehicle Sound For Pedestrians (VSP) OFF Switch

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- The VSP OFF switch ① is located on the instrument lower panel LH.

② : VSP OFF indicator

- The VSP OFF switch can stop operation of the VSP system and resume operation.
- The VSP OFF switch outputs the VSP OFF switch signal to the VSP control unit.

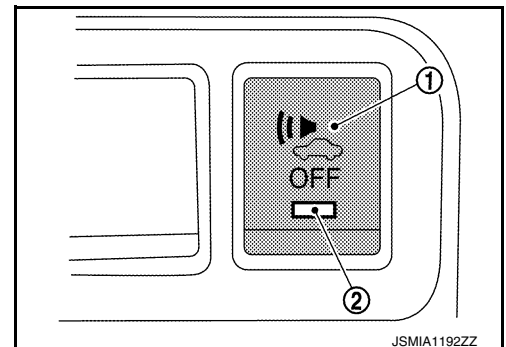


Approaching Vehicle Sound For Pedestrian (VSP) OFF Indicator

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- The VSP OFF indicator ② is located on the VSP OFF switch ①.
- The VSP OFF indicator turns ON/OFF according to the VSP OFF indicator signal from the VSP control unit.
- The VSP OFF indicator can check the operating status of the VSP system.

VSP system status	VSP OFF indicator
Operating	OFF
Stopped	ON
Error	ON



Approaching Vehicle Sound For Pedestrians (VSP) Warning Lamp

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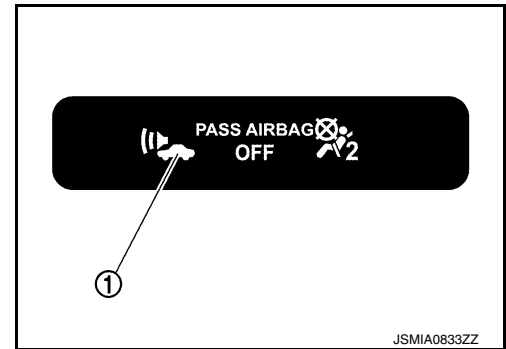
- The VSP warning lamp ① is located on the cluster lid C.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

- The VSP warning lamp can check the operating status of the VSP system.

VSP system status	VSP warning lamp
Error	ON



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SYSTEM

< SYSTEM DESCRIPTION >

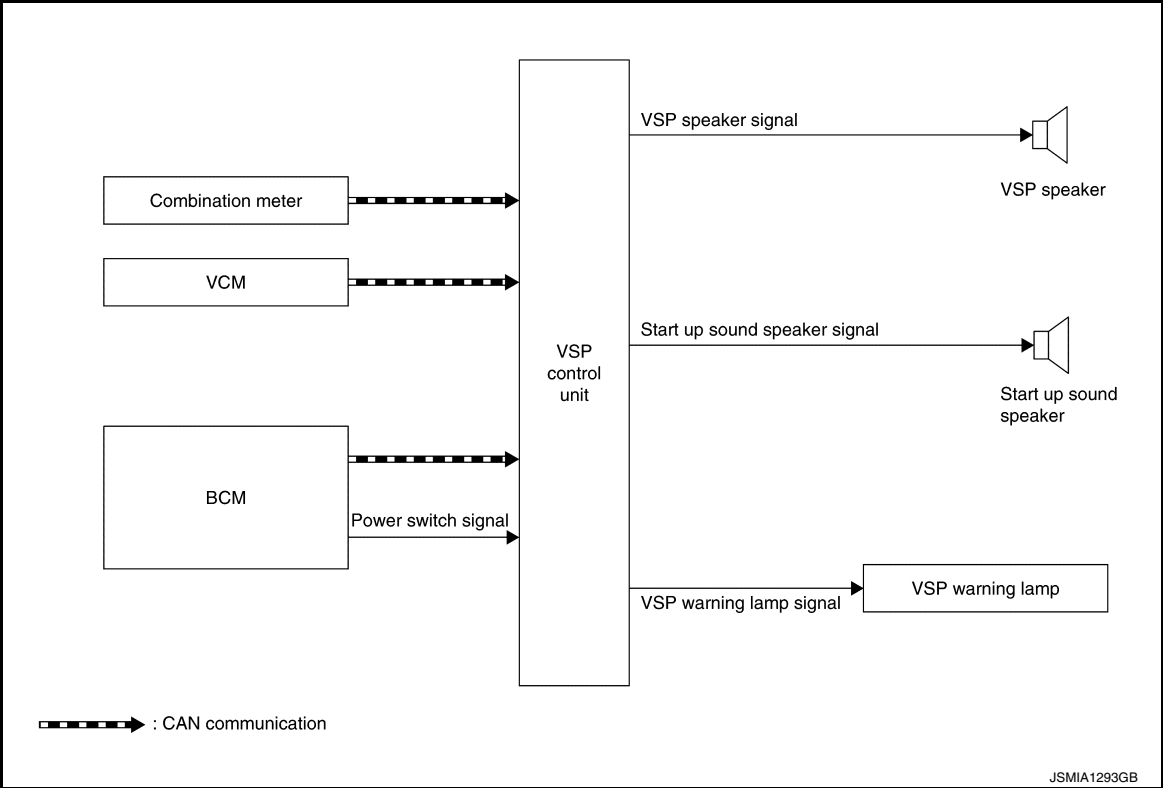
SYSTEM

System Description

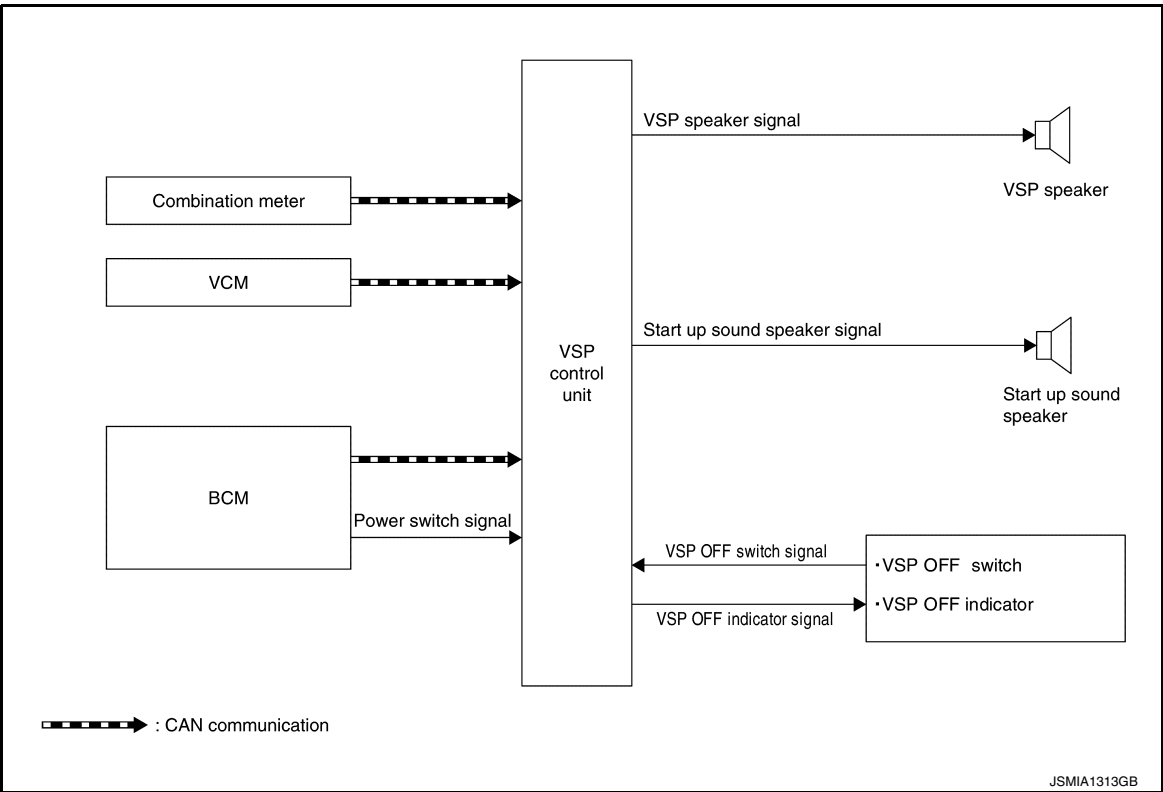
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SYSTEM DIAGRAM

Except for Mexico



For Mexico



SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

VSP Control Unit Input Signal (CAN Communication)

Transmit unit	Signal name
Combination meter	Vehicle speed signal
	Sound set request signal
	Sound signal
VCM	READY to drive indicator lamp request signal
	Charge sound request signal
	Shift position signal
BCM	Stop lamp switch signal

Description

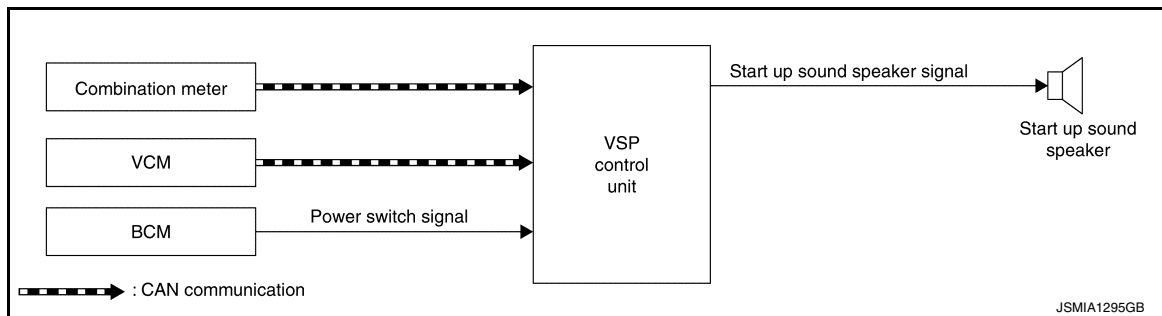
- The VSP control unit receives necessary signals from each unit and switch to control the following functions.
 - VSP system
 - Start up sound system
 - Charge sound system
- The VSP control unit can be diagnosed with CONSULT.

START UP SOUND SYSTEM

START UP SOUND SYSTEM : System Description

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SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The start up sound is a function that produces a sound that is linked with the power switch operation and with the READY to drive indicator lamp on the combination meter.
- The start up sound consists of the following two types.
 - The power switch operation sound, which operates when the power switch is operated.
 - The READY effect sound, which is linked with the READY to drive indicator lamp on the combination meter.
- Four sound types (including OFF) can be selected for the start up sound.
- The type of start up sound can be set in the combination meter.

POWER SWITCH OPERATION SOUND

The power switch operation sound is a function that operates when the power switch is pressed.

Operation Description

- The VSP control unit judges power switch operation according to the power switch signal from the BCM.
- When the power switch signal is received, the VSP control unit transmits the start up sound speaker signal to the start up sound speaker.

Operation Condition

When the following conditions are met, the power switch operation sound operates.

Operation condition	
Start up sound setting	Other than OFF
Power switch	When pressed

SYSTEM

< SYSTEM DESCRIPTION >

NOTE:

If the power switch is pressed and released quickly, the power switch operation sound may not sound linked with the switch.

Operation Stop Condition

When any of the following conditions is met, the power switch operation sound stops.

Operation stop condition
The operation time of the power switch operation sound ends.
The conditions for operation of the READY effect sound are met.
The conditions for operation of the VSP system are met.

Signal Path

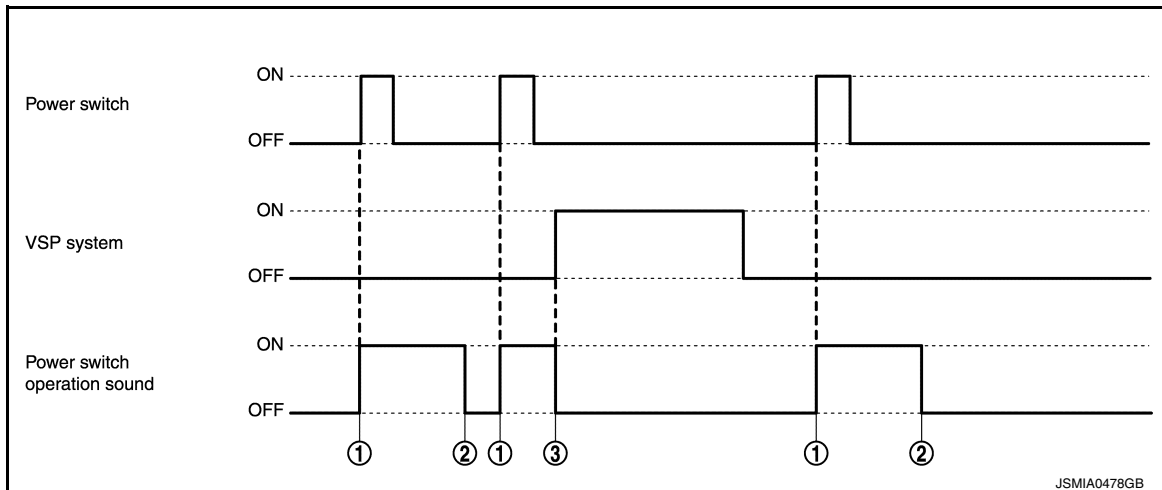
- The VSP control unit judges that the power switch operation sound is necessary according to the following signal, and operates the power switch operation sound.

Signal name	Signal path
Power switch signal	Power switch → BCM → VSP control unit

- When the VSP control unit judges that the power switch operation sound is necessary, it transmits the following signal.

Signal name	Signal path
Start up sound speaker signal	VSP control unit → Start up sound speaker

Timing Chart



No.	Description
①	The power switch operation sound operates when the power switch is pressed.
②	The operation time of the power switch operation sound ends.
③	When the VSP system operates, operation of the power switch operation sound stops.

READY EFFECT SOUND

The READY effect sound is a function that operates linked with the READY to drive indicator lamp on the combination meter.

Operation Description

- The VCM transmits the READY to drive indicator lamp request signal to the VSP control unit via CAN communication.

SYSTEM

< SYSTEM DESCRIPTION >

- The VSP control unit judges that the READY effect sound is necessary according to the READY to drive indicator lamp request signal from the VCM.
- When the READY to drive indicator lamp request signal is received, the VSP control unit transmits the start up sound speaker signal to the start up sound speaker.

Operation Condition

The READY effect sound operates when all of the following conditions are met.

Operation condition	
Start up sound setting	Other than OFF
READY to drive indicator lamp	OFF → ON


Operation Stop Condition

The READY effect sound operation stops when any of the following conditions is met.

Operation stop condition	
The operation time for the READY effect sound ends.	
READY to drive indicator lamp	OFF
Power switch	OFF
VSP system	Operates

Signal Path

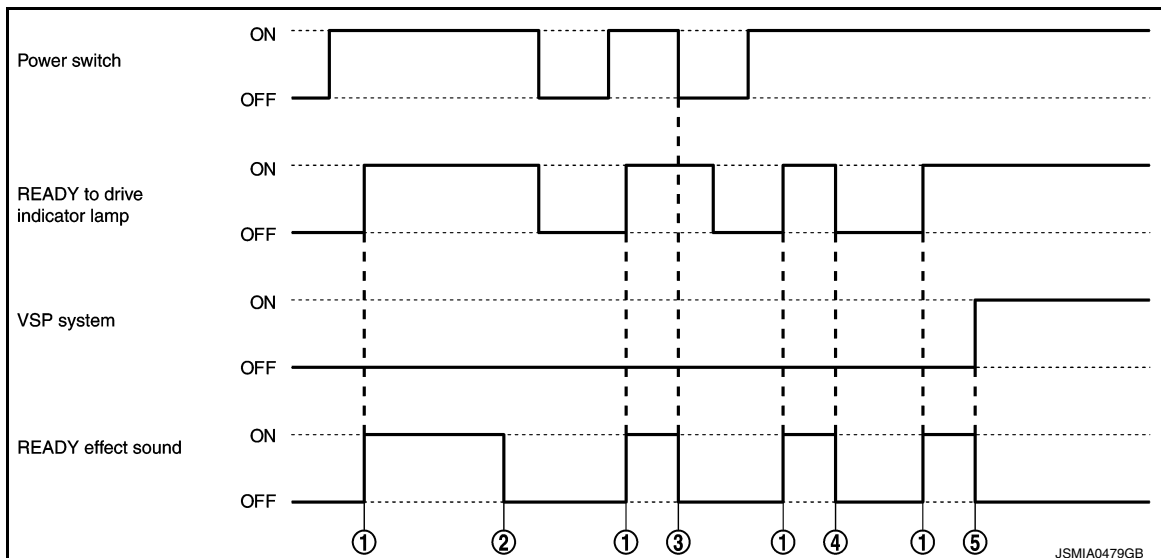
- The VSP control unit judges that the READY effect sound is necessary according to the following signal, and operates the READY effect sound.

Signal name	Signal path
Power switch signal	Power switch → BCM → VSP control unit
READY to drive indicator lamp request signal	VCM  VSP control unit

- When the VSP control unit judges that the READY effect sound is necessary, it transmits the following signal.

Signal name	Signal path
Start up sound speaker signal	VSP control unit → Start up sound speaker

Timing Chart



SYSTEM

< SYSTEM DESCRIPTION >

No.	Description
①	When the READY to drive indicator lamp turns ON, the READY effect sound operates.
②	The operation time of the READY effect sound ends.
③	When the power switch turns OFF, operation of the READY effect sound stops.
④	When the READY to drive indicator lamp turns OFF, operation of the READY effect sound stops.
⑤	When the VSP system operates, operation of the READY effect sound stops.

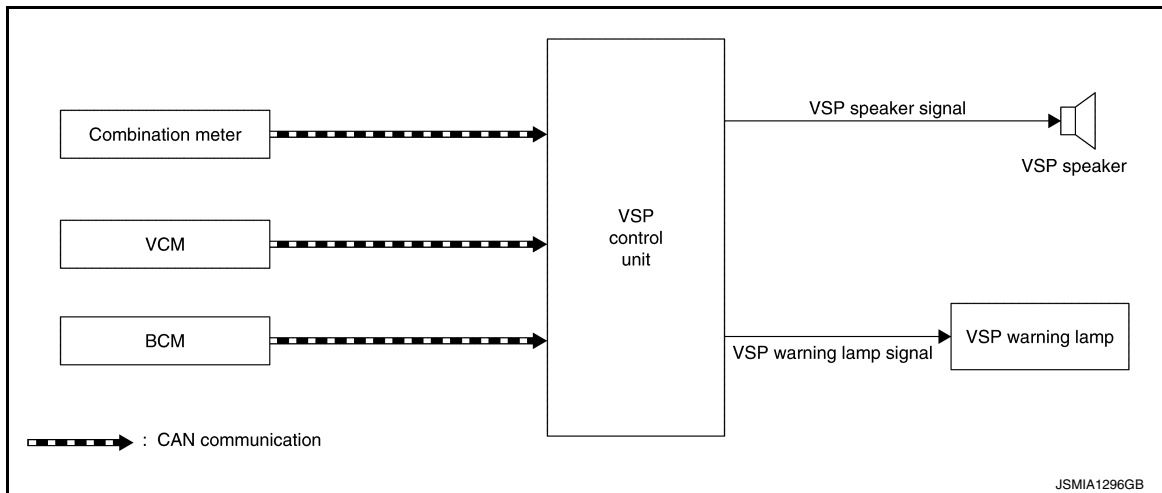
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM : System Description

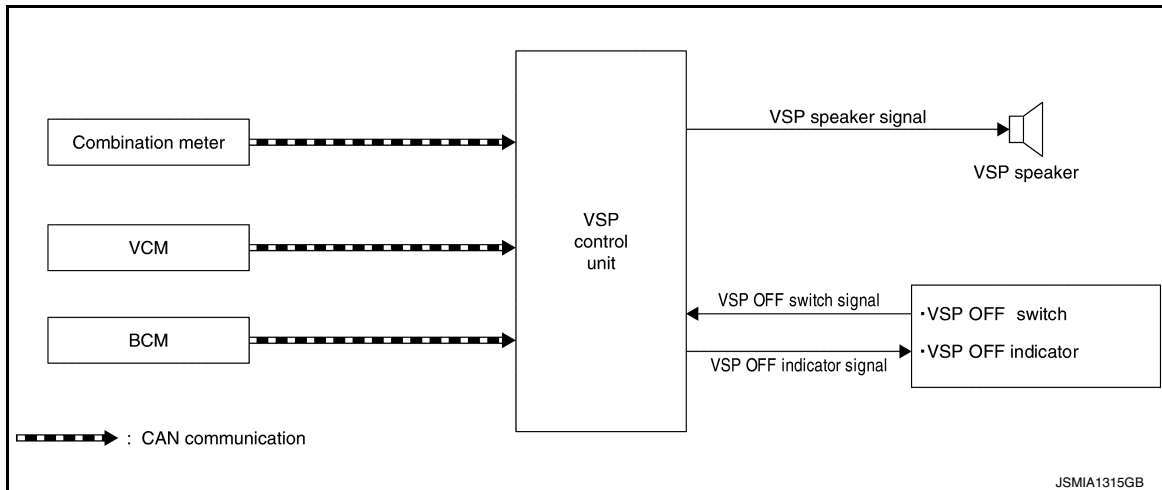
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SYSTEM DIAGRAM

Except for Mexico



For Mexico



SYSTEM DESCRIPTION (Except for Mexico)

- The VSP system operates according to the signals received from the VCM, combination meter, and BCM via CAN communication, and notifies the driver that the vehicle is approaching a pedestrian.
- The VSP system includes the following three types of sound.
 - Driving start sound
 - Driving sound
 - Reverse sound
- The VSP system starts operating when the power switch is turned from OFF to READY.

SYSTEM

< SYSTEM DESCRIPTION >

- The VSP warning lamp illuminates when there is a malfunction in the VSP system.

SYSTEM DESCRIPTION (For Mexico)

- The VSP system operates according to the signals received from the VCM, combination meter, and BCM via CAN communication, and notifies the driver that the vehicle is approaching a pedestrian.
- The VSP system includes the following three types of sound.
 - Driving start sound
 - Driving sound
 - Reverse sound
- The VSP system operation status can be checked with the VSP OFF indicator.
- The VSP system can be set to operation stop or operation resume with the VSP OFF switch.
- The VSP system starts operating when the power switch is turned from OFF to READY.
- The VSP OFF indicator illuminates when there is a malfunction in the VSP system.

DRIVING START SOUND

The driving start sound is a function which operates when the selector lever is in the “D” position and the brake pedal is released.

Operation Description

- The combination meter transmits the vehicle speed signal to the VSP control unit via CAN communication.
- The BCM transmits the stop lamp switch signal to the VSP control unit via CAN communication.
- The VCM transmits the following signals to the VSP control unit via CAN communication.
 - READY to drive indicator lamp request signal
 - Shift position signal
- The VSP control unit judges that the driving start sound is necessary according to the signals received from each unit.
- When the VSP control unit judges that operation of the driving start sound is necessary, it transmits the VSP speaker signal to the VSP speaker.
- The driving start sound operates until the end of its operation time (500 ms) and then switches to the driving sound.

Operation Condition

The driving start sound operates when all of the following conditions are met.

Operation condition	
Selector lever	“D” Position
Vehicle speed	0 km/h (0 MPH)
READY to drive indicator lamp	ON
Brake pedal	Released (not depressed)

Operation Stop Condition

The driving start sound operation stops when the following condition is met.



Operation stop condition	
Reverse sound	Operation

NOTE:

The driving start sound operates until the end of its operation time (500 ms) and then switches to the driving sound.



Signal Path

- The VSP control unit judges that the driving start sound is necessary according to the following signals, and operates the driving start sound.


Signal name	Signal path
READY to drive indicator lamp request signal	VCM  VSP control unit
Shift position signal	VCM  VSP control unit

SYSTEM

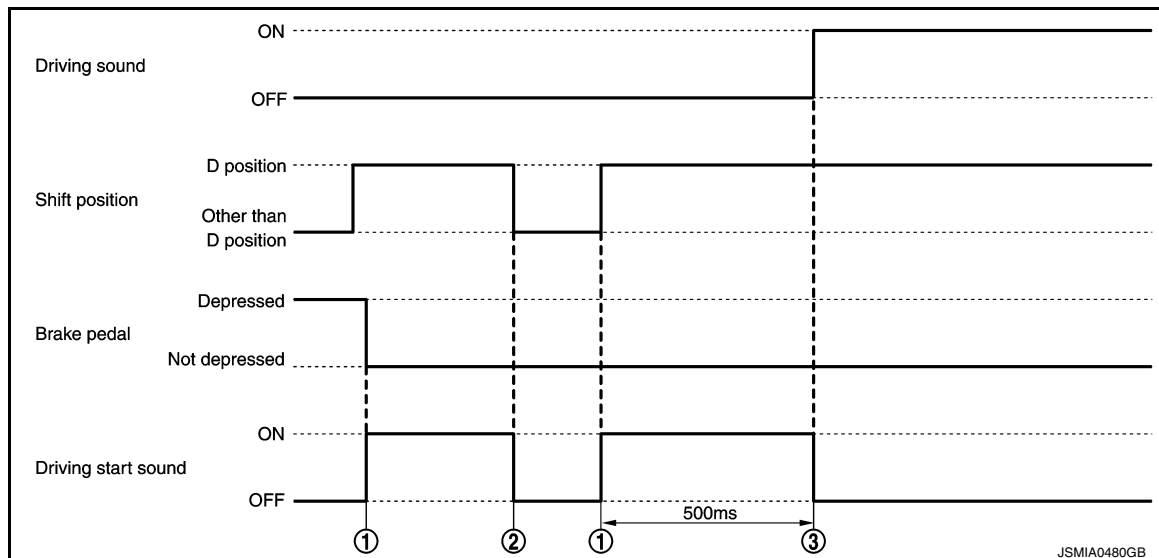
< SYSTEM DESCRIPTION >

Signal name	Signal path
Vehicle speed signal	Combination meter  VSP control unit
Stop lamp switch signal	BCM  VSP control unit

- When the VSP control unit judges that the driving start sound is necessary, it transmits the following signal.

Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

Timing Chart



No.	Description
①	The driving start sound operates when the selector lever is in the "D" position and the brake pedal is released.
②	Operation of the driving start sound stops when the selector lever is moved to the "R" position.
③	The driving start sound operates until the end of its operation time (500 ms) and then switches to the driving sound. NOTE: The system switches to the driving sound after the driving start sound fades out.

DRIVING SOUND

- The driving sound is a function that operates according to the vehicle speed.
- The driving sound tone frequency changes according to the vehicle speed.
- When accelerating, driving sound operates until the speed reaches approximately 30 km/h (19 MPH). When decelerating, it starts operating at approximately 25 km/h (16 MPH).
- Operation stops when the vehicle stops or the vehicle speed is 0 km/h (0 MPH).

Operation Description

- The combination meter transmits the vehicle speed signal to the VSP control unit via CAN communication.
- The VCM transmits the following signals to the VSP control unit via CAN communication.
 - READY to drive indicator lamp request signal
 - Shift position signal
- The VSP control unit judges that the driving sound is necessary according to the signals received from the combination meter and VCM via CAN communication.
- When the VSP control unit judges that operation of the driving sound is necessary, it transmits the VSP speaker signal to the VSP speaker.

Operation Condition

The driving sound operates when all of the following conditions are met.

SYSTEM

< SYSTEM DESCRIPTION >

Operation condition		
Vehicle speed	During acceleration	1 km/h (0.6 MPH) or more
	During deceleration	25 km/h (16 MPH) or less
READY to drive indicator lamp		ON
Selector lever		"D" Position




Operation Stop Condition

The driving sound stops operating when any of the following conditions is met.


Operation stop condition		
Vehicle speed	During acceleration	Higher than 30 km/h (19 MPH)
	During deceleration	Less than 1 km/h (0.6 MPH)
READY to drive indicator lamp		OFF

Signal Path

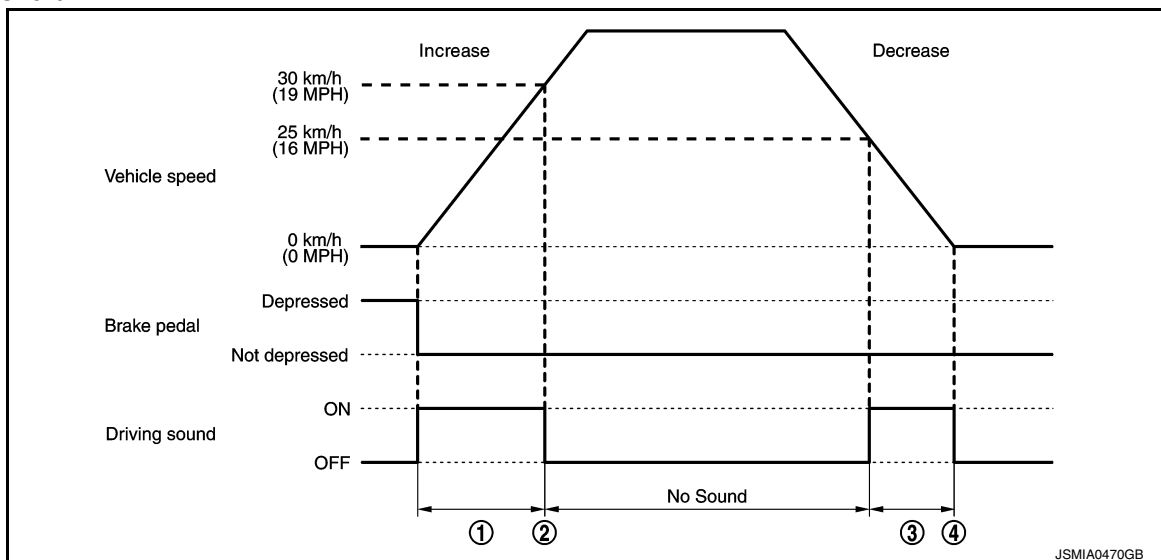
- The VSP control unit judges that the driving sound is necessary according to the following signals, and operates the driving sound.

Signal name	Signal path
READY to drive indicator lamp request signal	VCM  VSP control unit
Shift position signal	VCM  VSP control unit
Vehicle speed signal	Combination meter  VSP control unit

- When the VSP control unit judges that the driving sound is necessary, it transmits the following signal.

Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

Timing Chart



SYSTEM

< SYSTEM DESCRIPTION >

No.	Description
①	When accelerating, the driving sound operates up to approximately 30 km/h (19 MPH).
②	When the speed is more than 30 km/h (19 MPH), the driving sound stops.
③	When decelerating, the driving sound operates when the speed is approximately 25 km/h (16 MPH) or less.
④	The driving sound stops when the vehicle is stopped (fades out and stops).

REVERSE SOUND

The reverse sound is a function that operates when the selector lever is in the “R” position.

Operation Description

- The VCM transmits the following signals to the VSP control unit via CAN communication.
 - Shift position signal
 - READY to drive indicator lamp request signal
- The VSP control unit judges that the reverse sound is necessary according to the signals received from the VCM.
- When the VSP control unit judges that operation of the reverse sound is necessary, it transmits the VSP speaker signal to the VSP speaker.

Operation Condition

The reverse sound operates when all of the following conditions are met.

Operation condition	
Selector lever	“R” position
READY to drive indicator lamp	ON



Operation Stop Condition

The reverse sound operation stops when any of the following conditions is met.


Operation stop condition	
Selector lever	Other than “R” position

Signal Path

- The VSP control unit judges that the reverse sound is necessary according to the following signals, and operates the reverse sound.

Signal name	Signal path
READY to drive indicator lamp request signal	VCM  VSP control unit
Shift position signal	VCM  VSP control unit

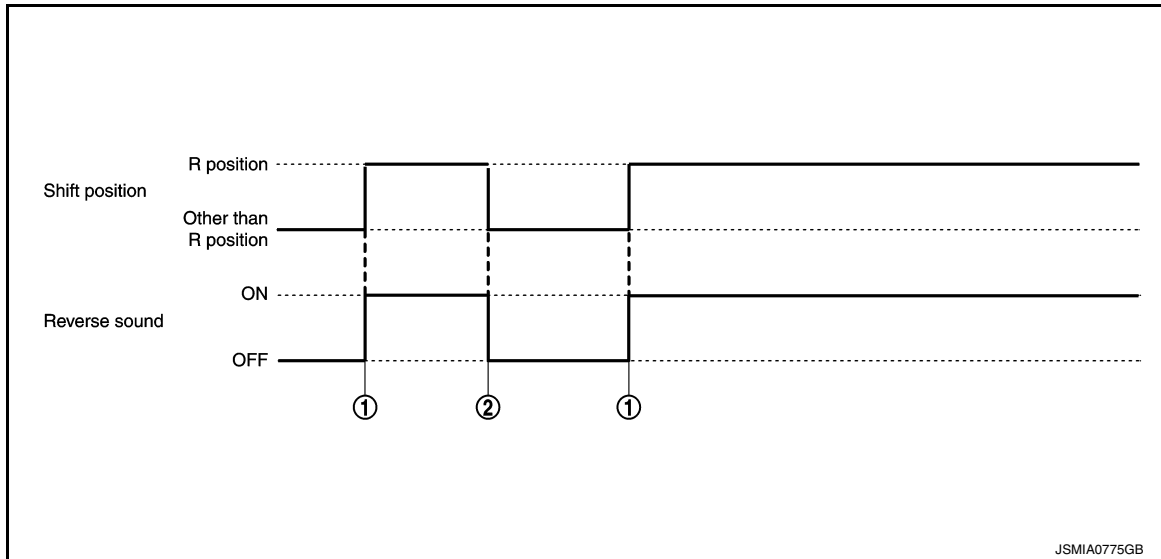
- When the VSP control unit judges that the reverse sound is necessary, it transmits the following signal.

Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

SYSTEM

< SYSTEM DESCRIPTION >

Timing Chart



No.	Description
①	The reverse sound operates when the selector lever is moved to the "R" position.
②	Operation of the reverse sound stops when the selector lever is moved to any position other than the "R" position.

VSP SYSTEM OPERATION STOP AND RESUME FUNCTION

- The VSP system can be set to stop operating or to resume operating with the VSP OFF switch.
- The VSP system starts operating when the power switch is turned from OFF to READY.
- While operation of the VSP system is stopped, the VSP OFF indicator turns ON.

VSP system status	VSP OFF indicator
Operating	OFF
Stopped	ON

Operation Description

- The VSP OFF switch transmits the VSP OFF switch signal to the VSP control unit.
- The VSP control unit judges VSP system operation stop or operation resume according to the VSP OFF switch signal.
- The VSP control unit transmits the VSP OFF indicator signal to the VSP OFF switch.

Stopping VSP System Operation

- Press the VSP OFF switch.
- Check that the VSP OFF indicator turns ON.

Cancelling VSP System Operation Stop

- Press the VSP OFF switch.
- Check that the VSP OFF indicator turns OFF.

NOTE:

Even if VSP system operation is stopped when the power switch is turned OFF, the VSP system starts to operate when the power switch is next turned from OFF to READY.

Signal Path


- The VSP control unit judges VSP system operation stop and operation resume according to the following signal.

Signal name	Signal path
VSP OFF switch signal	VSP OFF switch → VSP control unit

- The VSP OFF switch turns the VSP OFF indicator lamp ON/OFF according to the following signal.

SYSTEM

< SYSTEM DESCRIPTION >


Signal name	Signal path
VSP OFF indicator signal	VSP control unit  VSP OFF switch

VSP SYSTEM MALFUNCTION DETECTION FUNCTION (Except for Mexico)

When a malfunction is detected in the VSP system, the VSP warning lamp turns ON.

Signal Path

- When the VSP control unit detects a VSP system malfunction, it transmits the VSP warning lamp signal to the VSP warning lamp.
- The VSP control unit turns the VSP warning lamp ON/OFF when the signal shown below is input.


Signal name	Signal path
VSP warning lamp signal	VSP control unit  VSP warning lamp

VSP SYSTEM MALFUNCTION DETECTION FUNCTION (For Mexico)

When a malfunction is detected in the VSP system, the VSP OFF indicator turns ON.

Signal Path

- When the VSP control unit detects a VSP system malfunction, it transmits the VSP OFF indicator signal to the VSP OFF switch.
- When the following signal is received, the VSP OFF switch turns the VSP OFF indicator lamp ON/OFF.

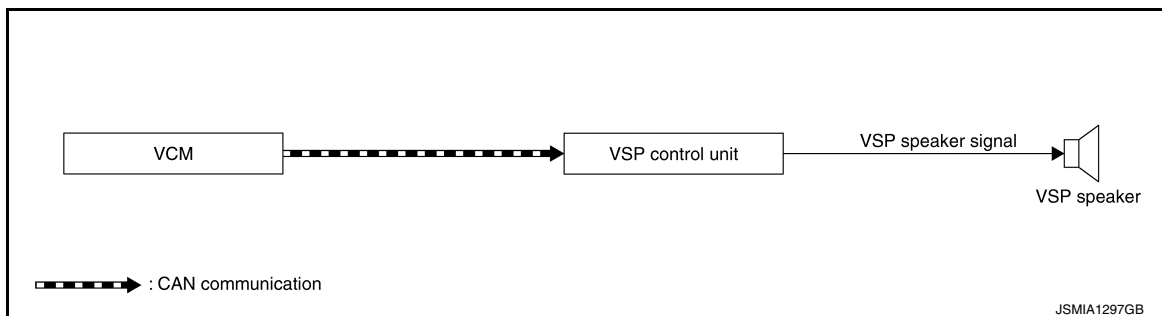
Signal name	Signal path
VSP OFF indicator signal	VSP control unit  VSP OFF switch

CHARGE SOUND SYSTEM

CHARGE SOUND SYSTEM : System Description

INFOID:0000000010633997

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The charge sound system is a function which notifies the charge connector connected status, charge reception status, and charge port lid unlocked/normal charge connector unlocked status by the charge sound request signal from VCM.
- The charge sound system includes the following three sound types and operates linked with the charging status indicator.
 - Plug-in detection sound
 - Charge acceptance sound
 - Charge port lid unlocked sound/normal charge connector unlocked sound

PLUG-IN DETECTION SOUND

- The plug-in detection sound notifies that the charger is connected correctly.
- During rapid charging, the plug-in detection sound does not operate.

Operation Description

- The VCM transmits the charge sound request signal (plug-in detection sound) to the VSP control unit via CAN communication.

A

B

- C

D

E

F

G

- A

1

- J

K

0



1

1

- 2015 Leaf NAM

SYSTEM

< SYSTEM DESCRIPTION >

The charge acceptance sound operates when all of the following conditions are met.

Operation condition	
Power switch	OFF
Charging	Started*


*: Includes time waiting for timer charge acceptance.

Signal Path

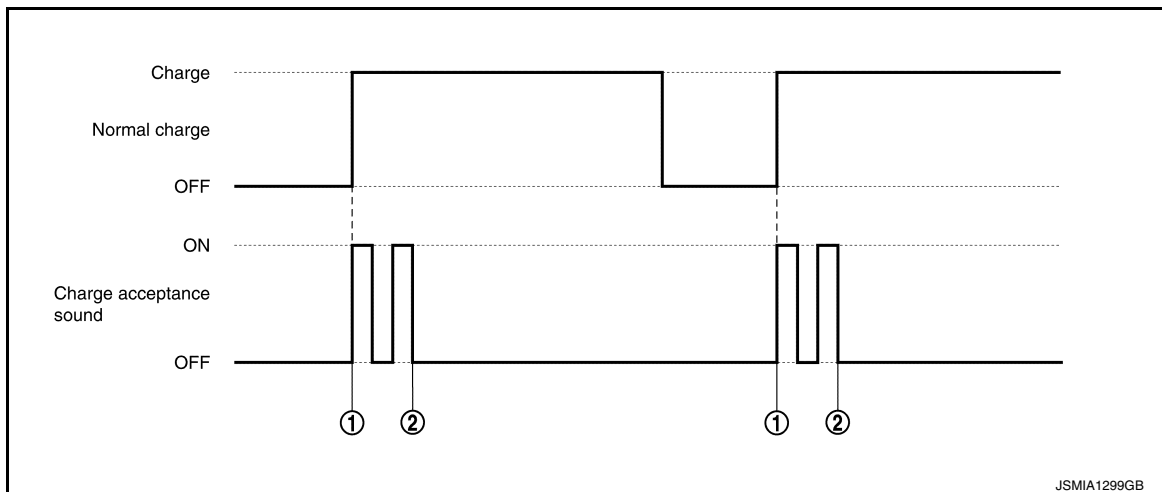
- The VSP control unit judges that the charge acceptance sound is necessary according to the following signal, and operates the charge acceptance sound.

Signal name	Signal path
Charge sound request signal (charge acceptance sound)	VCM  VSP control unit

- When the VSP control unit judges that the charge acceptance sound is necessary, it transmits the following signal.

Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

Timing Chart



No.	Description
①	The charge acceptance sound operates when charging is started.
②	The operation time of the charge acceptance sound ends.

CHARGE PORT LID UNLOCKED SOUND/NORMAL CHARGE CONNECTOR UNLOCKED SOUND

- The charge port lid unlocked sound is a function which notifies that the charge port lid is unlocked when the charge port lid opener switch or charge port lid opener button is operated.
- The normal charge connector unlocked sound is a function that notifies that the normal charge connector is unlocked when the charge port lid opener switch or charge port lid opener button is operated.

NOTE:

The charge port lid unlocked sound/normal charge connector unlocked sound operates when the charge port lid opener switch or charge port lid opener button is operated.

Operation Description

- The VCM transmits the charge sound request signal (charge port lid unlocked sound/normal charge connector unlocked sound) to the VSP control unit via CAN communication.
- The VSP control unit judges that the charge port lid unlocked sound/normal charge connector unlocked sound is necessary according to the charge sound request signal (charge port lid unlocked sound/normal charge connector unlocked sound) from the VCM.

SYSTEM

< SYSTEM DESCRIPTION >

- When the VSP control unit judges that operation of the charge port lid unlocked sound/normal charge connector unlocked sound is necessary, it transmits the VSP speaker signal to the VSP speaker.


Operation Condition

The charge port lid unlocked sound/normal charge connector unlocked sound operates when any of the following conditions is met.


Operation condition	
Charge port lid opener switch	When pressed
Charge port lid opener button	When pressed

Signal Path

- The VSP control unit judges that the charge port lid unlocked sound/normal charge connector unlocked sound is necessary according to the following signal, and operates the charge port lid unlocked/normal charging connector unlocked sound.

Signal name	Signal path
Charge sound request signal (charge port lid unlocked sound/normal charge connector unlocked sound)	VCM  VSP control unit

- When the VSP control unit judges that the charge port lid unlocked sound/normal charge connector unlocked sound is necessary, it transmits the following signal.

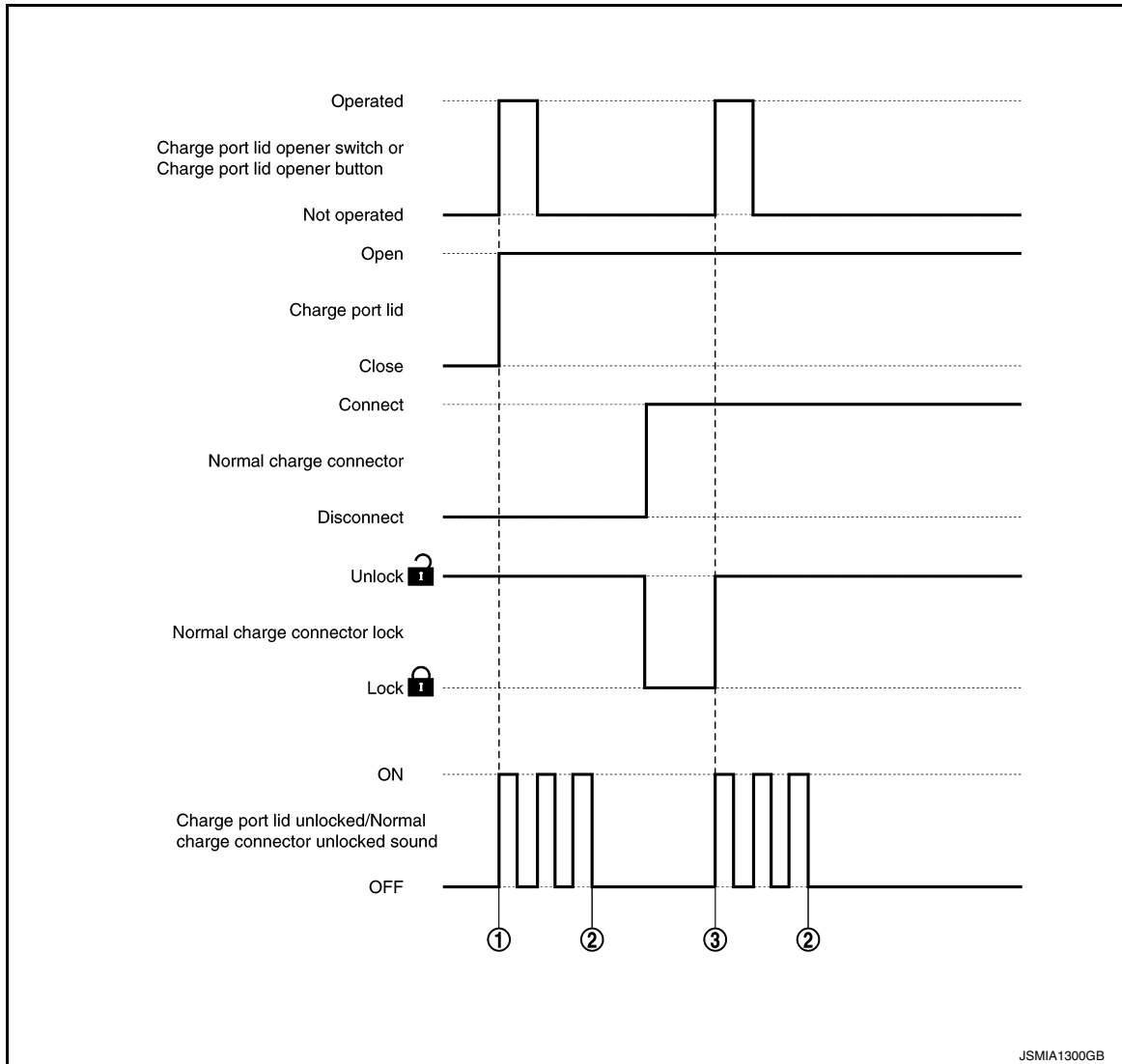
Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

VSP

SYSTEM

< SYSTEM DESCRIPTION >

Timing Chart



JSMIA1300GB

No.	Description
①	The charge port lid unlocked sound operates when the charge port lid is unlocked.
②	The operation time for the charge port lid unlocked sound/normal charge connector unlocked sound ends.
③	The normal charge connector unlocked sound operates when the normal charge connector is unlocked.

NORMAL CHARGE CONNECTOR IMPROPER CONNECTION WARNING SOUND

The normal charge connector improper connection warning sound is a function that notifies the user when the normal charge connector is not connected normally (improper connection).

Operation Description

- The VCM transmits the charge sound request signal (normal charge connector improper connection warning sound) to the VSP control unit via CAN communication.
- The VSP control unit judges that the normal charge connector improper connection warning sound is necessary according to the charge sound request signal (normal charge connector improper connection warning sound) from the VCM.
- When the VSP control unit judges that the normal charge connector improper connection warning sound is necessary, it transmits the VSP speaker signal to the VSP speaker.

Operation Condition

Three seconds after the following condition is met the normal charge connector improper connection warning sound operates for 30 seconds.

SYSTEM

< SYSTEM DESCRIPTION >

Operation condition	
Normal charge connector	Improper connection detected. (Release button is depressed.)


Operation Stop Condition

When any of the following conditions is met, the normal charge connector improper connection warning sound is stopped.


Operation stop condition	
Normal charge connector	Normal connection The normal charge connector is disconnected.

Signal Path

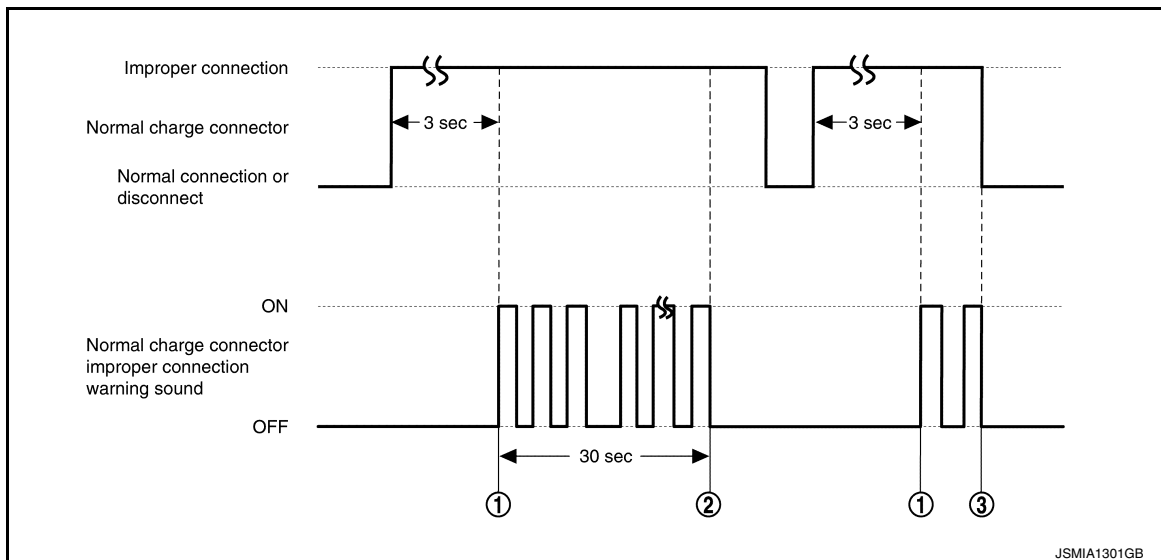
- The VSP control unit judges that the normal charge connector improper connection warning sound is necessary according to the following signal, and operates the normal charge connector improper connection warning sound.

Signal name	Signal path
Charge sound request signal (normal charge connector improper connection warning sound)	VCM  VSP control unit

- When the VSP control unit judges that the normal charge connector improper connection warning sound is necessary, it transmits the following signal.

Signal name	Signal path
VSP speaker signal	VSP control unit  VSP speaker

Timing Chart



No.	Description
①	The normal charge connector improper connection warning sound operates 3 seconds after improper connection of the normal charge connector is detected.
②	The operation time for the normal charge connector improper connection warning sound ends.
③	Normal charge connector improper connection warning sound stop condition is met.

SYSTEM

< SYSTEM DESCRIPTION >

Fail-Safe

INFOID:0000000010633998

When a malfunction occurs in the VSP control unit, fail-safe control is performed according to the malfunction.

DTC	Fail-safe condition
U1000	<ul style="list-style-type: none">Start up sound system: Function stops when there is a communication break. NOTE: The power switch operation sound operates. <ul style="list-style-type: none">VSP system: Function stops when there is a communication break.Charge sound system: Does not operate.
U1010	<ul style="list-style-type: none">Start up sound system: Function stops NOTE: The power switch operation sound operates <ul style="list-style-type: none">VSP system: Function stopsCharge sound system: Does not operate
B2471	<ul style="list-style-type: none">Start up sound system: Function stops NOTE: The power switch operation sound operates <ul style="list-style-type: none">VSP system: Function stopsCharge sound system: Does not operate

DIAGNOSIS SYSTEM (VSP)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (VSP)

CONSULT Function

INFOID:000000010633999

APPLICATION ITEM

CONSULT can display each diagnostic item using the diagnostic test modes shown as per the following:

Test mode	Function
Ecu Identification	Displays VSP control unit part number
Self Diagnostic Results	Displays the name of a malfunctioning system stored in the VSP control unit
Data Monitor	Displays VSP control unit input/output data in real time.
Active Test	Gives a drive signal to a load to check the operation.

NOTE:

The approaching vehicle sound for pedestrians (VSP) system sound, start up sound and charge sound system may not be activated when diagnosing VSP control unit by using CONSULT.

ECU IDENTIFICATION

VSP control unit part number can be read.

SELF-DIAGNOSTIC RESULTS

For details, refer to [VSP-34, "DTC Index"](#).

When "CRNT" is displayed on self-diagnosis result,

- The system is presently malfunctioning.

When "PAST" is displayed on self-diagnosis result,

- System malfunction in the past is detected, but the system is presently normal.

Freeze frame data (FFD)

Item name	Display item
IGN counter (0 – 39)	<p>The number of times that power switch is turned ON after the DTC is detected is displayed.</p> <ul style="list-style-type: none">• When "0" is displayed: It indicates that the system is presently malfunctioning.• When except "0" is displayed: It indicates that system malfunction in the past is detected, but the system is presently normal. <p>NOTE: Each time when power switch is turned OFF to ON, numerical number increases in 1 → 2 → 3...38 → 39. When the operation number of times exceeds 39, the number do not increase and "39" is displayed until self-diagnosis is erased.</p>

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	Description
VSP OFF INDICATOR (OFF/ON)	<ul style="list-style-type: none">• Status of VSP warning lamp judged from VSP warning lamp signal transmitted from the VSP control unit. (Except for Mexico)• Status of VSP OFF indicator judged from VSP OFF indicator signal transmitted from the VSP control unit. (For Mexico)
VSP SYSTEM SOUND STATUS (OFF/START/DRIVE/REVRSE)	Status of VSP system sound.
START UP SOUND STATUS (OFF/SW/READY)	Status of start up sound.
CHARGE SOUND STATUS (OFF/PLG IN/CHR ST/UNLCK)	Status of charge sound.
START UP SOUND SETTING (OFF/1/2/3)	Status of start up sound setting.

DIAGNOSIS SYSTEM (VSP)

< SYSTEM DESCRIPTION >

Monitor item	Description
IGN STATUS SIG (OFF/ON)	ON/OFF status of power switch judged by VSP control unit.
VSP OFF SW (OFF)	VSP OFF switch status input from the VSP OFF switch.
VSP SOUND (OFF/ON)	Status of VSP system sound cancellation.
PUSH SW (OFF/ON)	Status of power switch signal received from BCM.
READY OP IND SIG (OFF/BLINK/ON)	Status of READY to drive indicator lamp judged from READY to drive indicator lamp request signal received from VCM via CAN communication.
CHARGE SOUND REQ (OFF/PLG IN/CHR ST/UNLCK)	Status of charge sound request signal received from VCM via CAN communication.
REVERSE BUZZER (OFF)	NOTE: This item is displayed, but cannot be monitored.
VEHICLE SPEED (km/h)	Vehicle speed signal value received from the combination meter via CAN communication. NOTE: 63 km/h (39.1 MPH) or faster is fixed at 63 km/h (39.1 MPH).
VHCL SPEED SIG (NORMAL/INVALID)	Status of vehicle speed signal received from the combination meter via CAN communication.
SHIFT POS SIG (P/N/R/D)	Status of shift position signal received from VCM via CAN communication.
ENGINE RPM	NOTE: This item is displayed, but cannot be monitored.
ENG SPEED SIG	NOTE: This item is displayed, but cannot be monitored.
START UP SOUND REQ (OFF/1/2/3)	Status of sound signal received from the combination meter via CAN communication.
SOUND SET REQ (OFF/ON)	Status of sound set request signal received from the combination meter via CAN communication.

ACTIVE TEST

Active test item	Function
VSP SPEAKER	The VSP speaker operation can be checked. NOTE: Activates the reverse sound at a higher sound level than normal operation.
START UP SOUND SPEAKER	The start up sound speaker operation can be checked. NOTE: Activates the reverse sound at a higher sound level than normal operation.
VSP OFF INDICATOR	Except for Mexico <ul style="list-style-type: none"> The VSP warning lamp operation can be checked. NOTE: The VSP warning lamp flashes (1 Hz). For Mexico <ul style="list-style-type: none"> The VSP OFF indicator operation can be checked. NOTE: The VSP OFF indicator flashes (1 Hz).

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Reference Value

INFOID:0000000010634000

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
VSP OFF INDICATOR	Power switch ON	<ul style="list-style-type: none">VSP warning lamp ON. (Except for Mexico)VSP OFF indicator ON. (For Mexico)	ON
		<ul style="list-style-type: none">VSP warning lamp OFF. (Except for Mexico)VSP OFF indicator OFF. (For Mexico)	OFF
VSP SYSTEM SOUND STATUS	READY	VSP system sound not operating.	OFF
		When start driving. (Selector lever is in "D" position. Vehicle speed 0 km/h)	START (Driving start sound operates until 500 ms)
		While driving. <ul style="list-style-type: none">During acceleration [Vehicle speed: 1 - 30 km/h (0.6 - 19 MPH)]During deceleration [Vehicle speed: 25 - 1 km/h (16 - 0.6 MPH)]	DRIVE
		Selector lever is in "R" position.	REVRSE
START UP SOUND STATUS	Start up sound is not operating.		OFF
	When power switch is pressed. (Power switch operation sound is operating.)		SW
	READY to drive indicator lamp: OFF to ON (READY effect sound is operating.)		READY
CHARGE SOUND STATUS	Charge sound is not operating.		OFF
	Charge connector connected. (Plug-in detection sound is operating.)		PLG IN
	<ul style="list-style-type: none">When charge starts.When waiting for timer charge acceptance. (Charge port unlocked sound is operating.)		CHR ST
	<ul style="list-style-type: none">When charge port lid lock is unlocked.When charge connector lock is unlocked. (Charge port lid unlocked sound/normal charge connector unlocked sound is operating.)		UNLCK
START UP SOUND SETTING	Power switch ON	When start up sound setting is OFF.	OFF
		When start up sound setting is "1".	1
		When start up sound setting is "2".	2
		When start up sound setting is "3".	3
IGN STATUS SIG	Power switch READY position.		ON
	Power switch other than READY position.		OFF
VSP OFF SW	Power switch ON	When VSP OFF switch is pressed.	ON
		When VSP OFF switch is not pressed.	OFF

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

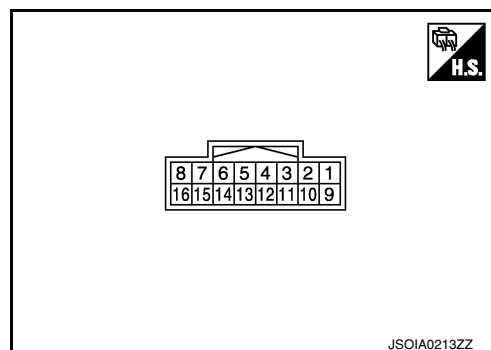
< ECU DIAGNOSIS INFORMATION >

Monitor item	Condition		Value/Status
VSP SOUND	READY	When VSP system sound is not cancelled. • VSP warning lamp: OFF (Except for Mexico) • VSP OFF indicator: OFF (For Mexico)	ON
		When VSP system sound is cancelled. • VSP warning lamp: ON (Except for Mexico) • VSP OFF indicator: ON (For Mexico)	OFF
PUSH SW	Power switch ON	When power switch is pressed.	ON
		When power switch is not pressed.	OFF
READY OP IND SIG	READY		ON
	When READY starts. (READY to drive indicator lamp: OFF to ON)		BLINK
	Other than the above.		OFF
CHARGE SOUND REQ	Charge sound is not operating.		OFF
	Charge connector connected.		PLG IN
	• When charge starts. • When waiting for timer charge acceptance.		CHR ST
	• When charge port lid is unlocked. • When charge connector lock is unlocked.		UNLCK
REVERSE BUZZER	NOTE: This item is displayed, but cannot be monitored.		OFF
VEHICLE SPEED	Power switch ON	While driving.	Approximately equal to speedometer reading NOTE: Indicates 63 km/h (39.1 MPH) when speed is 63 km/h (39.1 MPH) or higher.
VHCL SPEED SIG	Power switch ON	Vehicle speed signal is normal.	NORMAL
		Vehicle speed signal is abnormal.	INVALID
SHIFT POS SIG	Power switch ON	When selector lever is in "P" position.	P
		When selector lever is in "N" position.	N
		When selector lever is in "R" position.	R
		When selector lever is in "D" position.	D
ENGINE RPM	NOTE: This item is displayed, but cannot be monitored.		rpm
ENG SPEED SIG	NOTE: This item is displayed, but cannot be monitored.		NORMAL
START UP SOUND REQ	Power switch ON	When start up sound setting in the combination meter is "1".	1
		When start up sound setting in the combination meter is "2".	2
		When start up sound setting in the combination meter is "3".	3
		When start up sound setting in the combination meter is OFF.	OFF
SOUND SET REQ	Power switch ON	When start up sound type was set.	ON
		Other than the above.	OFF

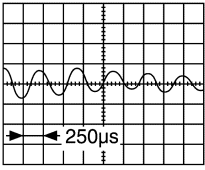
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

TERMINAL LAYOUT

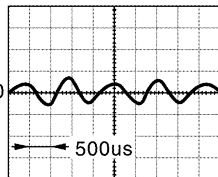


PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	—	Signal name	Input/ Output			
1 (B)	Ground	Ground	—	Power switch ON	—	0 V
3 (V)	Ground	Power switch signal	Input	Power switch ON	When power switch is pressed.	0 V
					When power switch is not pressed.	12 V
4 (L)	Ground	CAN-H	—	—	—	—
5 (LG)	Ground	VSP OFF switch signal	Input	Power switch ON	When VSP OFF switch is pressed	0 V
					When VSP OFF switch is not pressed	12 V
8 (Y)	7 (L)	VSP speaker signal	Output	Power switch ON	When VSP speaker is output.	NOTE: Waveform varies depending on tone and sound level.  JSMIA0539GB
11 (G)	Ground	Power ON power supply	Input	Power switch ON	—	Battery voltage
12 (P)	—	CAN-L	—	—	—	—
13 (R)	Ground	Battery power supply	Input	Power switch OFF	—	Battery voltage
14*1 (LG)	Ground	VSP warning lamp signal	Output	Power switch ON	VSP warning lamp is ON.	0 V
					VSP warning lamp is OFF.	12 V

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
14 ^{*2} (SB)	Ground	VSP OFF indicator signal	Output	Power switch ON	VSP OFF indicator is ON.	0 V
					VSP OFF indicator is OFF.	12 V
16 (W)	15 (R)	Start up sound speaker signal	Output	Power switch ON	When start up sound speaker is output.	NOTE: Waveform varies depending on tone and sound level.  <small>JSMIA0564GB</small>

*1: Except for Mexico

*2: For Mexico

Fail-Safe

INFOID:0000000010634001

When a malfunction occurs in the VSP control unit, fail-safe control is performed according to the malfunction.

DTC	Fail-safe condition
U1000	<ul style="list-style-type: none"> Start up sound system: Function stops when there is a communication break. NOTE: The power switch operation sound operates. <ul style="list-style-type: none"> VSP system: Function stops when there is a communication break. Charge sound system: Does not operate.
U1010	<ul style="list-style-type: none"> Start up sound system: Function stops NOTE: The power switch operation sound operates <ul style="list-style-type: none"> VSP system: Function stops Charge sound system: Does not operate
B2471	<ul style="list-style-type: none"> Start up sound system: Function stops NOTE: The power switch operation sound operates <ul style="list-style-type: none"> VSP system: Function stops Charge sound system: Does not operate

DTC Index

INFOID:0000000010634002

DTC	CONSULT display	Reference
U1000	CAN COMM CIRCUIT	VSP-42, "DTC Logic"
U1010	CONTROL UNIT (CAN)	VSP-43, "DTC Logic"
B2741	VSP CONTROL UNIT	VSP-44, "DTC Logic"

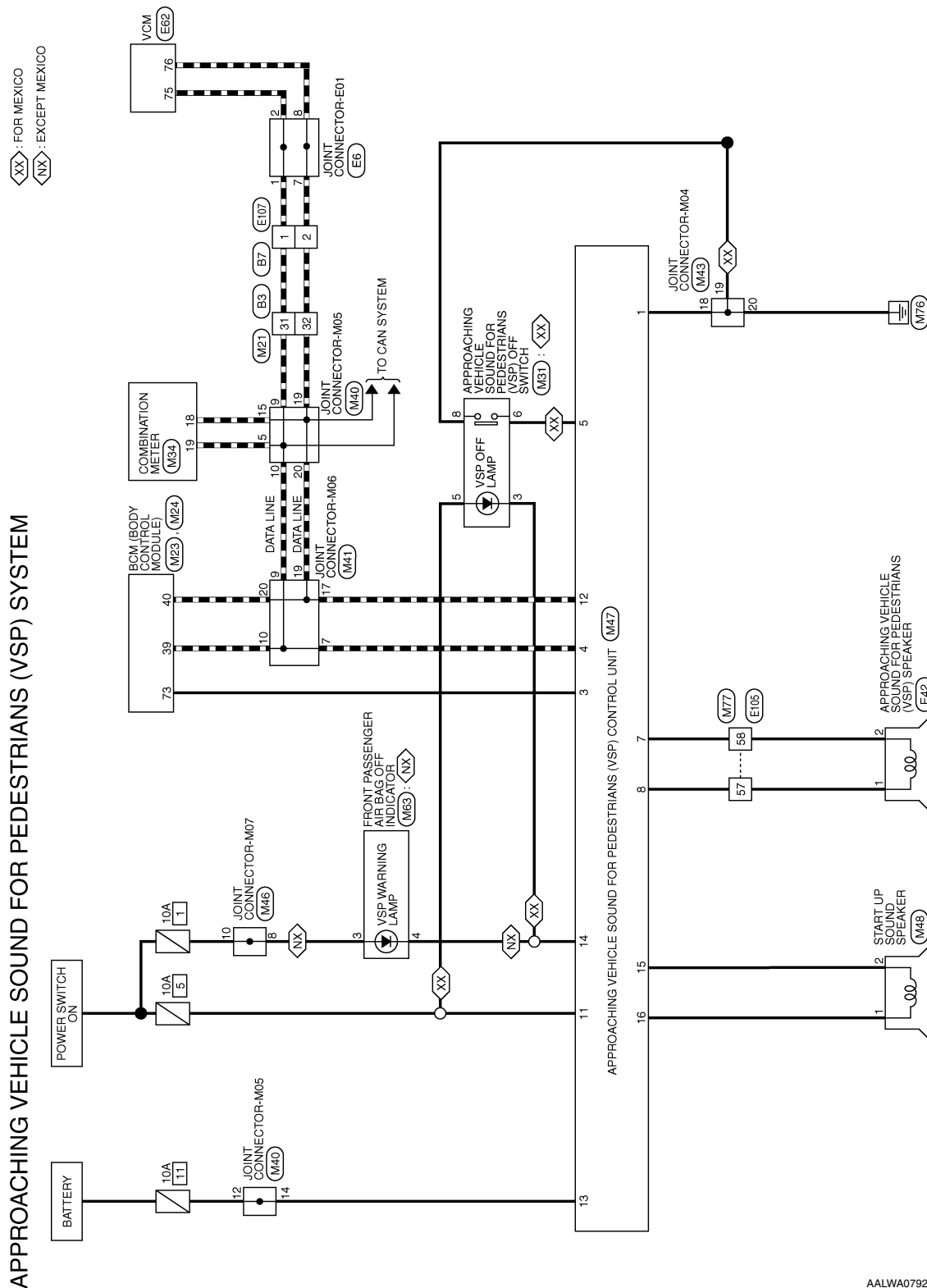
< WIRING DIAGRAM >

WIRING DIAGRAM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

Wiring Diagram

INFOID:0000000010634003



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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

< WIRING DIAGRAM >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	M21
Connector Name	WIRE TO WIRE
Connector Color	WHITE



16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

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

Connector No.	M23
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110

Terminal No.	Color of Wire	Signal Name
73	V	PUSH SW SIGNAL OUTPUT

Connector No.	M24
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

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

Connector No.	M31
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH
Connector Color	WHITE



4	3	2	1
8	7	6	5

Terminal No.	Color of Wire	Signal Name
1	P	-
2	-	-
3	SB	-
4	B	-
5	GR	-
6	LG	-
7	-	-
8	BR	-

Connector No.	M34
Connector Name	COMBINATION METER
Connector Color	WHITE



20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
18	P	CAN-L
19	L	CAN-H

Connector No.	M40
Connector Name	JOINT CONNECTOR-M05
Connector Color	BLUE



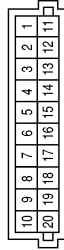
10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

Terminal No.	Color of Wire	Signal Name
5	L	-
9	L	-
10	L	-
12	LG	-
14	R	-
15	P	-
19	P	-
20	P	-

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

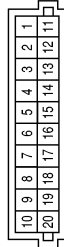
< WIRING DIAGRAM >

Connector No.	M46
Connector Name	JOINT CONNECTOR-M07
Connector Color	ORANGE



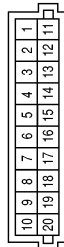
Terminal No.	Color of Wire	Signal Name
8	GR	-
10	BR	-

Connector No.	M43
Connector Name	JOINT CONNECTOR-M04
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
18	B	-
19	B	-
20	B	-

Connector No.	M41
Connector Name	JOINT CONNECTOR-M06
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
7	L	-
9	L	-
10	L	-
17	P	-
19	P	-
20	P	-

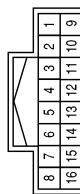
Connector No.	M48
Connector Name	START UP SOUND SPEAKER
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	W	-
2	R	-

Terminal No.	Color of Wire	Signal Name
8	Y	VSP SPEAKER SIGNAL (+)
9	-	-
10	-	-
11	G	POWER SWITCH SUPPLY
12	P	CAN-L
13	R	BATTERY POWER SUPPLY
14	SB	VSP OFF INDICATOR SIGNAL (FOR MEXICO)
14	LG	VSP WARNING LAMP SIGNAL (EXCEPT MEXICO)
15	R	START UP SOUND SPEAKER SIGNAL (-)
16	W	START UP SOUND SPEAKER SIGNAL (+)

Connector No.	M47
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	-	-
3	V	POWER SWITCH SIGNAL
4	L	CAN-H
5	LG	VSP OFF SW
6	-	-
7	L	VSP SPEAKER SIGNAL (-)

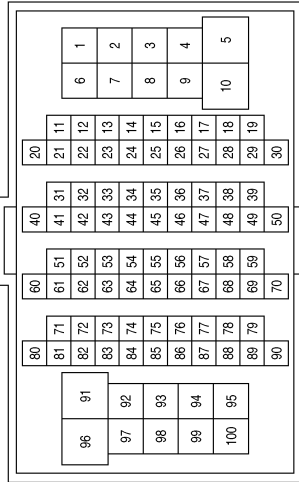
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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
57	Y	-
58	L	-

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Color	WHITE

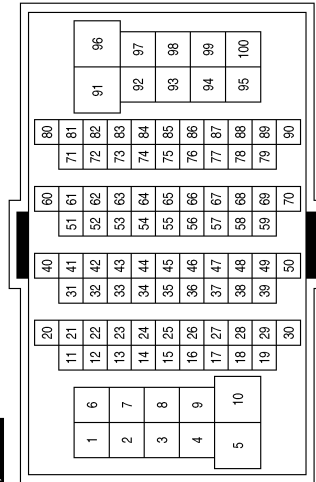


APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

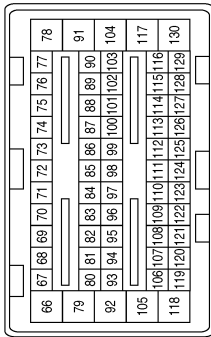
< WIRING DIAGRAM >

Terminal No.	Color of Wire	Signal Name
57	Y	-
58	L	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Color	WHITE

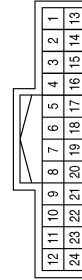


Connector No.	E62
Connector Name	VCM
Connector Color	BROWN



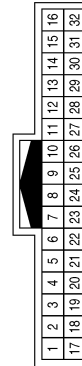
Terminal No.	Color of Wire	Signal Name
75	L	CAN-H
76	P	CAN-L

Connector No.	B7
Connector Name	WIRE TO WIRE
Connector Color	WHITE



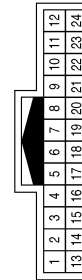
Terminal No.	Color of Wire	Signal Name
1	L	-
2	P	-

Connector No.	B3
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

Connector No.	E107
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

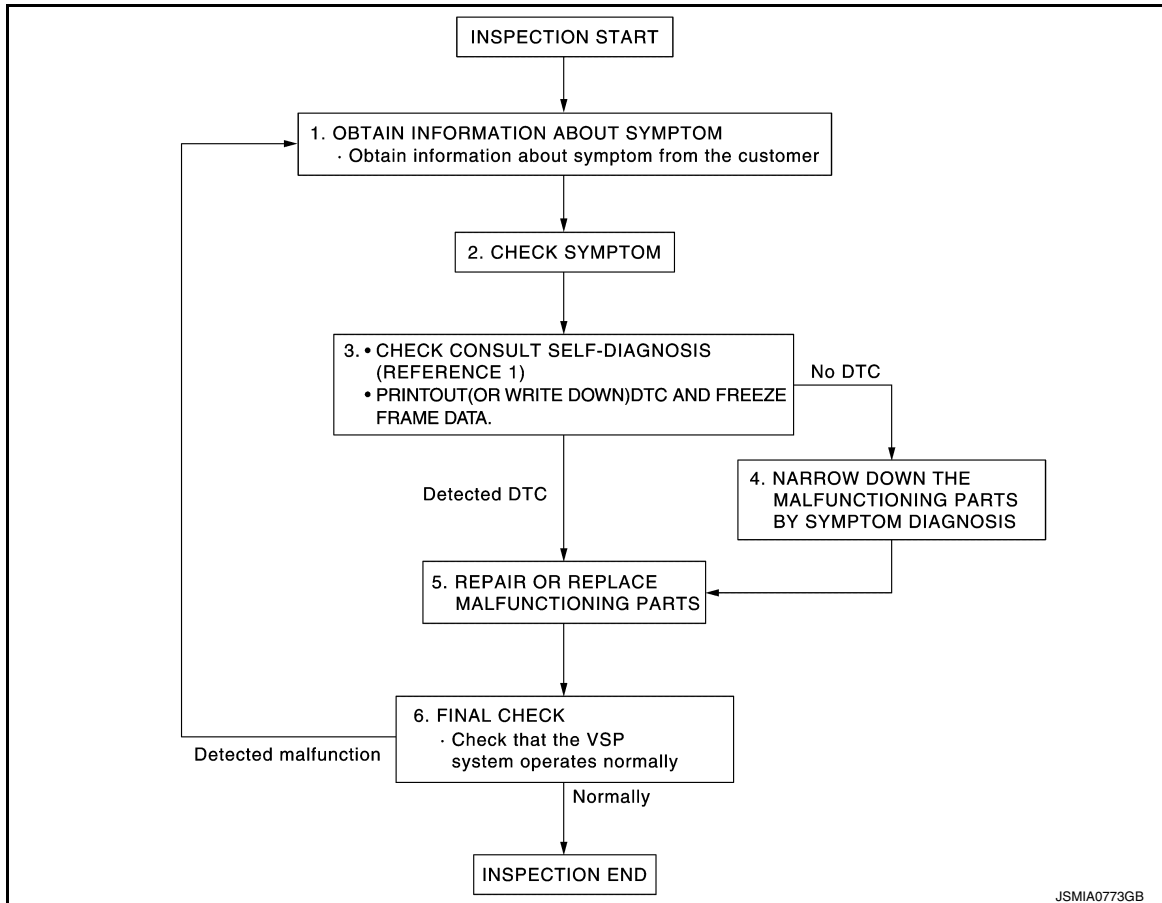
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000010634004

OVERALL SEQUENCE



Reference 1...[VSP-34, "DTC Index"](#).

DETAILED FLOW

1.OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain as much information as possible about the conditions and environment under which the malfunction occurred.

>> GO TO 2.

2.CHECK SYMPTOM

- Check the symptom based on the information obtained from the customer.
- Check if any other malfunctions are present.

>> GO TO 3.

3.CHECK CONSULT SELF-DIAGNOSIS RESULTS

1. Connect CONSULT and perform self-diagnosis. Refer to [VSP-34, "DTC Index"](#).
2. When DTC is detected, follow the instructions below:
 - Record DTC and Freeze Frame Data.

Is any DTC detected?

YES >> GO TO 5.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

NO >> GO TO 4.

4.NARROW DOWN MALFUNCTIONING PARTS BY SYMPTOM DIAGNOSIS

Perform symptom diagnosis and narrow down the malfunctioning parts.

>> GO TO 5.

5.REPAIR OR REPLACE MALFUNCTIONING PARTS

Repair or replace malfunctioning parts.

NOTE:

If DTC is detected, erase DTC after repairing or replacing malfunctioning parts.

>> GO TO 6.

6.FINAL CHECK

Check that the VSP system operates normally.

Does it operate normally?

YES >> INSPECTION END

NO >> GO TO 1.

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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000010634005

CAN (Controller Area Network) is a serial communication system for real time application. It is an on-vehicle multiplex communication system with high data communication speed and excellent error detect ability. Many electronic control units are equipped onto vehicles, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two 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-37, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

DTC Logic

INFOID:0000000010634006

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when...	Probable malfunction location
U1000	CAN COMM CIRCUIT	When VSP control unit is not transmitting or receiving CAN communication signal for 2 seconds or more.	CAN communication

Diagnosis Procedure

INFOID:0000000010634007

1.PERFORM SELF DIAGNOSTIC

1. Turn power switch ON and wait for 2 seconds or more.
2. Perform self-diagnosis with CONSULT.
3. Check if the DTC "U1000" is detected in self-diagnosis results of "VSP".

Is "U1000" detected?

- YES >> Refer to [LAN-17, "Trouble Diagnosis Flow Chart"](#).
- NO >> Refer to [GI-53, "Intermittent Incident"](#).

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000010634008

Initial diagnosis of VSP control unit.

DTC Logic

INFOID:0000000010634009

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when...	Probable malfunction location
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of the CAN controller of VSP control unit.	VSP control unit

Diagnosis Procedure

INFOID:0000000010634010

1.PERFORM SELF DIAGNOSTIC

1. Turn power switch ON.
2. Perform self-diagnosis with CONSULT.
3. Check if the DTC "U1010" is detected in self-diagnosis results of "VSP".

Is "U1010" detected?

- YES >> Replace VSP control unit. Refer to [VSP-67, "Removal and Installation"](#).
- NO >> INSPECTION END

VSP

B2741 VSP CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

B2741 VSP CONTROL UNIT

DTC Logic

INFOID:0000000010634011

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when...	Probable malfunction location
B2741	VSP CONTROL UNIT	<ul style="list-style-type: none">• VSP control unit internal malfunction• When open circuit is detected in VSP speaker circuit or start up sound speaker circuit• When short circuit is detected in VSP speaker circuit or start up sound speaker circuit	<ul style="list-style-type: none">• VSP control unit• VSP speaker circuit• VSP speaker• Start up sound speaker circuit• Start up sound speaker

NOTE:

DTC "B2741" may be detected when VSP speaker or start up sound speaker connector is disconnected without disconnecting the 12V battery negative terminal.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn power switch ON.
2. Erases "self-diagnosis results" with CONSULT.
3. Turn power switch OFF.
4. Turn power switch ON.
5. Check if the DTC "B2741" is detected in self-diagnosis results of "VSP".

Is "B2741" detected?

YES >> Refer to [VSP-44, "Diagnosis Procedure"](#).

NO >> Refer to [GI-53, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:0000000010634012

1.CHECK START UP SOUND SPEAKER SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit and start up sound speaker connector.
3. Check continuity between VSP control unit harness connector and start up sound speaker harness connector.

VSP control unit		Start up sound speaker		Continuity
Connector	Terminal	Connector	Terminal	
M47	15	M48	2	Existed
	16		1	

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	15		Not existed
	16		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair harness or connector.

2.CHECK START UP SOUND SPEAKER

Check start up sound speaker. Refer to [VSP-45, "Component Inspection \(Start Up Sound Speaker\)"](#).

B2741 VSP CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Replace start up sound speaker.

3.CHECK VSP SPEAKER SIGNAL CIRCUIT

1. Disconnect VSP speaker connector.
2. Check continuity between VSP control unit harness connector and VSP speaker harness connector.

VSP control unit		VSP speaker		Continuity
Connector	Terminal	Connector	Terminal	
M47	7	E42	2	Existed
	8		1	

3. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	7		Not existed
	8		

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair harness or connector.

4.CHECK VSP SPEAKER

Check VSP speaker. Refer to [VSP-45, "Component Inspection \(VSP Speaker\)"](#).

Is the inspection result normal?

- YES >> Replace VSP control unit.
NO >> Replace VSP speaker.

Component Inspection (Start Up Sound Speaker)

INFOID:0000000010634013

1.CHECK START UP SOUND SPEAKER

1. Turn power switch OFF.
2. Disconnect start up sound speaker connector.
3. Check resistance between start up sound speaker terminals.

Terminal		Resistance
1	2	Approx. 6 Ω

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Replace start up sound speaker.

Component Inspection (VSP Speaker)

INFOID:0000000010634014

1.CHECK VSP SPEAKER

1. Turn power switch OFF.
2. Disconnect VSP speaker connector.
3. Check resistance between VSP speaker terminals.

Terminal		Resistance
1	2	Approx. 4 Ω

Is the inspection result normal?

- YES >> INSPECTION END

B2741 VSP CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

NO >> Replace VSP speaker.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure

INFOID:000000010634015

1.CHECK FUSE

Check for blown fuses.

Signal name	Fuse No.
Battery power supply	11
Power switch ON signal	5

Is the inspection result normal?

YES >> GO TO 2.

NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn power switch ON.
2. Check voltage between VSP control unit harness connector and ground.

Signal name	Connector No.	Terminal No.	Power switch position	Value (Approx.)
Battery power supply	M47	13	OFF	Battery voltage
Power switch ON signal		11	ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace VSP control unit power supply harness.

3.CHECK GROUND CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit connector.
3. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	1		Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace VSP control unit ground harness.

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VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER SIGNAL CIRCUIT

Description

INFOID:0000000010634016

The VSP control unit outputs the VSP speaker signal to the VSP speaker.

Component Function Check

INFOID:0000000010634017

1.CHECK VSP SPEAKER OPERATION

1. Connect the CONSULT.
2. Turn power switch ON.
3. Select the "ACTIVE TEST" item "VSP SPEAKER" of "VSP".
4. Activate "VSP SPEAKER" and check that VSP speaker operates.

Is the inspection result normal?

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

Diagnosis Procedure

INFOID:0000000010634018

1.CHECK VSP SPEAKER SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit and VSP speaker connector.
3. Check continuity between VSP control unit harness connector and VSP speaker harness connector.

VSP control unit		VSP speaker		Continuity
Connector	Terminal	Connector	Terminal	
M47	7	E42	2	Existed
	8		1	

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	7		Not existed
	8		

Is the inspection result normal?

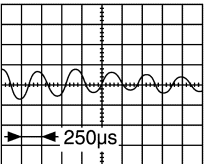
- YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK VSP SPEAKER OUTPUT SIGNAL

1. Connect VSP control unit and VSP speaker connector.
2. Connect the CONSULT.
3. Turn power switch ON.
4. Select the "ACTIVE TEST" for the "VSP" and perform the "VSP SPEAKER".
5. Check signal between VSP control unit harness connector.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Terminals				Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal	Connector	Terminal	
M47	8	M47	7	<div><p>NOTE: Waveform varies depending on tone and sound level.</p><p>JSMIA0539GB</p></div>

Is the inspection result normal?

- YES >> Replace VSP speaker. Refer to [VSP-69. "Removal and Installation"](#).
- NO >> Replace VSP control unit. Refer to [VSP-67. "Removal and Installation"](#).

VSP

START UP SOUND SPEAKER SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

START UP SOUND SPEAKER SIGNAL CIRCUIT

Description

INFOID:0000000010634019

The VSP control unit outputs the start up sound speaker signal to the start up sound speaker.

Component Function Check

INFOID:0000000010634020

1.CHECK START UP SOUND SPEAKER OPERATION

1. Connect the CONSULT.
2. Turn power switch ON.
3. Select the "ACTIVE TEST" item "START UP SOUND SPEAKER" of "VSP".
4. Activate "START UP SOUND SPEAKER" and check that start up sound speaker operates.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to [VSP-50, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000010634021

1.CHECK START UP SOUND SPEAKER SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit and start up sound speaker connector.
3. Check continuity between VSP control unit harness connector and start up sound speaker harness connector.

VSP control unit		Start up sound speaker		Continuity
Connector	Terminal	Connector	Terminal	
M47	15	M48	2	Existed
	16		1	

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	15		Not existed
	16		

Is the inspection result normal?

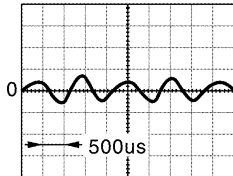
YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK START UP SOUND SPEAKER OUTPUT SIGNAL

1. Connect VSP control unit and start up sound speaker connector.
2. Connect the CONSULT.
3. Turn power switch ON.
4. Select the "ACTIVE TEST" for the "VSP" and perform the "START UP SOUND SPEAKER".
5. Check signal between VSP control unit harness connector.

START UP SOUND SPEAKER SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Terminals				Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal	Connector	Terminal	
M47	16	M47	15	<div><p>NOTE: Waveform varies depending on tone and sound level.</p></div>

Is the inspection result normal?

- YES >> Replace start up sound speaker. Refer to [VSP-68. "Removal and Installation"](#).
- NO >> Replace VSP control unit. Refer to [VSP-67. "Removal and Installation"](#).

VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) WARNING LAMP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) WARNING LAMP SIGNAL CIRCUIT

Description

INFOID:0000000010634022

VSP warning lamp turns ON/OFF according to VSP warning lamp signal transmitted from VSP control unit.

Component Function Check

INFOID:0000000010634023

1.CHECK VSP WARNING LAMP OPERATION

1. Connect the CONSULT.
2. Turn power switch ON.
3. Select the "ACTIVE TEST" item "VSP OFF INDICATOR" of "VSP".
4. Activate "VSP OFF INDICATOR" and check that VSP warning lamp operates.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Refer to [VSP-52, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000010634024

1.CHECK FUSE

Check that the following fuse is not fusing.

Location	Fuse No.
Fuse block (J/B)	1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the fuse after repairing the applicable circuit.

2.CHECK VSP WARNING LAMP POWER SUPPLY CIRCUIT

1. Turn power switch OFF.
2. Disconnect front passenger air bag OFF indicator harness connector.
3. Turn power switch ON.
4. Check voltage between front passenger air bag OFF indicator harness connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
Front passenger air bag OFF indicator			
Connector	Terminal		
M63	3	Ground	12 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

3.CHECK VSP WARNING LAMP SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit harness connector.
3. Check the continuity between VSP control unit harness connector and front passenger air bag OFF indicator harness connector.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) WARNING LAMP SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

VSP control unit		Front passenger air bag OFF indicator		Continuity
Connector	Terminal	Connector	Terminal	
M47	14	M63	4	Existed

4. Check the continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	14		Not existed

Is the inspection result normal?

YES >> Replace front passenger air bag OFF indicator.

NO >> Repair the harness or connector.

VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010634025

The VSP OFF switch outputs the VSP OFF switch signal to the VSP control unit.

Component Function Check

INFOID:0000000010634026

1.CHECK VSP OFF SWITCH INPUT SIGNAL CIRCUIT

1. Connect the CONSULT.
2. Select the "DATA MONITOR" for the "VSP" and check the "VSP OFF SW" monitor value.

	"VSP OFF SW"
When VSP OFF switch is pressed	: On
When VSP OFF switch is not pressed	: Off

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to [VSP-54. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000010634027

1.CHECK VSP OFF SWITCH SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit and VSP OFF switch connector.
3. Check continuity between VSP control unit harness connector and VSP OFF switch harness connector.

VSP control unit		VSP OFF SW		Continuity
Connector	Terminal	Connector	Terminal	
M47	5	M31	6	Existed

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	5		Not existed

5. Check continuity between VSP OFF switch harness connector and ground.

VSP OFF SW		Ground	Continuity
Connector	Terminal		
M31	8		Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK VSP OFF SWITCH INPUT SIGNAL

1. Connect VSP control unit and VSP OFF switch connector.
2. Turn power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Terminal			Condition	Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal			
M47	5	Ground	When VSP OFF switch is pressed	0 V
			When VSP OFF switch is not pressed	12 V

Is the inspection result normal?

YES >> Replace VSP control unit. Refer to [VSP-67, "Removal and Installation"](#).
NO >> GO TO 3.

3.CHECK VSP OFF SWITCH

1. Turn power switch OFF.
2. Disconnect VSP OFF switch connector.
3. Check VSP OFF switch. Refer to [VSP-55, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace VSP control unit. Refer to [VSP-67, "Removal and Installation"](#).
NO >> Replace VSP OFF switch. Refer to [VSP-70, "Removal and Installation"](#).

Component Inspection

INFOID:0000000010634028

1.CHECK VSP OFF SWITCH

1. Turn power switch OFF.
2. Disconnect VSP OFF switch connector.
3. Check continuity between following terminals of the VSP OFF switch.

Terminals		Condition	Continuity
6	8	When VSP OFF switch is pressed	Existed
		When VSP OFF switch is not pressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace VSP OFF switch. Refer to [VSP-70, "Removal and Installation"](#).

VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF INDICATOR SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF INDICATOR SIGNAL CIRCUIT

Description

INFOID:0000000010634029

The VSP OFF indicator turns ON and OFF according to the VSP OFF indicator signal from the VSP control unit.

Component Function Check

INFOID:0000000010634030

1.CHECK VSP OFF INDICATOR OPERATION

1. Connect the CONSULT.
2. Turn power switch ON.
3. Select the "ACTIVE TEST" item "VSP OFF INDICATOR" of "VSP".
4. Activate "VSP OFF INDICATOR" and check that VSP OFF indicator operates.

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Refer to [VSP-56. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:0000000010634031

1.CHECK FUSE

Check that the following fuse is not fusing.

Signal name	Fuse No.
Power switch ON signal	5

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Replace the fuse after repairing the applicable circuit.

2.CHECK VSP OFF INDICATOR POWER SUPPLY CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP OFF switch connector.
3. Turn power switch ON.
4. Check voltage between VSP OFF switch connector and ground.

Terminals			Voltage (Approx.)
(+)		(-)	
VSP OFF switch			
Connector	Terminal		
M31	5	Ground	12 V

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Check harness between fuse and VSP OFF switch.

3.CHECK VSP OFF INDICATOR SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit connector.
3. Check continuity between the VSP control unit harness connector and the VSP OFF switch harness connector.

VSP control unit		VSP OFF SW		Continuity
Connector	Terminal	Connector	Terminal	
M47	14	M31	3	Existed

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF INDICATOR SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the harnesses or connector.

4.CHECK VSP OFF INDICATOR OUTPUT SIGNAL

1. Connect VSP control unit and VSP OFF switch connector.
2. Turn power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

Terminals			Condition	Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal			
M47	14	Ground	VSP system operating	12 V
			VSP system stopped	0 V

NOTE:

Check whether or not the voltage changes when the VSP off switch is operated.

Is the inspection result normal?

YES >> Replace the VSP OFF switch. Refer to [VSP-70. "Removal and Installation"](#).

NO >> Replace the VSP control unit. Refer to [VSP-67. "Removal and Installation"](#).

VSP

POWER SWITCH SIGNAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000010634032

The power switch outputs the power switch signal to the VSP control unit.

Component Function Check

INFOID:0000000010634033

1.CHECK POWER SWITCH INPUT SIGNAL

1. Connect the CONSULT.
2. Select the "DATA MONITOR" for the "VSP" and check the "PUSH SW" monitor value.

	"PUSH SW"
When power switch is pressed	: On
When power switch is not pressed	: Off

Is the inspection result normal?

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

Diagnosis Procedure

INFOID:0000000010634034

1.CHECK POWER SWITCH SIGNAL CIRCUIT

1. Turn power switch OFF.
2. Disconnect VSP control unit and BCM connector.
3. Check continuity between VSP control unit harness connector and BCM harness connector.

VSP control unit		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M47	3	M23	43	Existed

4. Check continuity between VSP control unit harness connector and ground.

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	3		Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair harness or connector.

2.CHECK POWER SWITCH INPUT SIGNAL

1. Connect VSP control unit and BCM connector.
2. Turn power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

Terminal			Condition	Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal			
M47	3	Ground	When power switch is pressed	0 V
			When power switch is not pressed	12 V

Is the inspection result normal?

YES >> Replace VSP control unit. Refer to [VSP-69, "Removal and Installation"](#).
NO >> Replace BCM. Refer to [BCS-72, "Removal and Installation"](#).

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000010634035

Except for Mexico

Symptoms	Check items	Possible malfunction location	Reference
VSP warning lamp does not turn ON or does not turn OFF.	—	<ul style="list-style-type: none"> VSP warning lamp VSP warning lamp signal circuit VSP control unit 	VSP-60, "Diagnosis Procedure"
No sound from VSP speaker	VSP sound and charge sounds do not sound.	<ul style="list-style-type: none"> VSP speaker VSP speaker signal circuit VSP control unit 	VSP-63, "Diagnosis Procedure"
No sound from start up sound speaker	Power switch operation sound and READY effect sound do not sound.	<ul style="list-style-type: none"> Start up sound speaker Start up sound speaker signal circuit VSP control unit 	VSP-64, "Diagnosis Procedure"
Power switch operation sound does not sound.	READY effect sound occurs.	<ul style="list-style-type: none"> Power switch Power switch signal circuit VSP control unit 	VSP-65, "Diagnosis Procedure"

For Mexico

Symptoms	Check items	Possible malfunction location	Reference
VSP OFF indicator does not turn ON or does not turn OFF.	System operation stop and operation resume are possible by operating the VSP OFF switch.	<ul style="list-style-type: none"> VSP OFF switch VSP OFF indicator signal circuit VSP control unit 	VSP-61, "Diagnosis Procedure"
VSP system operation cannot be stopped.	—	<ul style="list-style-type: none"> VSP OFF switch VSP OFF switch signal circuit VSP control unit 	VSP-62, "Diagnosis Procedure"
No sound from VSP speaker	<ul style="list-style-type: none"> VSP OFF switch operation is normal. VSP sound and charge sounds do not sound. 	<ul style="list-style-type: none"> VSP speaker VSP speaker signal circuit VSP control unit 	VSP-63, "Diagnosis Procedure"
No sound from start up sound speaker	Power switch operation sound and READY effect sound do not sound.	<ul style="list-style-type: none"> Start up sound speaker Start up sound speaker signal circuit VSP control unit 	VSP-64, "Diagnosis Procedure"
Power switch operation sound does not sound.	READY effect sound occurs.	<ul style="list-style-type: none"> Power switch Power switch signal circuit VSP control unit 	VSP-65, "Diagnosis Procedure"

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) WARNING LAMP DOES NOT TURN ON OR OFF

< SYMPTOM DIAGNOSIS >

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) WARNING LAMP DOES NOT TURN ON OR OFF

Description

INFOID:0000000010634036

- VSP warning lamp does not turn ON.
- VSP warning lamp does not turn OFF except when:
 - Communication error occurs.

Diagnosis Procedure

INFOID:0000000010634037

1. CHECK VSP WARNING LAMP SIGNAL CIRCUIT

Check VSP warning lamp signal circuit. Refer to [VSP-52. "Component Function Check"](#).

Is the inspection result normal?

- YES >> Refer to [GI-53. "Intermittent Incident"](#).
- NO >> Repair or replace the malfunctioning parts.

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF INDICATOR DOES NOT TURN ON OR OFF

< SYMPTOM DIAGNOSIS >

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF INDICATOR DOES NOT TURN ON OR OFF

Description

INFOID:0000000010634038

- The VSP OFF indicator does not turn OFF even when VSP system is operating.
- The VSP OFF indicator does not turn ON even when VSP system is stopped.

Diagnosis Procedure

INFOID:0000000010634039

1.CHECK VSP OFF INDICATOR SIGNAL CIRCUIT

Check VSP OFF indicator signal circuit. Refer to [VSP-56. "Component Function Check"](#).

Is the inspection result normal?

- YES >> Refer to [GI-53. "Intermittent Incident"](#).
NO >> Repair or replace the malfunctioning parts.

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VSP

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CAN NOT BE CANCELED

< SYMPTOM DIAGNOSIS >

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CAN NOT BE CANCELED

Description

INFOID:0000000010634040

The VSP system operation does not stop even when the VSP OFF switch is pressed.

Diagnosis Procedure

INFOID:0000000010634041

1.CHECK VSP OFF SWITCH SIGNAL CIRCUIT

Check the VSP OFF switch signal circuit. Refer to [VSP-54, "Component Function Check"](#).

Is the inspection result normal?

- YES >> Refer to [GI-53, "Intermittent Incident"](#).
NO >> Repair or replace the malfunctioning parts.

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER DOES NOT SOUND

< SYMPTOM DIAGNOSIS >

THE APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER DOES NOT SOUND

Description

INFOID:0000000010634042

The driving start sound, driving sound, reverse sound, and charge sound all do not operate.

Diagnosis Procedure

INFOID:0000000010634043

1.CHECK VSP SPEAKER SIGNAL CIRCUIT

Check VSP speaker signal circuit. Refer to [VSP-48, "Component Function Check"](#).

Is the inspection result normal?

- YES >> Refer to [GI-53, "Intermittent Incident"](#).
- NO >> Repair or replace the malfunctioning parts.

VSP

THE START UP SOUND SPEAKER DOES NOT SOUND

< SYMPTOM DIAGNOSIS >

THE START UP SOUND SPEAKER DOES NOT SOUND

Description

INFOID:0000000010634044

The start up sound do not sound.

Diagnosis Procedure

INFOID:0000000010634045

1.CHECK START UP SOUND SPEAKER SIGNAL CIRCUIT

Check start up sound speaker signal circuit. Refer to [VSP-50, "Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-53, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

THE POWER SWITCH OPERATION SOUND DOES NOT SOUND

< SYMPTOM DIAGNOSIS >

THE POWER SWITCH OPERATION SOUND DOES NOT SOUND

Description

INFOID:0000000010634046

The power switch operation sound does not sound when the power switch is operated.

Diagnosis Procedure

INFOID:0000000010634047

1.CHECK POWER SWITCH SIGNAL CIRCUIT

Check power switch signal circuit. Refer to [VSP-58, "Component Function Check"](#).

Is the inspection result normal?

- YES >> Refer to [GI-53, "Intermittent Incident"](#).
- NO >> Repair or replace the malfunctioning parts.

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VSP

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM : Description

INFOID:0000000010634048

- The VSP during forward driving fades out and stops operating when the vehicle stops [vehicle speed 0 km/h (0 MPH) is detected].
- The VSP during reverse driving continues to operate when the vehicle is stopped.

START UP SOUND SYSTEM

START UP SOUND SYSTEM : Description

INFOID:0000000010634049

- The power switch operation sound may not be able to respond normally if the power switch is pressed quickly.
- The power switch operation sound is inoperative when “Effects” in the combination meter settings is OFF.

CHARGE SOUND SYSTEM

CHARGE SOUND SYSTEM : Description

INFOID:0000000010634050

- Charge acceptance sound is inoperative when the power switch is ON.
- During quick charge, the plug-in detection sound does not operate.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

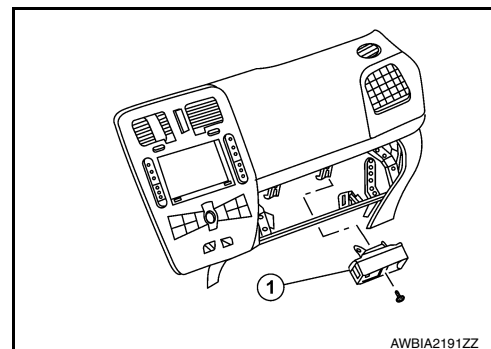
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Removal and Installation

INFOID:0000000010634051

REMOVAL

1. Remove the glove box cover assembly. Refer to [JP-17, "Removal and Installation"](#).
2. Remove the VSP control unit connector.
3. Remove screw and then remove the VSP control unit ①.



INSTALLATION

Installation is in the reverse order of removal.

VSP

START UP SOUND SPEAKER

< REMOVAL AND INSTALLATION >

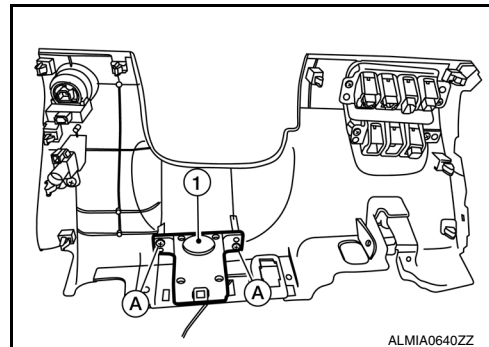
START UP SOUND SPEAKER

Removal and Installation

INFOID:0000000010634052

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-17. "Removal and Installation"](#).
2. Remove screws (A), and then remove the start up sound speaker (1).



INSTALLATION

Install in the reverse order of removal.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER

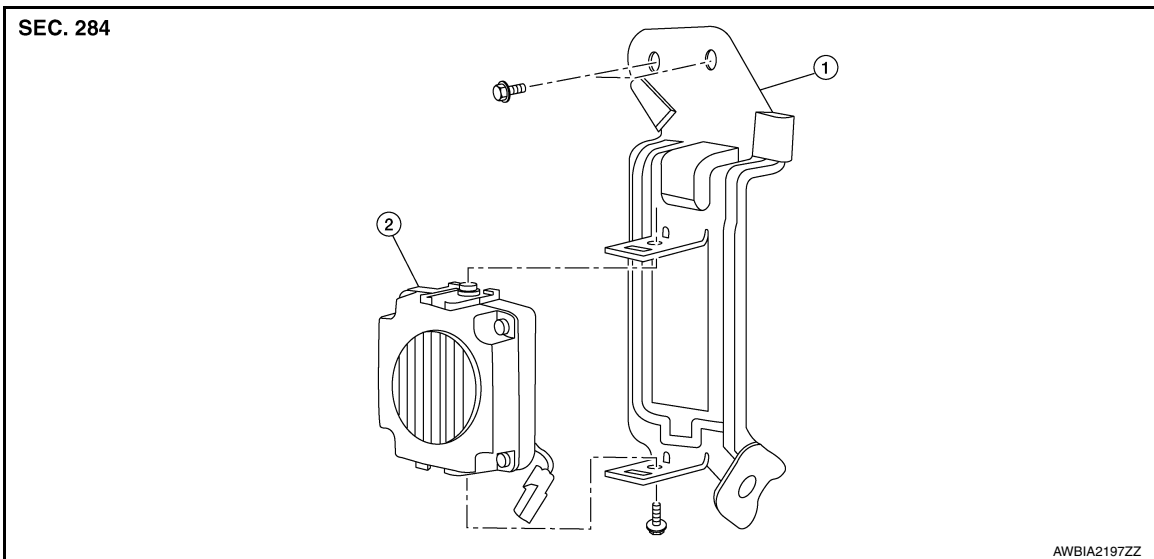
< REMOVAL AND INSTALLATION >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER

Exploded View

INFOID:0000000010634053

DISASSEMBLY



1. Bracket

2. VSP speaker

Removal and Installation

INFOID:0000000010634054

REMOVAL

1. Remove the front fender protector (LH). Refer to [EXT-21, "FENDER PROTECTOR : Removal and Installation"](#).
2. Disconnect the harness connector from the VSP speaker.
3. Remove bolts and then remove the VSP speaker .

INSTALLATION

Installation is in the reverse order of removal.

Disassembly and Assembly

INFOID:0000000010634055

VSP

DISASSEMBLY

Remove screws, and then remove bracket.

ASSEMBLY

Assembly is in the reverse order of disassembly.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH

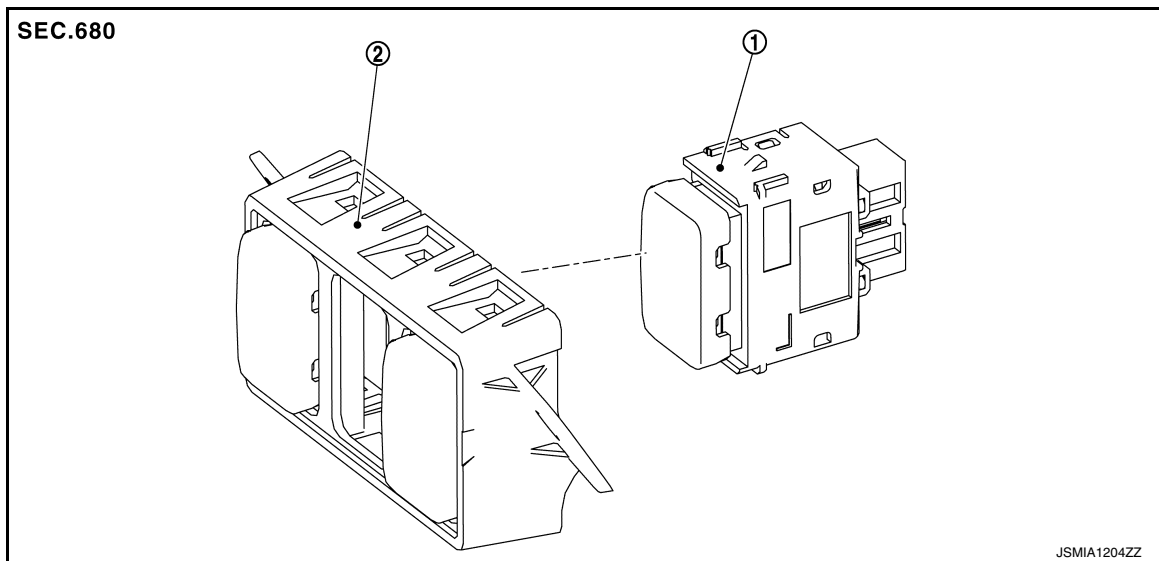
< REMOVAL AND INSTALLATION >

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH

Exploded View

INFOID:0000000010634056

REMOVAL



① VSP OFF switch

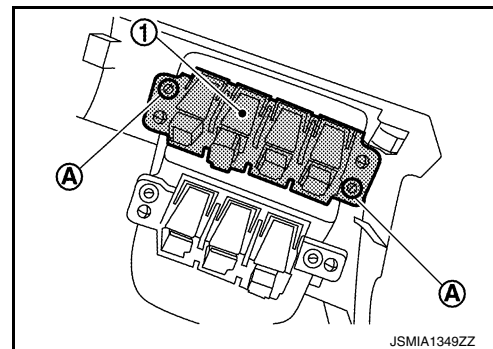
② Switch assembly

Removal and Installation

INFOID:0000000010634057

REMOVAL

1. Remove the instrument lower panel LH. Refer to [IP-17, "Removal and Installation"](#).
2. Remove screws (A), and then switch assembly ①.



3. Disengage the pawls to remove the VSP OFF switch.

INSTALLATION

Installation is in the reverse order of removal.