SECTION VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP)

CONTENTS

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:0000000007071907

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 on board charger at normal charge operation may effect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not enter the vehicle compartment (including luggage room) 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

INFOID:0000000007079453

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"

INFOID:0000000007508985

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

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

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see “SRS AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

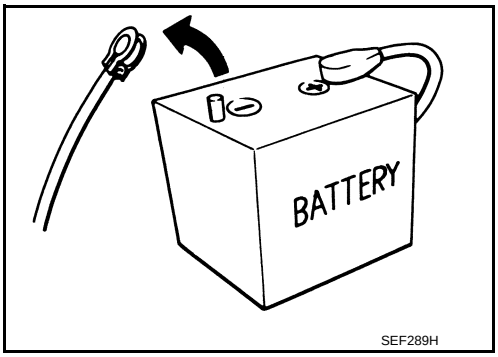
Always observe the following items for preventing accidental activation.

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the power switch ON, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the power switch OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.**

Precautions for Removing Battery Terminal

INFOID:0000000006932749

- 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.

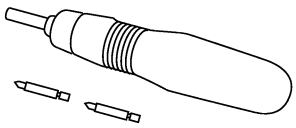
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the power switch.
  NOTE:
  If the power switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V 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

Commercial Service Tools

INFOID:0000000006959896

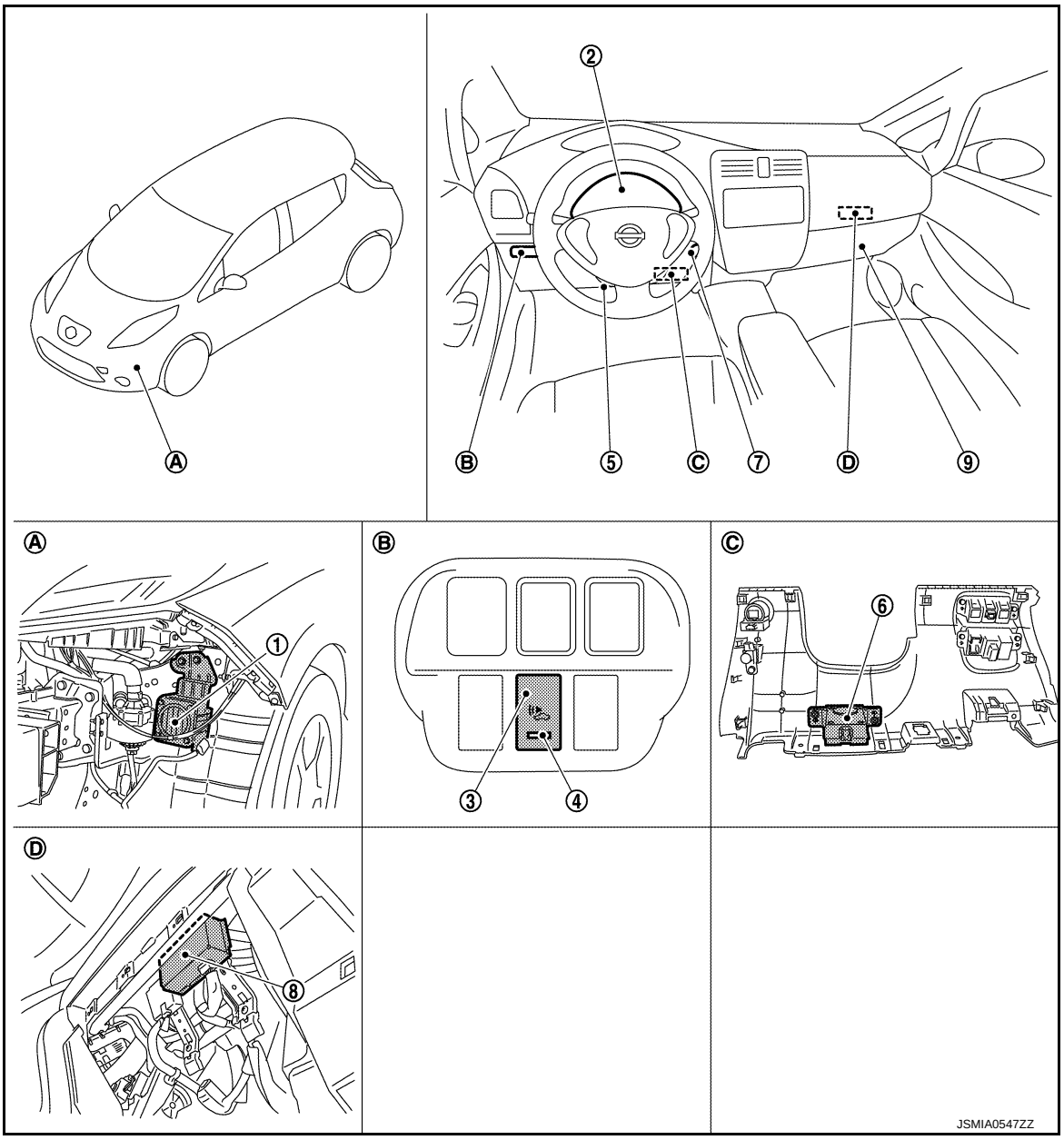
Tool name	Description
Power tool  PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006959791



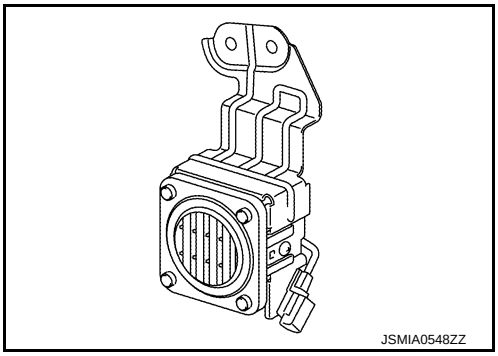
A. Left inside of front bumper
B. Instrument lower panel LH
C. Instrument lower panel LH reverse side
D. Inside glove box cover assembly

	Component	Description
1.	Approaching vehicle sound for pedestrians (VSP) speaker	Refer to VSP-8, "Approaching Vehicle Sound For Pedestrians (VSP) Speaker".
2.	Combination meter	• Transmits the following signals to the VSP control unit via the communication line. - READY to drive indicator lamp signal - Power switch signal - Vehicle speed signal - Sound set request signal - Sound signal - Shift position signal - Reverse warning buzzer signal • Sets the sound type of the start up sound function.
3.	Approaching vehicle sound for pedestrians (VSP) OFF switch	Refer to VSP-9, "Approaching Vehicle Sound For Pedestrians (VSP) OFF Switch".
4.	Approaching vehicle sound for pedestrians (VSP) OFF indicator	Refer to VSP-9, "Approaching Vehicle Sound For Pedestrians (VSP) OFF Indicator".
5.	Stop lamp switch	Outputs the stop lamp switch signal to the VSP control unit.
6.	Start up sound speaker	Refer to VSP-8, "Start Up Sound Speaker".
7.	Power switch	Outputs the power switch signal to the VSP control unit.
8.	Approaching vehicle sound for pedestrians (VSP) control unit	Refer to VSP-9, "Approaching Vehicle Sound For Pedestrians (VSP) Control Unit".
9.	VCM	Outputs the charge pulse signal to the VSP control unit. Refer to EVC-17, "Component Parts Location" for detailed installation location.

Approaching Vehicle Sound For Pedestrians (VSP) Speaker

INFOID:0000000006959792

- 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.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Start Up Sound Speaker

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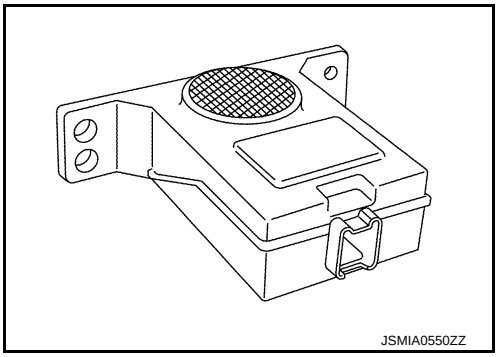
- The start up sound speaker is located on the reverse side of instrument lower panel LH.
- The start up sound speaker outputs the start up sound according to the start up sound speaker signal from the VSP control unit.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Approaching Vehicle Sound For Pedestrians (VSP) Control Unit

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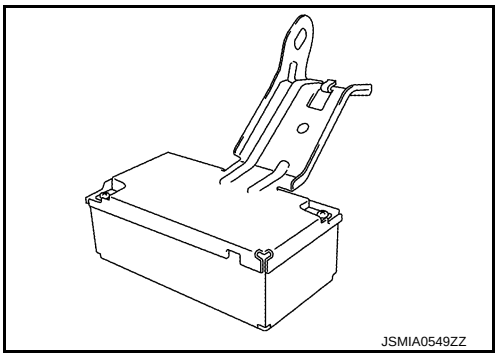
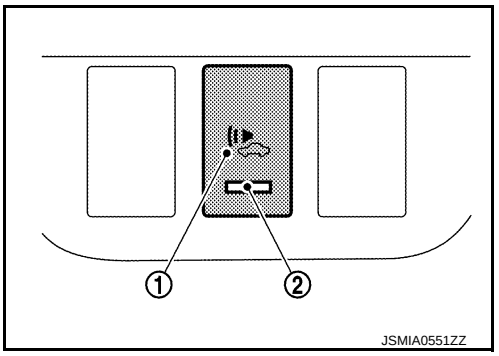


- The VSP control unit is located inside the glove box cover assembly.
- The VSP control unit contains 2 power amplifiers for the VSP speaker and start up sound speaker.
- The VSP control unit controls the following systems according to the signals from the units and switches.
- VSP system
- Start up 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

INFOID:0000000006959795

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



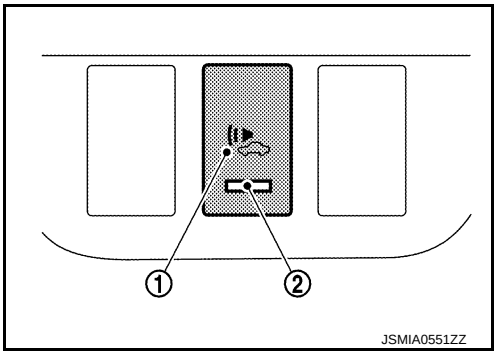
2. : VSP OFF indicator

- 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 Pedestrians (VSP) OFF Indicator

INFOID:0000000006959796

- 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.

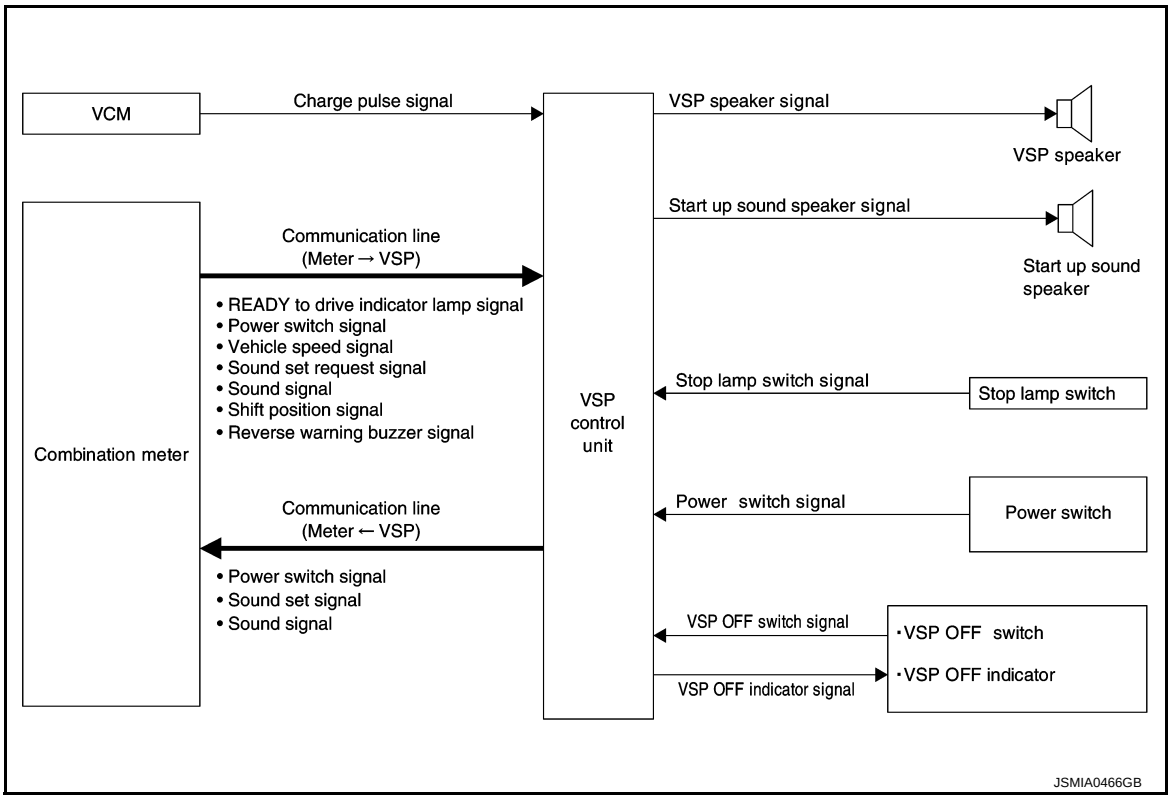
VSP system status	VSP OFF indicator
Operating	OFF
Stopped	ON
Error	ON

SYSTEM

System Description

INFOID:0000000006959797

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The VSP control unit is connected to the parts listed below, and it controls each system according to the input signals.
  - Combination meter
  - VCM
  - VSP OFF switch
  - VSP OFF indicator
  - Power switch
  - Stop lamp switch
  - VSP speaker
  - Start up sound speaker
- The combination meter sends the following signals to the VSP control unit via communication line.
  - READY to drive indicator lamp signal
  - Power switch signal
  - Vehicle speed signal
  - Sound set request signal
  - Sound signal
  - Shift position signal
  - Reverse warning buzzer signal
- The VSP control unit sends the following signals to the combination meter via communication line.
  - Power switch signal
  - Sound set signal
  - Sound signal
- The VCM outputs the charge pulse signal to the VSP control unit.
- The VSP control unit controls the following systems according to the signals from the units and switches.
  - VSP system
  - Start up sound system
  - Charge sound system
- The VSP control unit has a diagnostic function. Diagnosis can be performed using CONSULT.

Circuit Diagram

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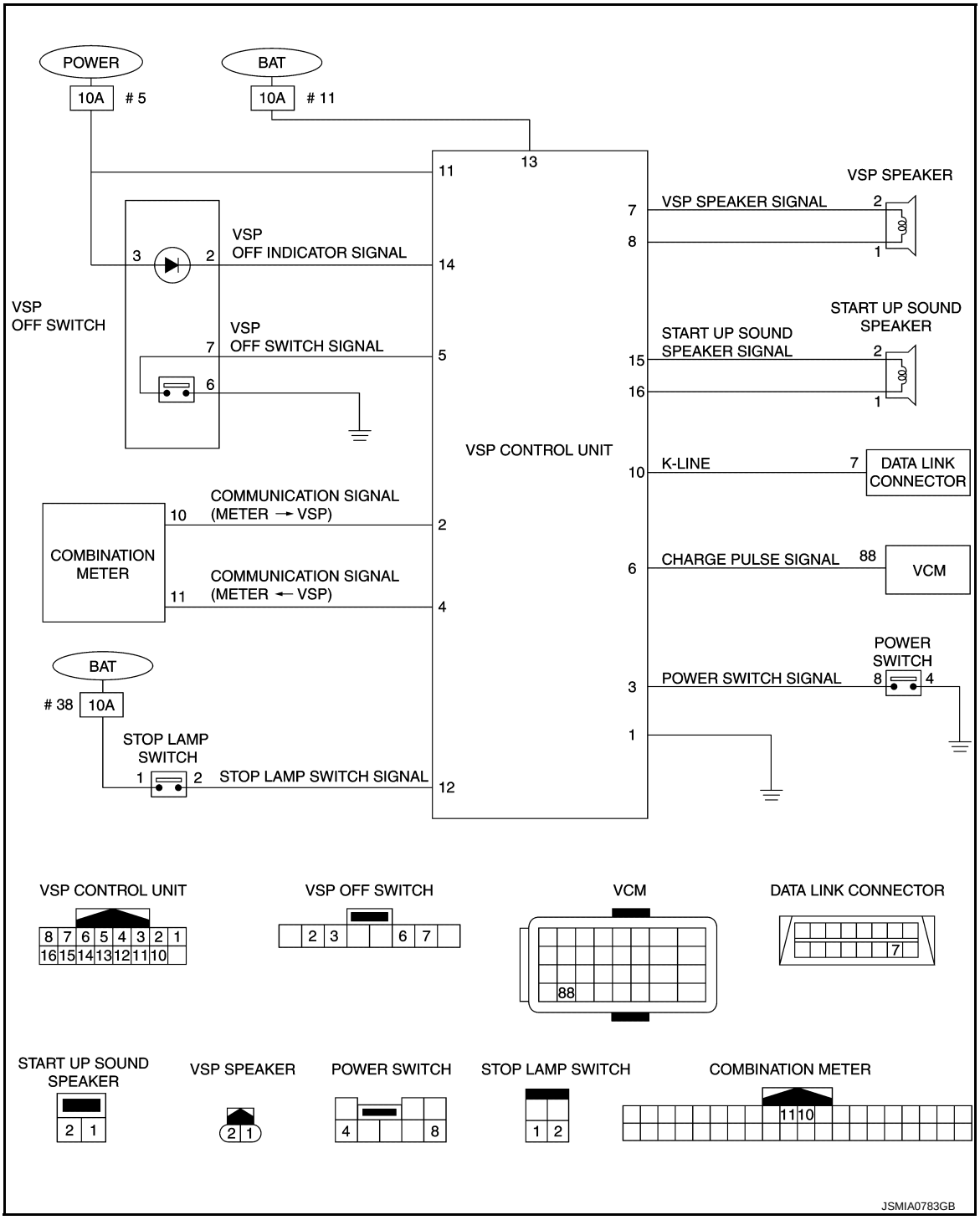


Fail-Safe

INFOID:0000000006959799

The VSP control unit performs fail-safe control when a communication error with the combination meter is detected.

System	Specifications
Start up sound system	Function stops by communication disruption. **NOTE:** Operation sound of the power switch operates.

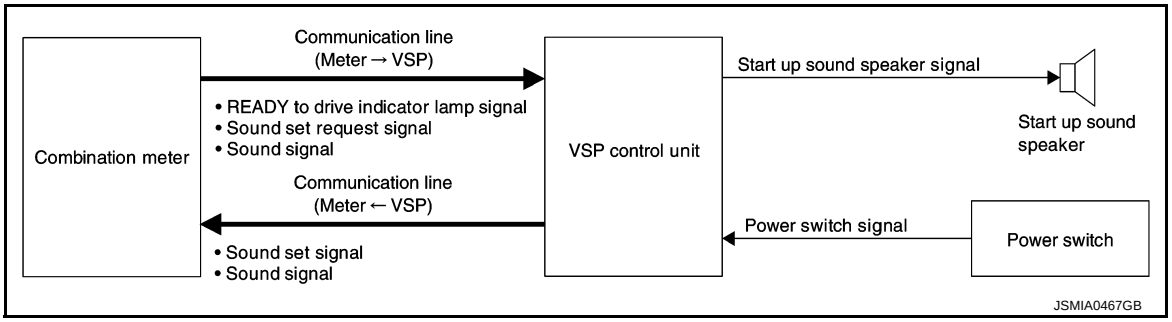
System	Specifications
VSP system	Function stops by communication disruption.
Charge sound system	Function operates.

START UP SOUND SYSTEM

START UP SOUND SYSTEM : System Description

INFOID:0000000006959800

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The start up sound is a system that produces a sound that is linked with the power switch and with the READY to drive indicator lamp on the combination meter.
- The start up sound function consists of the following 2 types.
- Power switch operation sound when the power switch is operated.
- READY effect sound that is linked to the READY to drive indicator lamp of the combination meter.
- A selection of 4 types (including OFF) of sound for the start up sound function is provided.
- The start up sound function sound types can be set using 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 uses the power switch signal from the power switch to determine the power switch operation sound.
- When the VSP control unit inputs the power switch signal, the start up sound speaker signal is output to the start up sound speaker.

Operation Condition

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

Operation condition	
Power switch	Pressed

NOTE:

The power switch operation sound may not be able to respond normally if the power switch is pressed quickly.

Cancel Condition

The power switch operation sound stops when one of the following conditions is met.

- The power switch operation sound operation time is expired
- The READY effect sound operation condition is met
- The VSP system operation condition is met

Signal Path

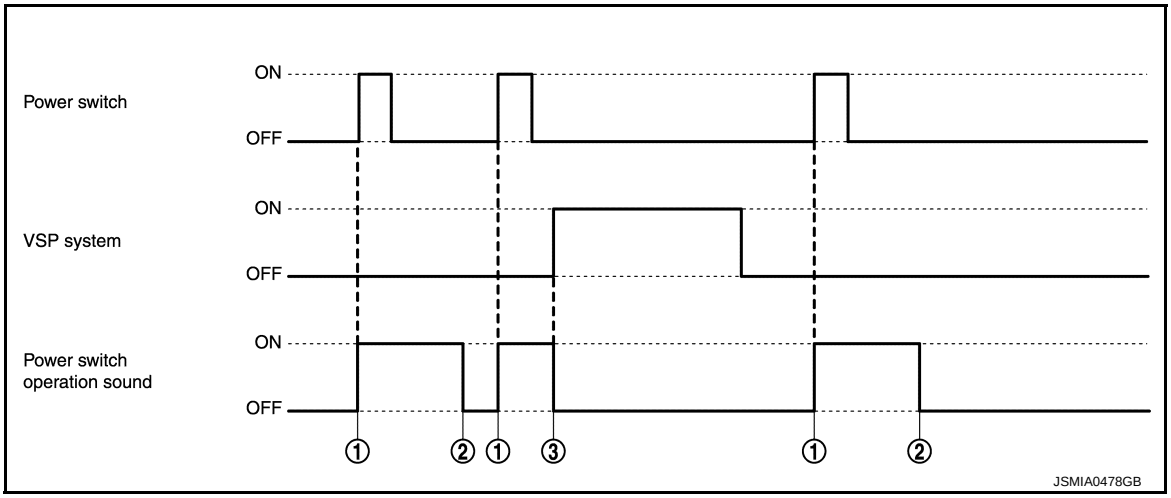
- The VSP control unit judges operation of the power switch operation sound function based on the signal shown below, and it operates the power switch operation sound.

Signal name	Signal path
Power switch signal	Power switch ➡ VSP control unit

- When the VSP control unit judges that the power switch operation sound is necessary, it outputs the signal shown below.

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

Timing Chart



	Description
1.	The power switch operation sound operates when the power switch is pressed.
2.	The power switch operation sound operation time is expired.
3.	When VSP system operates, the power switch operation sound stops.

READY EFFECT SOUND

The READY effect sound is a function that operates through a link with the READY to drive indicator lamp of the combination meter.

Operation Description

- The combination meter sends the READY to drive indicator lamp signal to the VSP control unit via the communication line.
- The VSP control unit determines the READY effect sound using the READY to drive indicator lamp signal from the combination meter.
- When the VSP control unit receives the READY to drive indicator lamp signal, the start up sound speaker signal is output to the start up sound speaker.

Operation Condition

When the following conditions are met, the READY effect sound operates.

Operation condition	
READY to drive indicator lamp	OFF → ON

Cancel Condition

When one of the following conditions is met, the READY effect sound operation stops.

Cancel condition	
The READY effect sound operation time expires	
READY to drive indicator lamp	OFF
Power switch	OFF
VSP system	Operating

Signal Path

< SYSTEM DESCRIPTION >

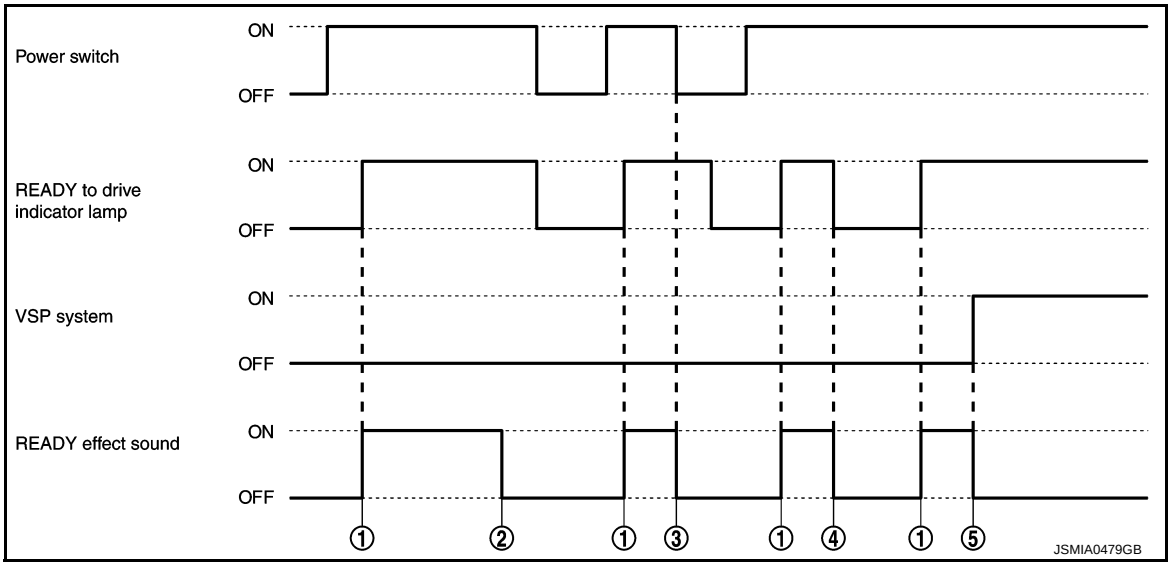
- The VSP control unit judges operation of the READY effect sound function based on the signal shown below, and it operates the READY effect sound.

Signal name	Signal path
Power switch signal	Power switch → VSP control unit
READY to drive indicator lamp signal	Combination meter —COMM→ VSP control unit

- When the VSP control unit judges that the READY effect sound is necessary, it outputs the signal shown below.

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

Timing Chart



	Description
1.	When the READY to drive indicator lamp turns ON, the READY effect sound operates.
2.	The READY effect sound operation time ends.
3.	When the power switch is OFF, the READY effect sound operation stops.
4.	When the READY to drive indicator lamp turns OFF, the READY effect sound operation stops.
5.	When the VSP system operates, the READY effect sound operation stops.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM : System

Description

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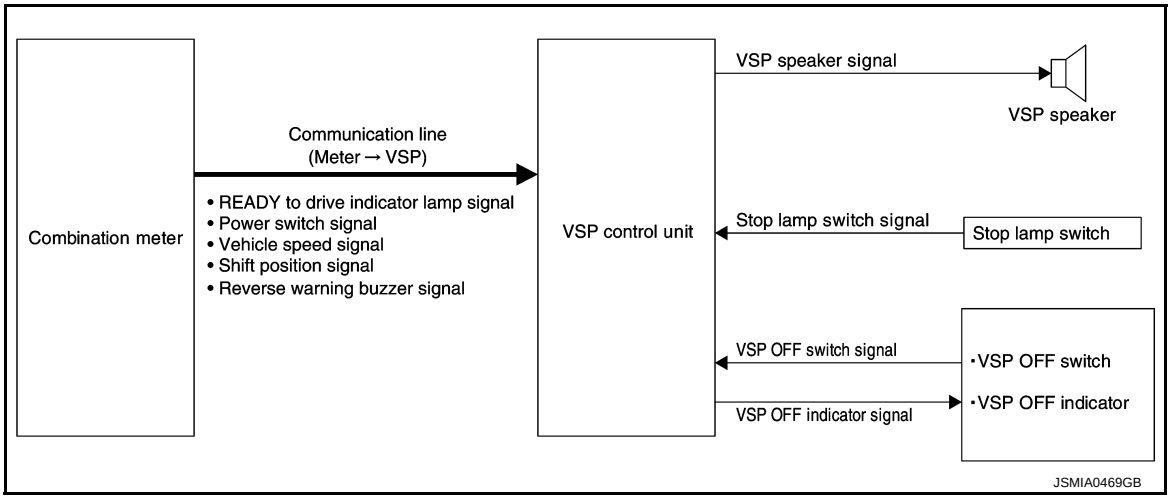
SYSYTEM DIAGRAM



SYSTEM DESCRIPTION

- The VSP system has the function of warning the driver of pedestrians approaching the vehicle, according to signals received from the combination meter and the stop lamp switch
- The VSP system consists of the following 3 types.
  - Driving start sound
  - Driving sound
  - Reverse sound
- The VSP system operating status can be checked from the VSP OFF indicator.
- The VSP system operation stop and stop release can be set using the VSP OFF switch.
- The VSP system begins operating when the power switch is turned from OFF to READY.
- The VSP OFF indicator turns ON when a malfunction occurs in the VSP system.

DRIVING START SOUND

The driving start sound operates when the selector lever is shifted to “D” position and the brake pedal is released (when READY to drive indicator lamp ON).

Operation Description

- The combination meter sends the following signals to the VSP control unit via the communication line.
  - Shift position signal
  - Vehicle speed signal
  - READY to drive indicator lamp signal
- The VSP control unit judges the driving start sound based on the signals input from the combination meter and on the stop lamp switch signal input from the stop lamp switch.
- When the VSP control unit judges that the driving start sound is necessary, it outputs the VSP speaker signal to the VSP speaker.
- The system switches to the driving sound after the driving start sound time ends.

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

Cancel Condition

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

Cancel condition	
Reverse sound	ON

NOTE:
The system switches to the driving sound after the driving start sound time ends.

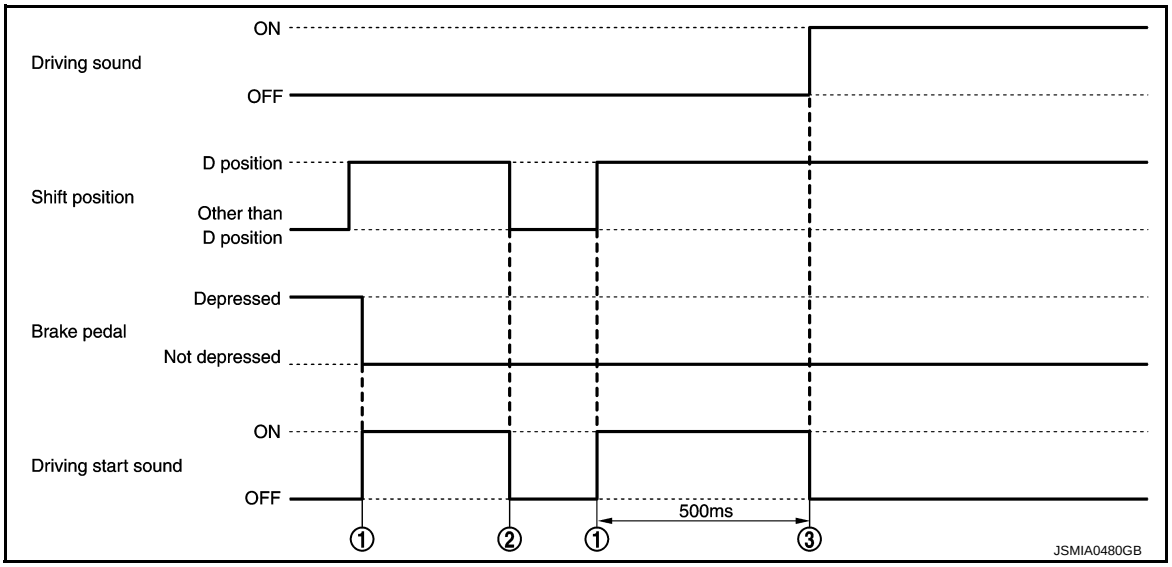
Signal Path
- The VSP control unit judges operation of the driving start sound function based on the signal shown below, and it operates the driving start sound.

Signal name	Signal path
Shift position signal	Combination meter —COMM→ VSP control unit
Vehicle speed signal	
READY to drive indicator lamp signal	
Stop lamp switch signal	Stop lamp switch → VSP control unit

- When the VSP control unit judges that the driving start sound is necessary, it outputs the signal shown below.

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

Timing Chart



	Description
1.	The driving start sound operates when the selector lever is shifted to “D” position and the brake pedal is released.
2.	If the selector lever is moved to “R” position, the driving sound stops.
3.	The system switches to the driving sound after the driving start sound time ends.

DRIVING SOUND
- The driving sound is a function that operates according to the vehicle speed.
- The driving sound tone frequency changes in accordance with the vehicle speed.

Operation Description
- The combination meter sends the following signals to the VSP control unit via the communication line.
- Vehicle speed signal
- READY to drive indicator lamp signal
- The VSP control unit judges the driving sound based on the signals input from the combination meter.

- When the VSP control unit judges that the driving sound is necessary, it outputs the VSP speaker signal to the VSP speaker.

Operation Condition

The driving sound operates when the following conditions are met.

Operation condition		
Vehicle speed	Accel-erating	1 km/h (0.6 MPH) or more
	Decel-erating	25 km/h (16 MPH) or less
READY to drive indicator lamp		ON
Selector lever		“D” position

Cancel Condition

The driving sound operation stops when the following conditions are met.

Cancel condition		
Vehicle speed	Accel-erating	30 km/h (19 MPH) or more
	Decel-erating	Less than 1 km/h (0.6 MPH)
READY to drive indicator lamp		OFF

Signal Path

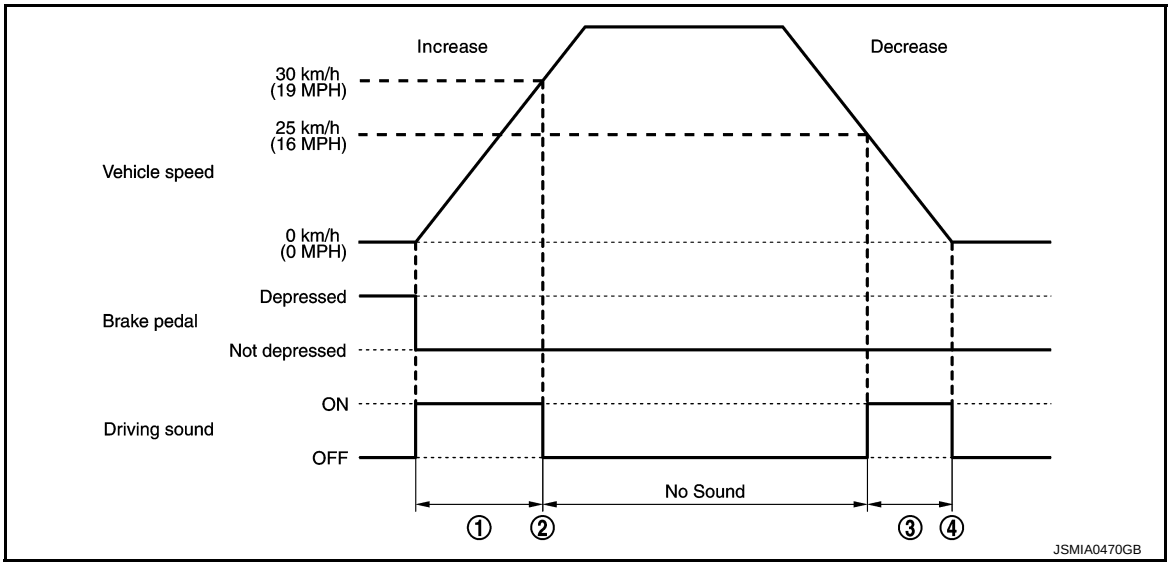
- The VSP control unit judges operation of the driving sound function based on the signals shown below, and it operates the driving sound.

Signal name	Signal path
Vehicle speed signal	Combination meter —COMM→ VSP control unit
READY to drive indicator lamp signal	

- When the VSP control unit judges that the driving sound is necessary, it outputs the signal shown below.

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

Timing Chart



	Operation contents
1.	The driving sound operates up to approximately 30 km/h (19 MPH) while accelerating.
2.	The driving sound stops when approximately 30 km/h (19 MPH) is reached.
3.	The driving sound operates when the speed falls to approximately 25 km/h (16 MPH) or less while decelerating.
4.	The driving sound stops while the vehicle stops (fades out and stops).

REVERSE SOUND

The reverse sound operates when the selector lever is shifted to “R” position.

Operation Description

- The combination meter sends the following signals to the VSP control unit via the communication line.
  - Shift position signal
  - Reverse warning buzzer signal
  - READY to drive indicator lamp signal
- The VSP control unit judges the reverse sound based on the signals input from the combination meter.
- When the VSP control unit judges that the reverse sound is necessary, it outputs the VSP speaker signal to the VSP speaker.

Operation Condition

The reverse sound operates when the following conditions are met.

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

Cancel Condition

The reverse sound operation stops when the following condition is met.

Operation condition	
Selector lever	Other than “R” position

Signal Path

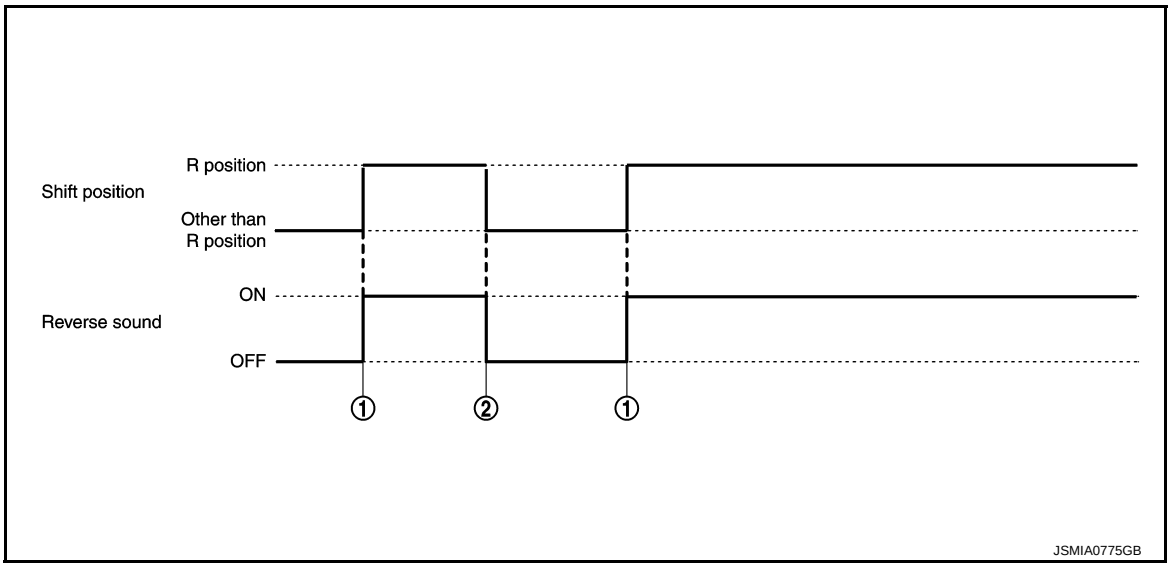
- The VSP control unit judges operation of the reverse sound based on the signals shown below, and operates the driving sound.

Signal name	Signal path
Shift position signal	Combination meter —COMM→ VSP control unit
Reverse warning buzzer signal	

- When the VSP control unit judges that the reverse sound is necessary, it outputs the signal shown below.

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

Timing Chart



	Operation contents
1.	The reverse sound operates when the selector lever is shifted to “R” position.
2.	The reverse sound stops when the selector lever is shifted to other than “R” position.

VSP SYSTEM OPERATION STOP AND RESUME FUNCTION

- The VSP system can be set to stop operating or to resume operating by means of the VSP OFF switch.
- The VSP system begins operating when the power switch is turned from OFF to READY.
- The VSP OFF indicator turns OFF when the VSP system is stopped.

VSP system status	VSP OFF indicator
Operation status	OFF
Operation stopped	ON

Operation Description

- The VSP OFF switch outputs the VSP OFF switch signal to the VSP control unit.
- The VSP control unit judges VSP system operation stop and operation resume according to the VSP OFF switch signal.
- The VSP control unit outputs 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 is turned ON.

Cancelling VSP System Operation Stop

- Press the VSP OFF switch.
- Check that the VSP OFF indicator is turned OFF.

NOTE:
Even if VSP system operation is stopped when the power switch is turned OFF, the VSP system begins operating 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 signal shown below.

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

- The VSP OFF switch turns the VSP OFF indicator ON/OFF according to the signal shown below.

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

VSP SYSTEM MALFUNCTION DETECTION FUNCTION

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

Signal Path

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

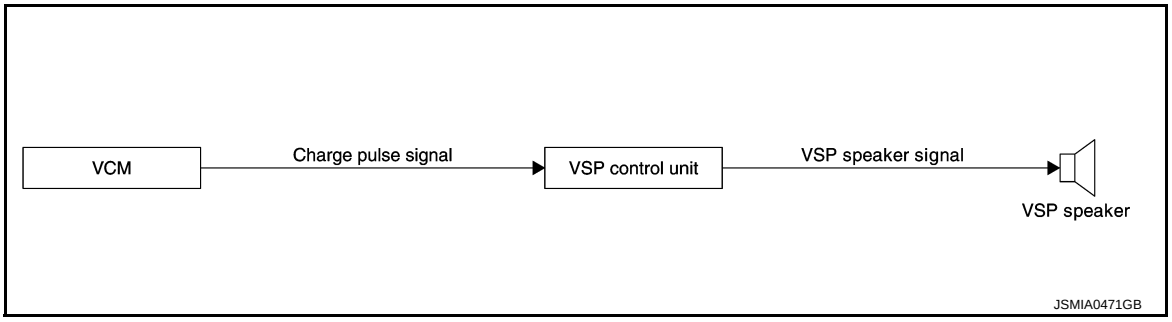
Signal name	Signal path
VSP OFF indicator signal	VSP control unit ➡ VSP OFF switch

CHARGE SOUND SYSTEM

CHARGE SOUND SYSTEM : System Description

INFOID:0000000006959802

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The charge sound system is a function that notifies of the charge connector status and the charge acceptance status.
- The charge sound system operates when the power switch is OFF.
- The charge sound system consists of the following 2 types and operates through a link with the charging status indicator.

- Plug-in detection sound.
- Charge acceptance sound.

PLUG-IN DETECTION SOUND

- The plug-in detection sound notifies that the charge connector is engaged normally.
- During quick charge, the plug-in detection sound does not operate.

Operation Description

- The VCM outputs the charge pulse signal to the VSP control unit.
- The VSP control unit determines the plug-in detection sound using the charge pulse signal (2 pulses) from the VCM.
- When the VSP control unit inputs the charge pulse signal (2 pulses), the VSP speaker signal is outputs to the VSP speaker.

Operation Condition

The plug-in detection sound operates when all of the following conditions are met.

Operation condition	
Power switch	OFF
Charge connector	Normal connection

CHARGE ACCEPTANCE SOUND

The charge acceptance sound notifies that the charge is accepted.

Operation Description

- The VCM outputs the charge pulse signal to the VSP control unit.
- The VSP control unit determines the charge acceptance sound using the charge pulse signal (3 pulses) from the VCM.
- When the VSP control unit inputs the charge pulse signal (3 pulses), the VSP speaker signal is output to the VSP speaker.

Operation Condition

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

Operation condition	
Power switch	OFF
Charge	When charge is accepted

Signal Path

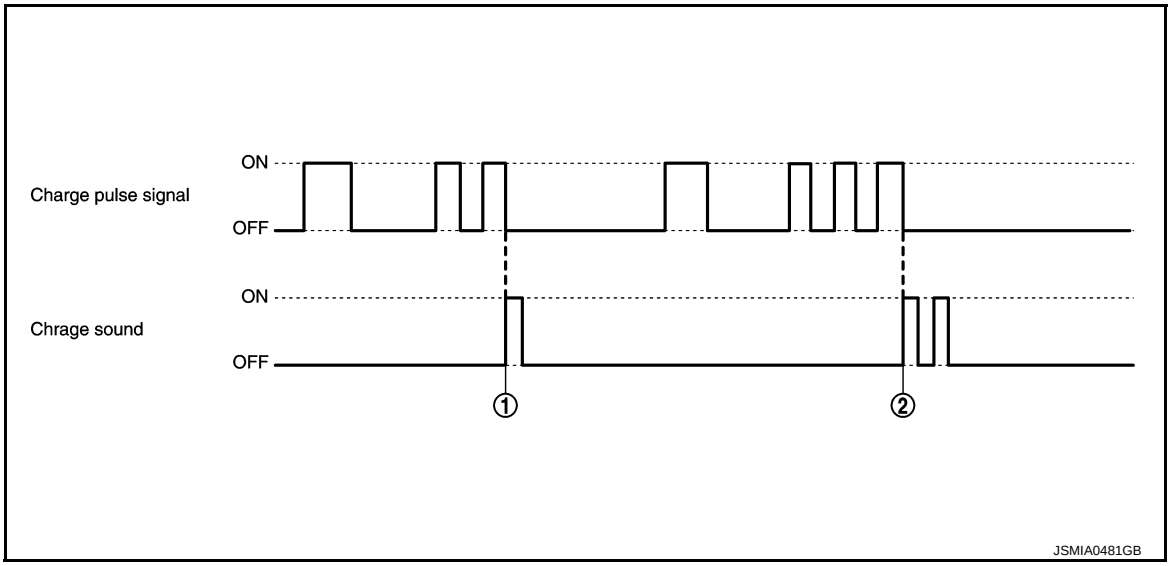
- The VSP control unit uses the signal shown below to judge the plug-in detection sound function and charge acceptance sound function, and it activates the plug-in detection sound and charge acceptance sound.

Signal name	Signal path
Charge pulse signal	VCM → VSP control unit

- When the VSP control unit judges that the plug-in detection sound and charge acceptance sound are necessary, it outputs the signal shown below.

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

TIMING CHART



	Description
1.	When the charge connector normally, the plug-in detection sound operates (when the charge pulse signal (2 pulses) is input).
2.	When charging is accepted, the charge acceptance sound operates (when the charge pulse signal (3 pulses) is input).

DIAGNOSIS SYSTEM (VSP)

CONSULT Function

INFOID:0000000006959803

APPLICATION ITEM

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

Test mode	Function
Self Diagnostic Results	Approaching vehicle sound for pedestrian control unit checks the conditions and displays memorized error.
Data Monitor	Approaching vehicle sound for pedestrian control unit input/output data in real time.
Active Test	Gives a drive signal to a load to check the operation.

SELF-DIAGNOSTIC RESULTS

For details, refer to VSP-27, "DTC Index".

DATA MONITOR

Monitor item	Display	Description
IGNITION SW	On	Power switch status input from the power switch supply.
	Off	
BRAKE SW	On	Stop lamp switch status input from the stop lamp switch.
	Off	
VSP OFF SW	On	VSP OFF switch status input from the VSP OFF switch.
	Off	
PUSH SW	On	Power switch status input from the power switch.
	Off	
VCM INPUT SIG	Hi	Charge connector status input from the VCM.
	Lo	
READY OP IND SIG	On	READY to drive indicator lamp status input from the combination meter via the communication line.
	Off	
IGN STATS SIG	On	Power switch status input from the combination meter via the communication line.
	Off	
VEHCLE SPEED	0 - 63 km/h	Vehicle speed signal value input from the combination meter via the communication line. **NOTE:** 63 km/h (39.1 MPH) or faster is fixed at 63 km/h (39.1 MPH).
ENG STATUS SIG	Off	This item is displayed, but cannot be monitored.
SOUND SET REQ	On	Start up sound setting requirement status display input from the combination meter via the communication line.
	Off	
SOUND	1	Start up sound setting display input from the combination meter via the communication line.
	2	
	3	
	4	
SHIFT POS SIG	P or N	The shift position status input from the combination meter via the communication line.
	R	
	D or B	
REVERSE BUZZER	On	Reverse warning buzzer status input from the combination meter via the communication line.
	Off	

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 IND	The VSP OFF indicator operation can be checked. **NOTE:** The VSP OFF indicator flashes (1 Hz).

ECU DIAGNOSIS INFORMATION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Reference Value

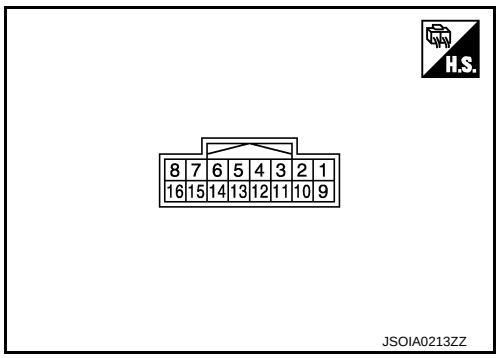
INFOID:0000000006959804

VALUES ON THE DIAGNOSIS TOOL

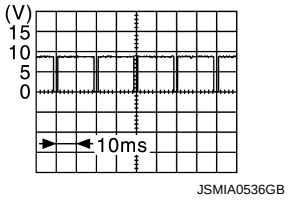
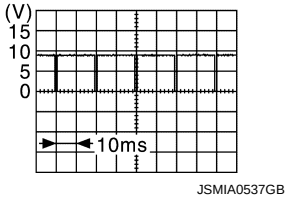
CONSULT MONITOR ITEM

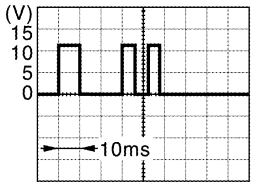
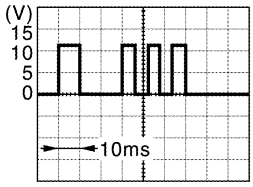
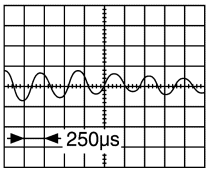
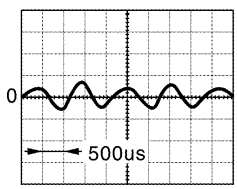
Monitor item	Condition		Value/Status
IGNITION SW	Power switch ON	Power switch READY position	On
		Power switch other than READY position	Off
BRAKE SW	Power switch ON	When brake pedal is depressed (stop lamp switch OFF)	On
		When brake pedal is not depressed (stop lamp switch ON)	Off
VSP OFF SW	Power switch ON	When VSP OFF switch is pressed	On
		When VSP OFF switch is not pressed	Off
PUSH SW	Power switch ON	When power switch is pressed	On
		When power switch is not pressed	Off
VCM INPUT SIG	Power switch ON	Charge connector connected	Hi
		Charge connector not connected	Low
READY OP IND SIG	Power switch ON	READY to drive indicator lamp ON	On
		READY to drive indicator lamp OFF	Off
IGN STATUS SIG	Power switch ON	Power switch READY position	On
		Power switch other than READY position	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.
ENG STATUS SIG	Power switch ON	**NOTE:** This item is displayed, but cannot be monitored.	Off
SOUND SET REQ	Power switch ON	Start up sound type was set.	On
		Other than the above	Off
SOUND	Power switch ON	Start up sound setting is “1”.	1
		Start up sound setting is “2”.	2
		Start up sound setting is “3”.	3
		Start up sound setting is “OFF”.	4
SHIFT POSITION SIG-NAL	Power switch ON	Selector lever is in “P” or “N” position.	P or N
		Selector lever is in “R” position.	R
		Selector lever is in “D” position.	D or B
REVERSE BUZZER	Power switch ON	Reverse warning buzzer operating	On
		Reverse warning buzzer not operating	Off

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
2 (L)	Ground	Communication signal (METER → VSP)	Input	Power switch ON	—	**NOTE:** Waveform shows reference values.  JSMIA0536GB 0 - 12 V
3 (SB)	Ground	Power switch signal	Input	Power switch ON	When power switch is pressed	0 V
					When power switch is not pressed	12 V
4 (P)	Ground	Communication signal (VSP → METER)	Output	Power switch ON	—	**NOTE:** Waveform shows reference values.  JSMIA0537GB 0 - 12 V
5 (G)	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

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
6 (Y)	Ground	Charge pulse signal	Input	Power switch ON	When charge connector is connected	 JSMIA0565GB
					• Power switch is OFF • Charge is accepted.	 JSMIA0566GB
					Other than the above	0 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
10 (GR)	—	K- LINE (CONSULT)	—	—	—	—
11 (GR)	Ground	Power switch supply	Input	Power switch ON	—	Battery voltage
12 (SB)	Ground	Stop lamp switch signal	Input	Power switch ON	When brake pedal is not depressed	0 V
					When the brake pedal is depressed	12 V
13 (L)	Ground	Battery power supply	Input	Power switch OFF	—	Battery voltage
14 (LG)	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.  JSMIA0564GB

Fail-Safe

INFOID:0000000006959805

The VSP control unit performs fail-safe control when a communication error with the combination meter is detected.

System	Specifications
Start up sound system	Function stops by communication disruption. **NOTE:** Operation sound of the power switch operates.
VSP system	Function stops by communication disruption.
Charge sound system	Function operates.

DTC Index

INFOID:0000000006959806

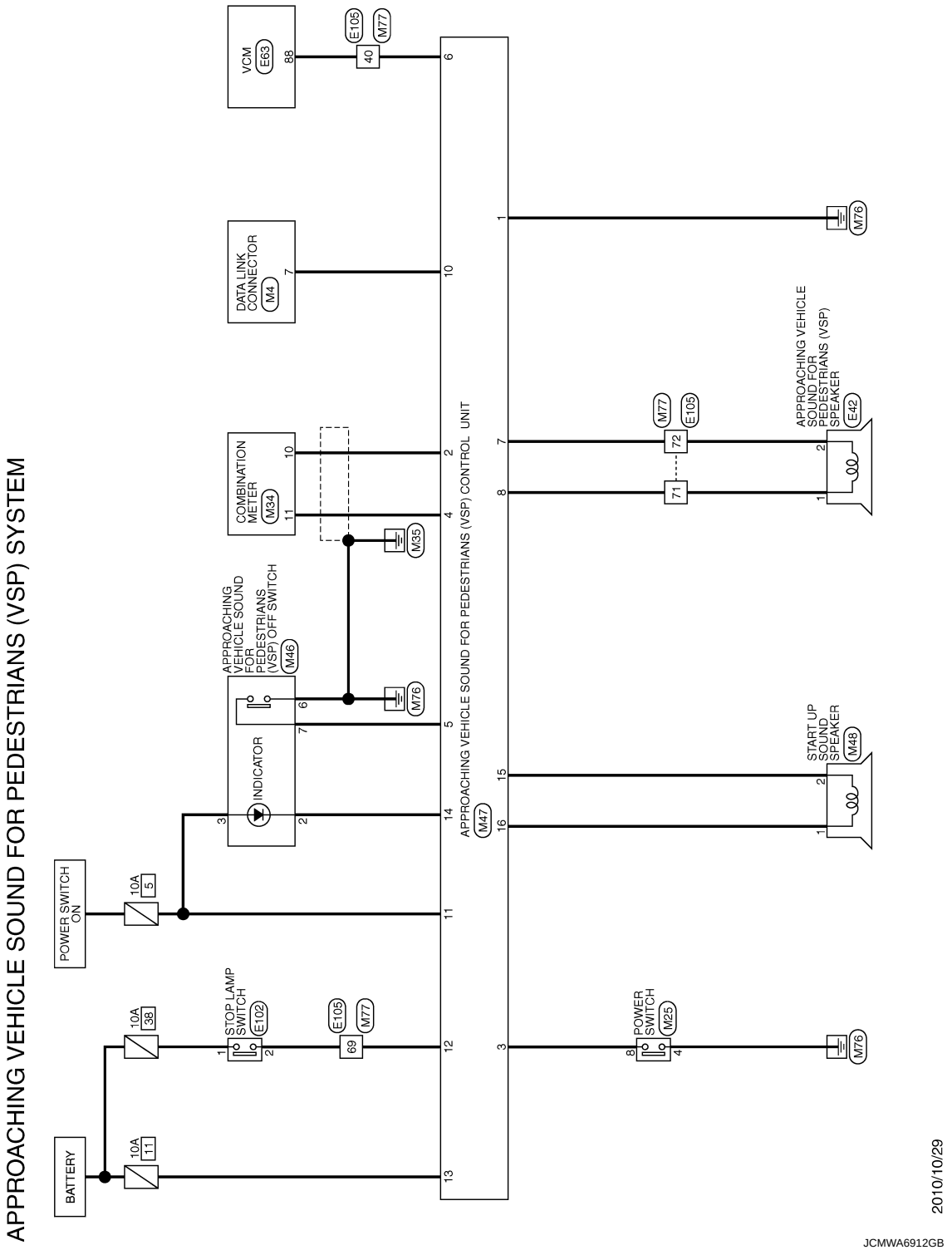
Display item [Code]	Malfunction is detected when...	Reference
COMM CIRCUIT [U1431]	Communications signal from combination meter could not be received continuously for 2 seconds or more (when power switch ON or READY).	VSP-34

WIRING DIAGRAM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

Wiring Diagram

INFOID:0000000006959807

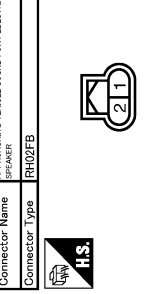


APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

Connector No.	E42
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER
Connector Type	RH02FB

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	L	–

Connector No.	E63
Connector Name	VCM
Connector Type	RH24FB-RZ8-L-RH

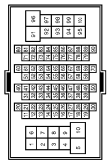


Terminal No.	Color of Wire	Signal Name [Specification]
81	GR	K-LINE
84	LG	EV SYSTEM ACTIVATION REQUEST SIGNAL
85	P	CHARGING STATUS INDICATIOR 2
86	V	CHARGING STATUS INDICATIOR 1
87	L	PLUG IN INDICATOR LAMP
88	Y	AVSP CONTROL SIGNAL
89	V	IMMEDIATE CHARGING SWITCH
90	W	STARTER RELAY CONT
91	O	ELECTRIC SHIFT WARNING SIGNAL
92	G	CHARGING STATUS INDICATOR 3
96	GR	EV SYSTEM ACTIVATION REQUEST SIGNAL
104	SB	ASCD STEERING SWITCH
105	L/O	PRE-CHARGE RELAY
107	W/L	SYSTEM MAIN RELAY 1
108	BR	ASCD SITTERING SWICH GROUND
110	L/Y	SYSTEM MAIN RELAY 2
111	B/R	GROUND
112	B/R	GROUND

Connector No.	E102
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC

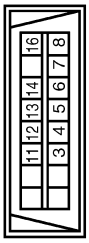
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	SB	–
3	LG	–
4	P	–

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	R	–
3	GR	–
4	LG	–
6	W	–
7	V	–
8	P	–
9	G	–
10	R	–
11	O	–
12	W	–
13	B	–
14	Y	–
15	BR	–
16	LG	–
17	L	–
19	G	–
20	V	–
21	P	–
22	LG	–
23	GR	–
24	L	–
25	R	–
26	SB	–
27	B	–
29	BR	–
30	W	–
31	V	–
32	LG	–
33	O	–
34	L	–
35	BR	–
38	SB	–
39	GR	–
40	Y	–
41	R	–
42	W	–
43	SB	–
44	GR	–
45	G	–
46	P	–
47	LG	–
48	V	–
49	G	–
50	L	–
51	W	–
54	P	–
55	O	–
56	Y	–
57	P	–
58	LG	–
60	LG	–
61	GR	–
62	BR	–
63	O	–
64	R	–
65	Y	–
66	G	–
67	V	–
68	W	–
69	SB	–
71	Y	–
72	L	–
73	R	–
74	L	–
75	V	–
76	P	–
80	O	–
81	L	–
82	SB	–
83	G	–
84	BR	–
85	LG	–
86	GR	–
88	B	–
89	W	–
90	SHIELD	–
91	Y	–
92	BR	–
93	W	–
94	R	–
95	V	–
96	P	–
97	G	–
98	SB	–
99	O	–

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



Terminal No.	Color of Wire	Signal Name [Specification]
3	LG	–
4	B	–
5	B	–
6	L	–
7	GR	–
8	G	–
11	SB	–
12	G	–
13	L	–
14	P	–
16	Y	–

JCLWA5506GB

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

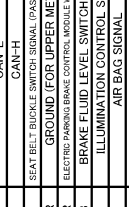
Connector No.	M25
Connector Name	POWER SWITCH
Connector Type	TK08FBR

Terminal No.	Color of Wire	Signal Name [Specification]
3	G	–
4	B	–
5	W	–
6	B	–
7	V	–
8	SB	–

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH

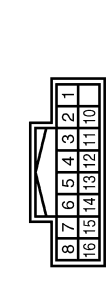
Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	BATTERY POWER SUPPLY
2	R	BATTERY POWER SUPPLY(FOR UPPER METER)
3	GR	POWER SWITCH SUPPLY
4	BR	POWER SWITCH SUPPLY (FOR UPPER METER)
5	B	GROUND
6	B	GROUND
7	V	ELECTRIC SHIFT WARNING SIGNAL
8	Y	WASHER LEVEL SWITCH SIGNAL
9	G	PLUG IN SIGNAL
10	L	COMMUNICATION SIGNAL (METER → VSP)
11	P	COMMUNICATION SIGNAL (VSP → METER)
12	V	METER CONTROL/SWITCH GROUND
13	LG	ENTER SWITCH SIGNAL
14	W	SELECT SWITCH SIGNAL
15	BR	TRIP RESET SWITCH SIGNAL
16	BR	ILLUMINATION CONTROL SWITCH SIGNAL
17	V	ILLUMINATION CONTROL SIGNAL (FOR UPPER METER)
18	P	CAN-L
19	L	CAN-H
20	V	SEAT BELT BUCKLE SWITCH SIGNAL (PASSENGER SIDE)
22	GR	GROUND (FOR UPPER METER)
24	BR	ELECTRIC PARKING BRAKE CONTROL MODULE WAKEUP SIGNAL
25	SB	BRAKE FLUID LEVEL SWITCH SIGNAL
26	B	ILLUMINATION CONTROL SIGNAL
27	R	AIR BAG SIGNAL
28	R	SECURITY SIGNAL
30	GR	VEHICLE SPEED SIGNAL (8-PULSE)
32	W	COMMUNICATION SIGNAL (METER → UPPER)
33	LG	CLOCK SIGNAL
34	L	PLUG IN INDICATOR LAMP SIGNAL
38	V	LED HEADLAMP (RH) WARNING SIGNAL
39	LG	LED HEADLAMP (LH) WARNING SIGNAL
40	Y	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)

Connector No.	M46
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH
Connector Type	TK08FGY



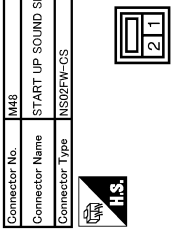
Terminal No.	Color of Wire	Signal Name [Specification]
2	LG	–
3	GR	–
4	B	–
5	W	–
6	B	–
7	G	–

Connector No.	M47
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
Connector Type	TH16FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	GROUND
2	L	COMMUNICATION SIGNAL (METER → VSP)
3	SB	POWER SWITCH SIGNAL
4	P	COMMUNICATION SIGNAL (VSP → METER)
5	G	VSP OFF SWITCH SIGNAL
6	Y	CHARGE PULSE SIGNAL
7	L	VSP SPEAKER SIGNAL (–)
8	Y	VSP SPEAKER SIGNAL (+)
10	GR	K-LINE (CONSULT)
11	GR	POWER SWITCH SUPPLY
12	SB	STOP LAMP SWITCH SIGNAL
13	L	BATTERY POWER SUPPLY
14	LG	VSP OFF INDICATOR SIGNAL
15	R	STRAT UP SOUND SPEAKER SIGNAL (–)
16	W	STRAT UP SOUND SPEAKER SIGNAL (–)

Connector No.	M48
Connector Name	START UP SOUND SPEAKER
Connector Type	NS02FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	R	–

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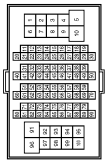
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	–
2	V	–
3	GR	–
4	LG	–
6	W	–
7	V	–
8	P	–
9	SB	–
10	L	–
11	LG	–
12	W	–
13	R	–
14	Y	–
15	R	–
16	G	–
17	BR	–
19	G	–
20	G	–
21	P	–
22	LG	–
23	GR	–
24	L	–
25	Y	–
26	G	–
27	L	–
29	V	–
30	W	–
31	SB	–
32	LG	–
33	V	–
34	L	–
35	SB	–
38	LG	–
39	GR	–
40	Y	–
41	R	–
42	W	–
43	SB	–
44	GR	–
45	P	–
46	R	–
47	W	–
48	L	–
49	G	–
50	L	–
51	L	–
54	W	–
55	G	–
56	BR	–
57	P	–
58	R	–
60	Y	–
61	GR	–
62	SB	–
63	Y	–
64	G	–
65	V	–
66	P	–
67	Y	–
68	P	–
69	BR	–
71	Y	–
72	L	–
73	G	–
74	L	–
75	V	–
76	R	–
80	W	–
81	L	–
82	SB	–
83	R	–
84	BR	–
85	R	–
86	GR	–
88	R	–
89	W	–
90	SHIELD	–
91	Y	–
92	BR	–
93	W	–
94	P	–
95	V	–
96	P	–
97	G	–
98	R	–
99	LG	–

JCLWA5508GB

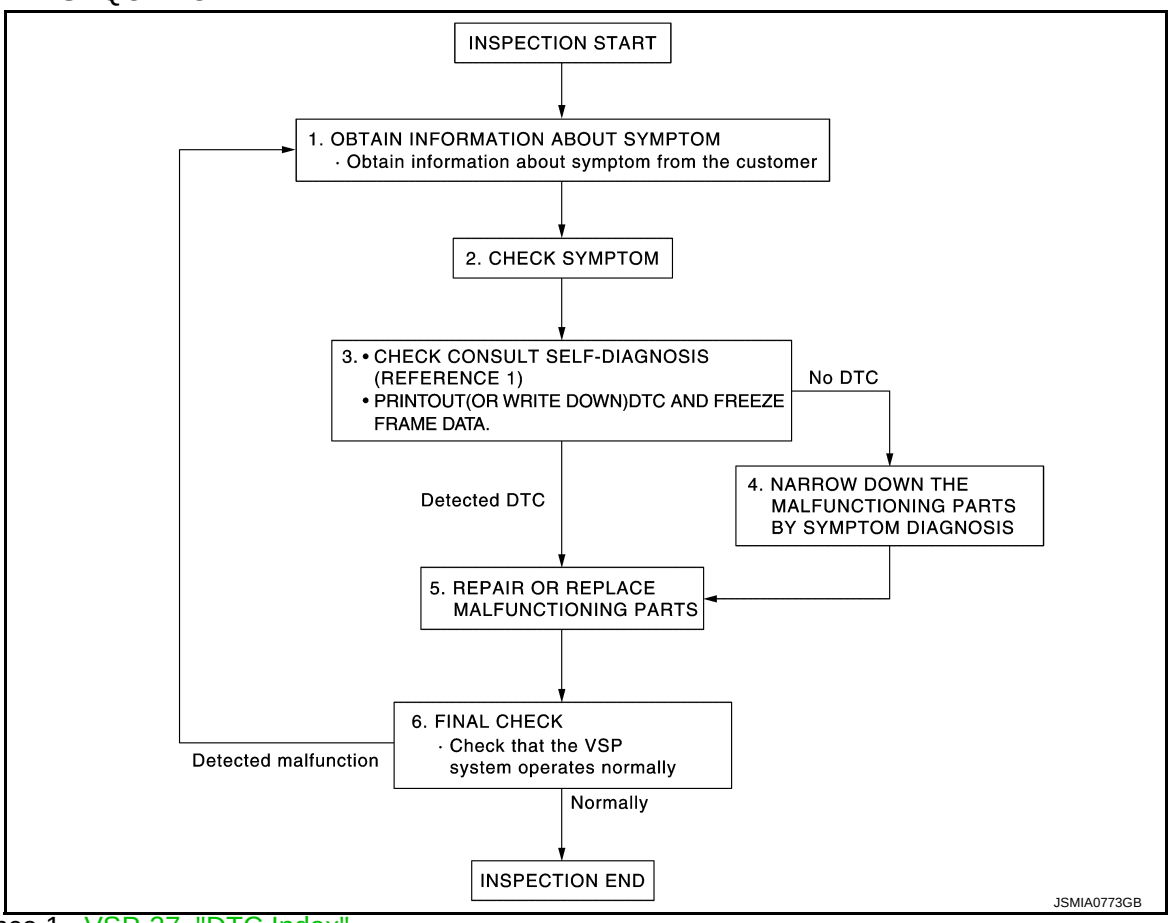
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000006959808

OVERALL SEQUENCE



Reference 1···VSP-27, "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-27, "DTC Index".
2. When DTC is detected, follow the instructions below:

- Record DTC and Freeze Frame Data.

Are self-diagnosis results normal?

YES >> GO TO 5.

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 displayed, 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.

DTC/CIRCUIT DIAGNOSIS

U1431 COMM CIRCUIT

Description

INFOID:0000000006959809

The communications line (METER →VSP) sends signals needed for VSP system control from the combination meter.

DTC Logic

INFOID:0000000006959810

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Diagnostic item is detected when...	Probable malfunction location
U1431	COMM CIRCUIT	Communications signal from combination meter could not be received continuously for 2 seconds or more (power switch ON or READY).	Communication line (METER → VSP)

Diagnosis Procedure

INFOID:0000000006959811

1.CHECK COMMUNICATION LINE (METER → VSP) SIGNAL CIRCUT

1. Power switch OFF
2. Disconnect VSP control unit and combination meter connector.
3. Check continuity between VSP control unit harness connector and combination meter harness connector.

VSP control unit		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M47	2	M34	10	Existed

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

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	2		Not existed

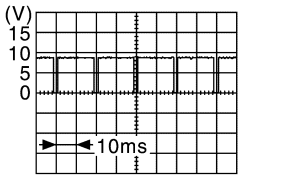
Is the inspection result normal?

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

2.CHECK COMMUNICATION LINE (METER → VSP) INPUT SIGNAL

1. Connect VSP control unit and combination meter connector.
2. Power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

Terminal			Voltage (Approx.)
(+)		(-)	
VSP control unit			
Connector	Terminal		

M47	2	Ground	**NOTE:** Waveform shows reference values.  JSMIA0536GB 0 - 12 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace combination meter. Refer to MWI-101, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure

INFOID:0000000006959812

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery power supply	11
Power switch ON	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. 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. 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.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER SIGNAL CIRCUIT

Description

INFOID:0000000006959813

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

Component Function Check

INFOID:0000000006959814

1.CHECK VSP SPEAKER OPERATION

1. Connect the COUNSULT.
2. Select the “ACTIVE TEST” for the “VSP”and perform the “VSP SPEAKER”.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959815

1.CHECK VSP SPEAKER SIGNAL CIRCUT

1. 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.

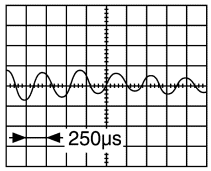
VSP control unit		Ground	Continuity
Connector	Terminal		
M47	7		Not existed
	8		

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. Power switch ON.
3. Check signal between VSP control unit harness connector.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace VSP control unit. Refer to VSP-62, "Removal and Installation".

START UP SOUND SPEAKER SIGNAL CIRCUIT

Description

INFOID:0000000006959816

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

Component Function Check

INFOID:0000000006959817

1.CHECK START UP SOUND SPEAKER OPERATION

1. Connect the COUNSULT.
2. Select the “ACTIVE TEST” for the “VSP”and perform the “START UP SOUND SPEAKER”.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959818

1.CHECK START UP SOUND SPEAKER SIGNAL CIRCUT

1. 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.

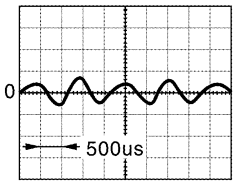
VSP control unit		Ground	Continuity
Connector	Terminal		
M47	15		Not existed
	16		

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. Power switch ON.
3. Check signal between VSP control unit harness connector.

Terminals				Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal	Connector	Terminal	
M47	16	M47	15	**NOTE:** Waveform varies depending on tone and sound level.  JSMIA0564GB

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace VSP control unit. Refer to VSP-62, "Removal and Installation".

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

Description

INFOID:0000000006959819

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

Component Function Check

INFOID:0000000006959820

1.CKECK 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

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959821

1.CHECK VSP OFF SWITCH SIGNAL CIRCUIT

1. 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	M46	7	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		
M46	6		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. Power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

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-62, "Removal and Installation".
NO >> Refer to VSP-42, "Component Inspection".

Component Inspection

INFOID:0000000006959822

1. CHECK VSP OFF SWITCH

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

Terminals		Condition	Continuity
6	7	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-63, "Removal and Installation".

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

Description

INFOID:0000000006959823

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

Diagnosis Procedure

INFOID:0000000006959824

1.CHECK VSP OFF INDICATOR POWER SUPPLY CIRCUIT

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

Terminals			Voltage (Approx.)
(+)		(-)	
VSP OFF switch			
Connector	Terminal		
M46	3	Ground	12 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check harness between fuse and VSP OFF switch.

2.CHECK VSP OFF INDICATOR SIGNAL CIRCUIT

1. 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	M46	2	Existed

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 3.
NO >> Repair the harnesses or connector.

3.CHECK VSP OFF INDICATOR OUTPUT SIGNAL

1. Connect VSP control unit and VSP OFF switch connector.
2. 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-63, "Removal and Installation".

NO >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".

STOP LAMP SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000006959825

The Stop lamp switch outputs the stop lamp switch signal to the VSP control unit.

Component Function Check

INFOID:0000000006959826

1.CHECK STOP LAMP SWITCH INPUT SIGNAL

1. Connect the CONSULT.
2. Select the “DATA MONITOR” for the “VSP” and check the “BRAKE SW” monitor value.

	“BRAKE SW”
When brake pedal is not depressed	: Off
When brake pedal is depressed	: On

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959827

1.STOP LAMP SWITCH POWER SUPPLY CIRCUIT

1. Power switch OFF.
2. Disconnect stop lamp switch connector.
3. Power switch ON.
4. Check voltage between stop lamp switch harness connector and ground.

Terminal			Voltage (Approx.)
(+)		(–)	
Stop lamp SW			
Connector	Terminal		
E102	1	Ground	12 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check harness between fuse and stop lamp switch.

2.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

1. Power switch OFF.
2. Disconnect VSP control unit connector.
3. Check continuity between VSP control unit harness connector and stop lamp switch harness connector.

VSP control unit		Stop lamp SW		Continuity
Connector	Terminal	Connector	Terminal	
M47	12	E102	2	Existed

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

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	12		Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harnesses or connector.

3.CHECK STOP LAMP SWITCH INPUT SIGNAL

1. Connect VSP control unit and stop lamp switch connector.
2. Power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

Terminals			Condition	Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal			
M47	12	Ground	When brake pedal is depressed	12 V
			When brake pedal is not depressed	0 V

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> Refer to VSP-46, "Component Inspection".

Component Inspection

INFOID:0000000006959828

1. CHECK STOP LAMP SWITCH

1. Power switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between following terminals of the stop lamp switch.

Terminals		Condition	Continuity
1	2	When brake pedal is depressed	Existed
		When brake pedal is not depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace stop lamp switch.

CHARGE PULSE SIGNAL CIRCUIT

Description

INFOID:0000000006959829

The VCM outputs the charge pulse signal to the VSP control unit.

Component Function Check

INFOID:0000000006959830

1.CHECK CHARGE PULSE INPUT SIGNAL

1. Connect the CONSULT.
2. Select the “DATA MONITOR” for the “VSP” and check the “VCM IN SIG” monitor value.

	“VCM IN SIG”
When charge connector is connected	: Hi
When charge connector is not connected	: Lo

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959831

1.CHECK CHARGE PULSE SIGNAL CIRCUIT

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

VSP control unit		VCM		Continuity
Connector	Terminal	Connector	Terminal	
M47	6	E63	88	Existed

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

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	6		Not existed

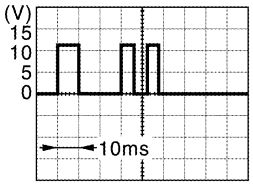
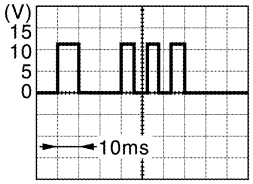
Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the harnesses or connector.

2.CHECK CHARGE PULSE INPUT SIGNAL

1. Connect VSP control unit and stop lamp switch connector.
2. Power switch ON.
3. Check voltage between VSP control unit harness connector and ground.

Terminals			Condition	Voltage (Approx.)
(+)		(-)		
VSP control unit				
Connector	Terminal			

M47	6	Ground	When charge connector connected	 JSMIA0565GB
			• When power switch OFF • When charge is accepted	 JSMIA0566GB
			Other than the above	0 V

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> Perform “Self Diagnosis Result” of VCM.

POWER SWITCH SIGNAL CIRCUIT

Description

INFOID:0000000006959832

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

Component Function Check

INFOID:0000000006959833

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

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006959834

1.CHECK POWER SWITCH SIGNAL CIRCUIT

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

VSP control unit		Power SW		Continuity
Connector	Terminal	Connector	Terminal	
M47	3	M25	8	Existed

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

VSP control unit		Ground	Continuity
Connector	Terminal		
M47	3		Not existed

5. Check continuity between power switch harness connector and ground.

Power SW		Ground	Continuity
Connector	Terminal		
M25	4		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 power switch connector.
2. 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-62, "Removal and Installation".
NO >> Refer to VSP-50, "Component Inspection".

Component Inspection

INFOID:0000000006959835

1. CHECK POWER SWITCH

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

Terminals		Condition	Continuity
8	4	When power switch is pressed	Existed
		When power switch is not pressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace power switch.

SYMPTOM DIAGNOSIS

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000006959836

Symptoms	Check items	Possible malfunction location/Action to take
No sound from VSP speaker	• Input signals from combination meter are normal. • VSP OFF SW operation is normal. • VSP sound and charge sounds do not sound.	• VSP speaker • VSP speaker signal circuit Refer to VSP-55, "Diagnosis Procedure".
No sound from start up sound speaker	• Input signals from combination meter are normal. • Power switch operation sound and READY effect sound do not sound.	• Start up sound speaker • Start up sound speaker signal circuit Refer to VSP-56, "Diagnosis Procedure".
Driving start sound does not sound.	Driving sound and reverse sound operate.	Stop lamp switch signal circuit Refer to VSP-54, "Diagnosis Procedure".
Power switch operation sound does not sound.	READY effect sound occurs.	Power switch signal circuit Refer to VSP-58, "Diagnosis Procedure".
Charge sound does not sound.	Plug-in detection sound and charge acceptance sound do not sound.	Charge pulse signal circuit Refer to VSP-57, "Diagnosis Procedure"
VSP system operation cannot be stopped.	—	VSP OFF switch signal circuit Refer to VSP-53, "Diagnosis Procedure".
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.	VSP OFF indicator signal circuit Refer to VSP-52, "Diagnosis Procedure".

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

Description

INFOID:0000000006959837

- 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:0000000006959838

1.CHECK VSP OFF INDICATOR SIGNAL CIRCUT

Check VSP OFF indicator signal circuit. Refer to VSP-43, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace VSP OFF switch. Refer to VSP-63, "Removal and Installation".
NO >> Repair harness or connector.

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

Description

INFOID:0000000006959839

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

Diagnosis Procedure

INFOID:0000000006959840

1.CHECK VSP OFF SWITCH INPUT SIGNAL

1. Connect the CONSULT.
2. Check the VSP OFF switch input signal. Refer to VSP-41, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 2.

2.CHECK VSP OFF SWITCH SIGNAL CIRCUIT

Check the VSP OFF switch signal circuit. Refer to VSP-41, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK VSP OFF SWITCH

Check the VSP OFF switch. Refer to VSP-42, "Component Inspection".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> Replace the VSP OFF switch. Refer to VSP-63, "Removal and Installation".

THE DRIVING SOUND DOES NOT SOUND

Description

INFOID:0000000006959841

The driving start sound does not operate when the selector lever is in the “D“ position and the brake pedal is released.

NOTE:

The driving sound and reverse sound operate.

Diagnosis Procedure

INFOID:0000000006959842

1.CHECK STOP LAMP SWITCH INPUT SIGNAL

1. Connect the CONSULT.
2. Check the stop lamp switch input signal. Refer to VSP-45, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH SIGNAL CIRCUIT

Check the stop lamp switch signal circuit. Refer to VSP-45, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK STIO LAMP SWITCH

Check stop lamp switch. Refer to VSP-46, "Component Inspection".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> Replace stop lamp switch.

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

Description

INFOID:0000000006959843

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

NOTE:

The VSP OFF indicator operates normally.

Diagnosis Procedure

INFOID:0000000006959844

1.CHECK VSP SPEAKER OPERATION

1. Connect the CONSULT.
2. Select “VSP SP” of “ACTIVE TEST”
3. Check the VSP speaker operation. Refer to VSP-37, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".

NO >> GO TO 2.

2.CHECK VSP SPEAKER SIGNAL CIRCUIT

Check VSP speaker signal circuit. Refer to VSP-37, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the VSP speaker. Refer to VSP-62, "Removal and Installation".

NO >> Repair harness or connector.

THE START UP SOUND SPEAKER DOES NOT SOUND

Description

INFOID:0000000006959845

The start up sound do not sound.

Diagnosis Procedure

INFOID:0000000006959846

1.CHECK STRAT UP SOUND SPEAKER OPERATION

1. Connect the CONSULT.
2. Select “START UP SOUND SP” of “ACTIVE TEST”
3. Check the start up sound speaker operation. Refer to VSP-39, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 2.

2.CHECK START UP SOUND SPEAKER SINGAL CIRCUIT

Check start up sound signal circuit. Refer to VSP-39, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the start up sound speaker. Refer to VSP-61, "Removal and Installation".
NO >> Repair harness or connector.

THE CHARGE SOUND DOES NOT SOUND

Description

INFOID:0000000006959847

- The plug-in detection sound does not sound when the charge connector is correctly connected.
- The charge acceptance sound does not sound when the charge is accepted.

NOTE:
During quick charge, the plug-in detection sound does not operate.

Diagnosis Procedure

INFOID:0000000006959848

1.CHECK CHARGE PULSE INPUT SIGNAL

1. Connect the CONSULT.
2. Check the charge pulse input signal. Refer to VSP-47, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 2.

2.CHECK CHARGE PULSE SIGNAL CIRCUIT

Check charge pulse signal circuit. Refer to VSP-47, "Diagnosis Procedure".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 3.

3.PERFORM SELF-DIAGNOSIS OF VCM

Perform “Self Diagnostic Result” of “VCM”, and repair or replace malfunctioning parts.

>> Refer to EVC-55, "CONSULT Function".

THE POWER SWITCH OPERATION SOUND DOES NOT SOUND

Description

INFOID:0000000006959849

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

Diagnosis Procedure

INFOID:0000000006959850

1.CHECK POWER SWITCH INPUT SIGNAL

1. Connect the CONSULT.
2. Check the power switch input signal. Refer to VSP-49, "Component Function Check".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> GO TO 2.

2.CHECK POWER SWITCH SIGNAL CIRCUIT

Check power switch signal circuit. Refer to VSP-49, "Diagnosis Procedure".

Is the inspection result normal?

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

3.CHECK POWER SWITCH

Check power switch. Refer to VSP-50, "Component Inspection".

Is the inspection result normal?

YES >> Replace the VSP control unit. Refer to VSP-60, "Removal and Installation".
NO >> Replace power switch.

NORMAL OPERATING CONDITION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM : Description

INFOID:0000000006959851

- 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:0000000006959852

The power switch operation sound may not be able to respond normally if the power switch is pressed quickly.

CHARGE SOUND SYSTEM

CHARGE SOUND SYSTEM : Description

INFOID:0000000006959853

- The charge sound system operates when the power switch is OFF.
- During quick charge, the plug-in detection sound does not operate.

REMOVAL AND INSTALLATION

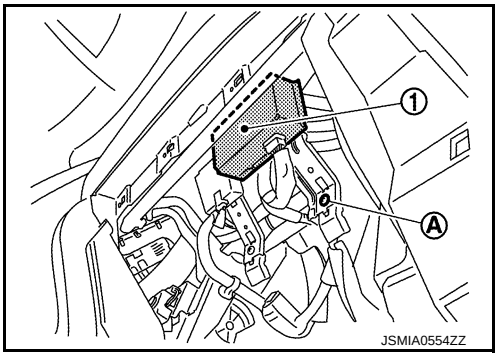
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Removal and Installation

INFOID:0000000006959854

REMOVAL

1. Remove the glove box cover assembly. Refer to IP-14, "Removal and Installation".
2. Remove the VSP control unit connector.
3. Remove screw (A), and then remove the VSP control unit (1).



INSTALLATION

Install in the reverse order of removal.

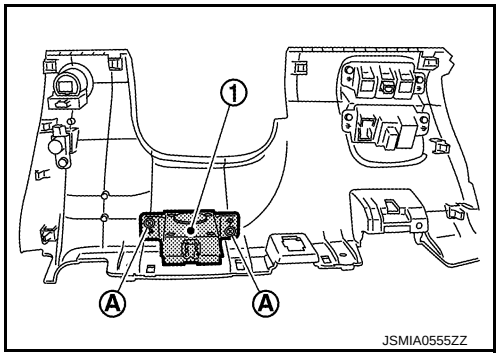
START UP SOUND SPEAKER

Removal and Installation

INFOID:0000000006959855

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-14, "Removal and Installation".
2. Remove screws (A), and then remove the start up sound speaker (1).



INSTALLATION

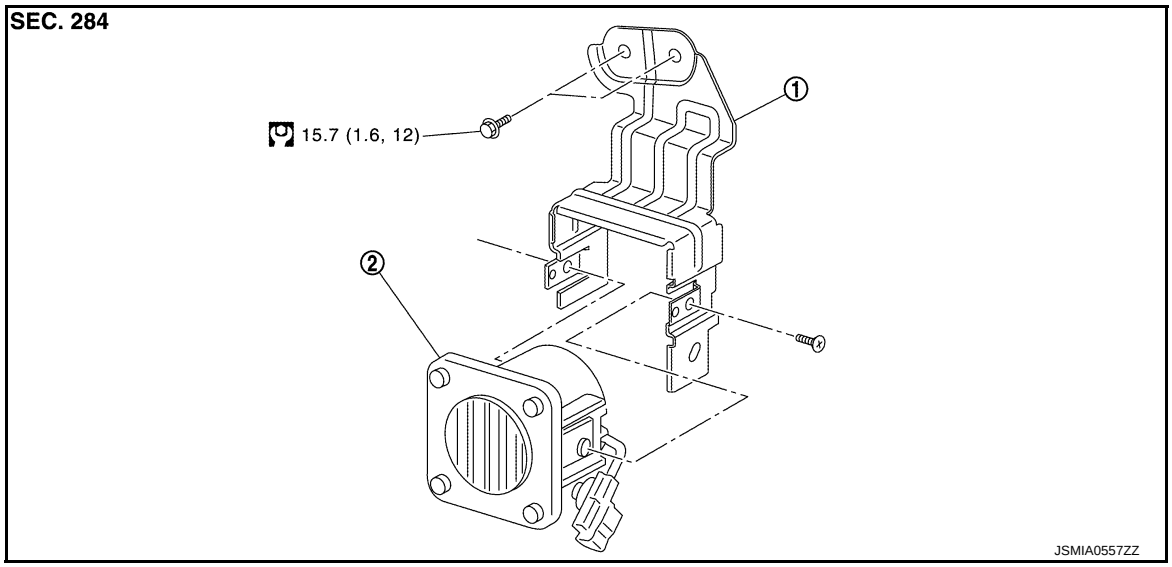
Install in the reverse order of removal.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SPEAKER

Exploded View

INFOID:0000000006959856

DIASSEMBLY



1. Bracket
2. VSP speaker

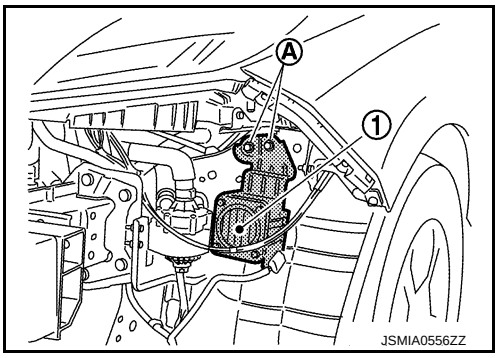
: N·m (kg-m, ft-lb)

Removal and Installation

INFOID:0000000006959857

REMOVAL

1. Remove the front bumper. Refer to EXT-13, "Removal and Installation".
2. Remove the VSP speaker connector.
3. Remove bolts (A), and then remove the VSP speaker (1).



INSTALLATION

Install in the reverse order of removal.

Disassembly and Assembly

INFOID:0000000006959858

DIASSEMBLY

Remove screws, and then remove bracket.

ASSEMBLY

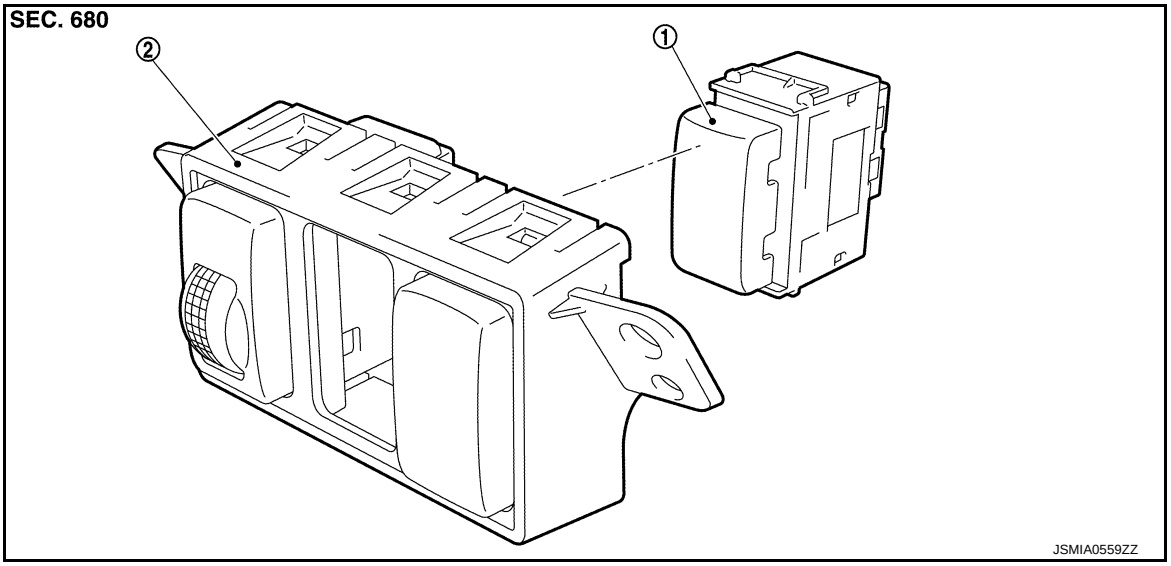
Assemble in the reverse order of disassembly.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH

Exploded View

INFOID:0000000006959859

REMOVAL



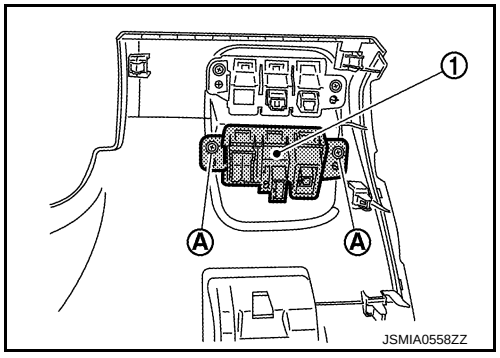
1. VSP OFF switch
2. Switch assembly

Removal and Installation

INFOID:0000000006959860

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-14, "Removal and Installation".
2. Remove screws (A), and then switch assembly (1).



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

INSTALLATION

Install in the reverse order of removal.