SECTION VSP

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP)

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000014742654

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the 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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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:

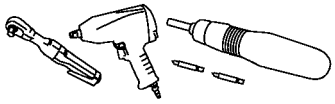
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000014623472

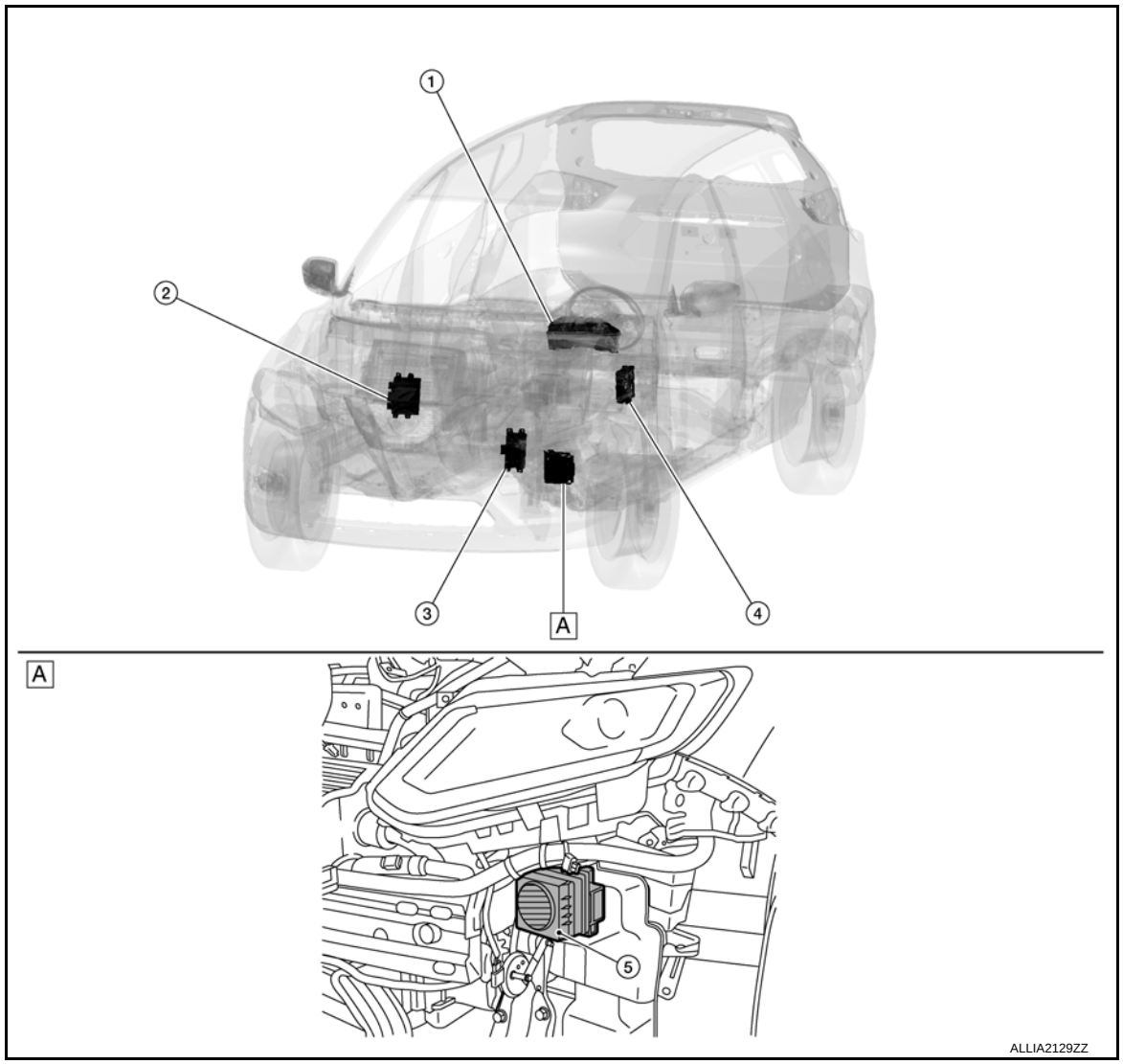
Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws, and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014623473



A. Left inside of front bumper

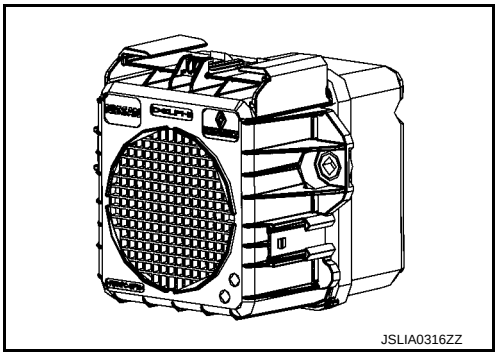
No.	Component	Function
①	Combination meter	• Combination meter transmits the vehicle speed signals to the VSP control unit via the CAN communication. • Combination meter receive the VSP OFF indicator signal from the VSP control unit via CAN communication.
②	HPCM	HPCM transmits the following signals to the VSP control unit via CAN communication. • READY to drive indicator lamp request signal • Engine speed signal
③	TCM	TCM transmits the shift position signal to the VSP control unit via CAN communication. Refer to TM-15, "CVT CONTROL SYSTEM : Component Parts Location" for detailed installation location.

No.	Component	Function
④	BCM	• BCM transmit the stop lamp switch signal to the VSP control unit via the CAN communication • Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
⑤	Approaching vehicle sound for pedestrians (VSP) control unit	Refer to VSP-6, "Approaching Vehicle Sound For Pedestrians (VSP) Control Unit".

Approaching Vehicle Sound For Pedestrians (VSP) Control Unit

INFOID:0000000014623474

- The VSP control unit is integral with a VSP speaker.
- The VSP control unit controls the VSP system according to the signals from the units and switches.
- The VSP control unit activates the VSP speaker when judging that the activation of the VSP system is necessary.



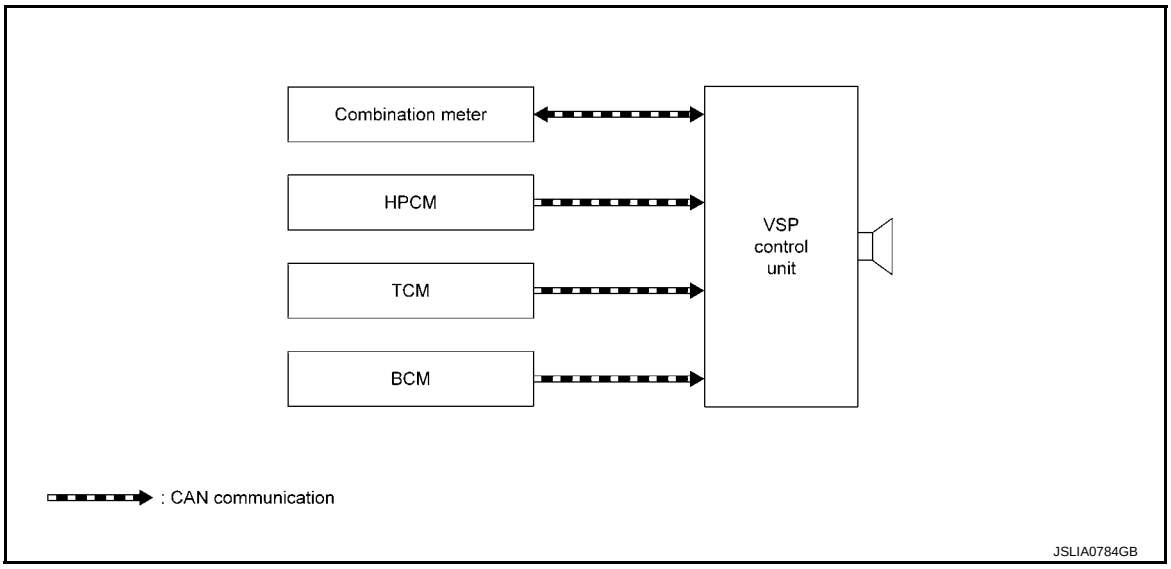
JSLIA0316ZZ

SYSTEM

System Description

INFOID:0000000014657978

SYSTEM DIAGRAM



VSP CONTROL UNIT INPUT/OUTPUT SIGNAL (CAN COMMUNICATION)

Input signal

Transmit unit	Signal name
Combination meter	Vehicle speed signal
HPCM	READY to drive indicator lamp request signal
	Engine speed signal
TCM	Shift position signal
BCM	Stop lamp switch signal

Output signal

Reception unit	Signal name
Combination meter	VSP OFF indicator lamp signal

SYSTEM DESCRIPTION

- The approaching vehicle sound for pedestrians (VSP) system activates the VSP speaker during motor driving (engine is stopped), notifying pedestrians that the vehicle is approaching.
- Other than during motor driving (engine is running), VSP system is inactive.
- The VSP system operates according to the signals received from the HPCM, combination meter, TCM, 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 lamp.
- The VSP system begins operating when the ignition switch is turned from OFF to ON.
- The VSP OFF indicator lamp illuminates when there is a malfunction in the VSP system.

DRIVING START SOUND

- The driving start sound operates during motor driving (engine is stopped) when the selector lever is in the “D” position and the brake pedal is released.
- The system switches to the driving sound after the driving start sound time (1200 ms) ends.
- Other than during motor driving (engine is running), the driving start sound is inactive.

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 HPCM transmits the following signals to the VSP control unit via CAN communication.
  - READY to drive indicator lamp request signal
  - Engine speed signal
- The TCM transmits the shift position signal to the VSP control unit via CAN communication.
- The VSP control unit judges that the driving start sound is necessary according to the signals received from each unit.
- The VSP control unit activates the VSP speaker when judging that the driving start sound is necessary to be produced.
- The driving start sound operates until the end of its operation time (1200 ms) and then switches to the driving sound.

Operation Condition

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

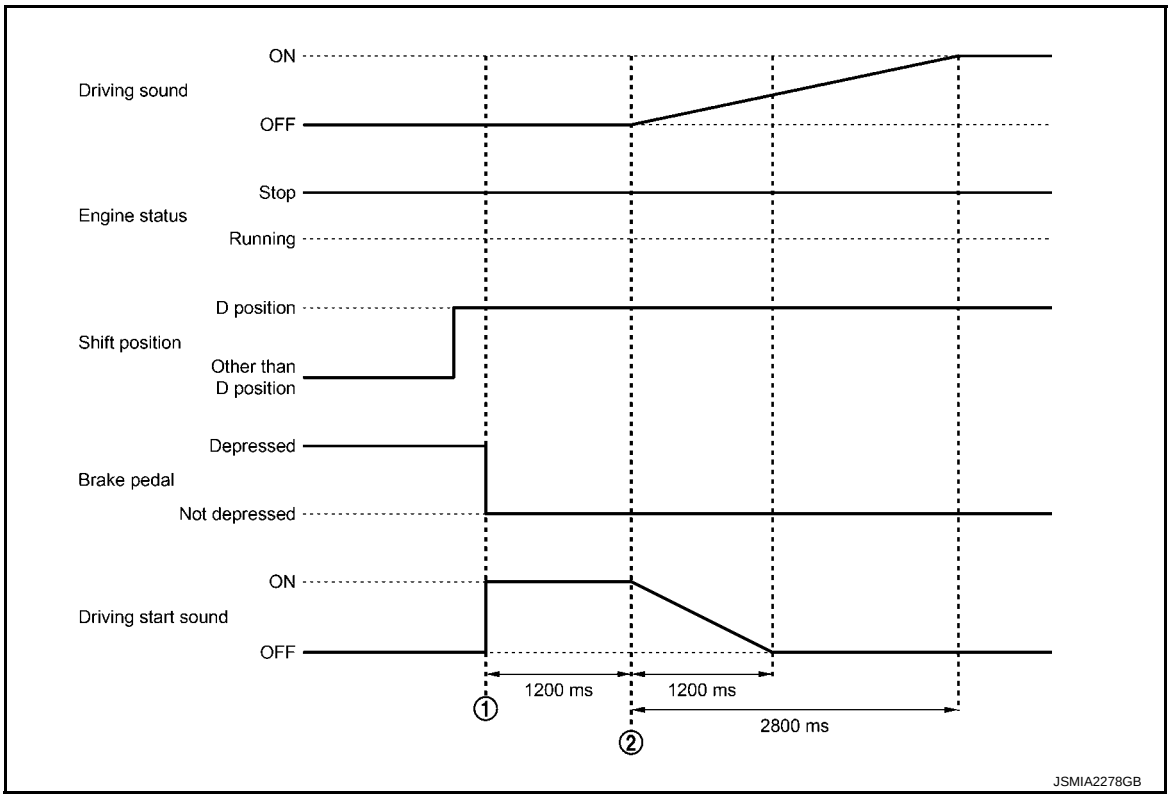
Operation condition	
Ignition switch	ON
READY to drive indicator lamp	ON
Selector lever	“D” position
Engine status	Stopped (motor driving)
Vehicle speed	0 km/h (0 MPH)
Brake pedal	Released

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
Shift position signal	TCM —CAN→ VSP control unit
READY to drive indicator lamp request signal	HPCM —CAN→ VSP control unit
Engine speed signal	
Vehicle speed signal	Combination meter —CAN→ VSP control unit
Stop lamp switch signal	BCM —CAN→ VSP control unit

Timing Chart



No.	Description
①	During motor driving (engine is stopped), the driving start sound activates when the selector lever is in the “D” position and the brake pedal is released.
②	The driving start sound operates until the end of its operation time (1200 ms) and then switches to the driving sound. **NOTE:** The driving sound fades in while the driving start sound fades out.

DRIVING SOUND

- The driving sound operates according to the vehicle speed during motor driving (engine is stopped) when the vehicle speed is 1 km/h (0.6 MPH) or more.
- 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).
- Other than during motor driving (engine is running), the driving sound is inactive.

Operation Description

- The combination meter transmits the vehicle speed signal to the VSP control unit via CAN communication.
- The HPCM transmits the following signals to the VSP control unit via CAN communication.
- READY to drive indicator lamp request signal
- Engine speed signal
- The TCM transmits the shift position signal to the VSP control unit via CAN communication.
- The VSP control unit judges that the driving sound is necessary according to the signals received from the combination meter, TCM, BCM and HPCM via CAN communication.
- The VSP control unit activates the VSP speaker when judging that the driving sound is necessary to be produced.

Operation Condition

The driving sound operates when the following conditions are met.

Operation condition	
Engine status	Stopped (motor driving)

Operation condition		
Vehicle speed	Accelerating	1 km/h (0.6 MPH) or more
	Decelerating	25 km/h (16 MPH) or less

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

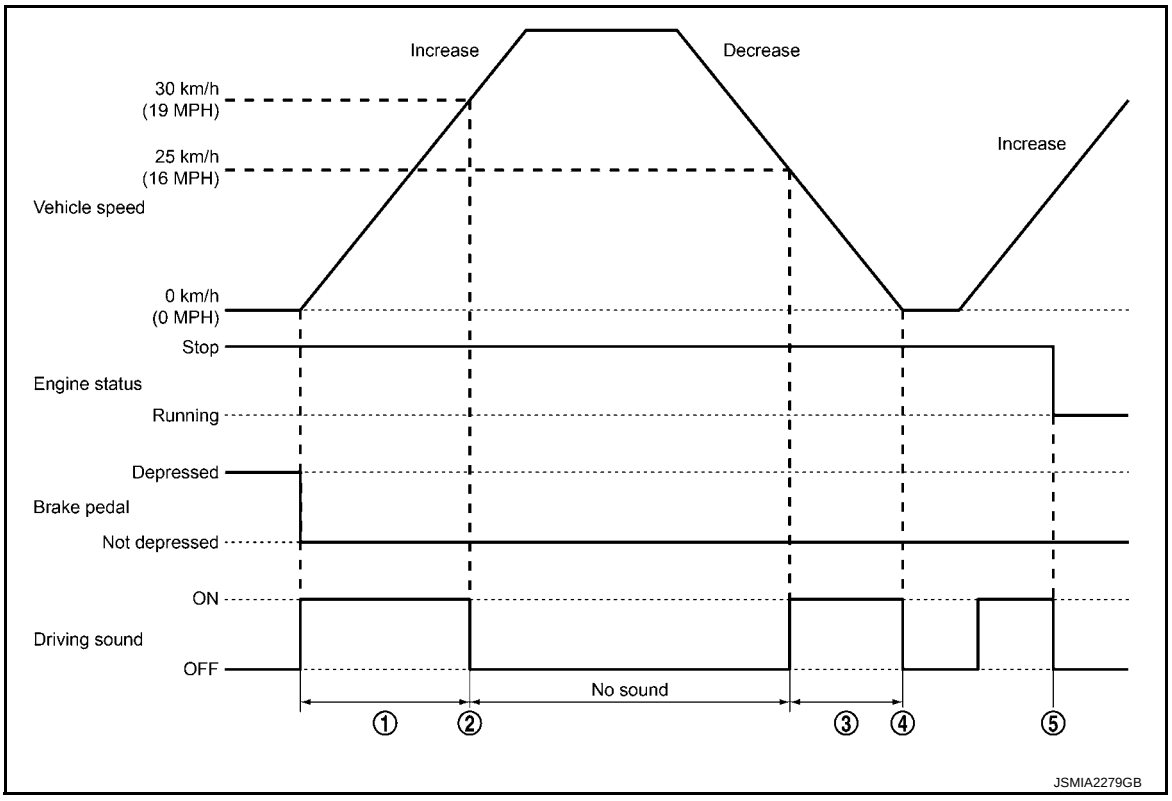
Cancel condition		
Engine status		Running (other than motor driving)
Vehicle speed	Accelerating	30 km/h (19 MPH) or more
	Decelerating	Less than 1 km/h (0.6 MPH)
Selector lever		“R” position
		“P” or “N” position*

NOTE:
*: When vehicle speed is less than 1 km/h (0.6 MPH).

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
Shift position signal	TCM —CAN→ VSP control unit
READY to drive indicator lamp request signal	HPCM —CAN→ VSP control unit
Engine speed signal	
Vehicle speed signal	Combination meter —CAN→ VSP control unit
Stop lamp switch signal	BCM —CAN→ VSP control unit

Timing Chart



No.	Description
①	The driving sound operates up to approximately 30 km/h (19 MPH) while accelerating [During motor driving (engine is stopped)].
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).
⑤	Other than during motor driving (engine is running), the driving sound is inactive.

REVERSE SOUND

- The reverse sound activates during motor driving (engine is stopped) when the selector lever is in the “R” position.
- Other than during motor driving (engine is running), the reverse sound is inactive.

Operation Description

- The HPCM transmits the following signals to the VSP control unit via CAN communication.
- Engine speed signal
- READY to drive indicator lamp request signal
- The TCM transmits the shift position signal to the VSP control unit via CAN communication.
- The VSP control unit judges that the reverse sound is necessary according to the signals received from the TCM and HPCM.
- The VSP control unit activates the VSP speaker when judging that the reverse sound is necessary to be produced.

Operation Condition

The reverse sound operates when the following conditions are met.

Operation condition	
Engine status	Stopped (motor driving)
Selector lever	“R” position

Cancel Condition

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

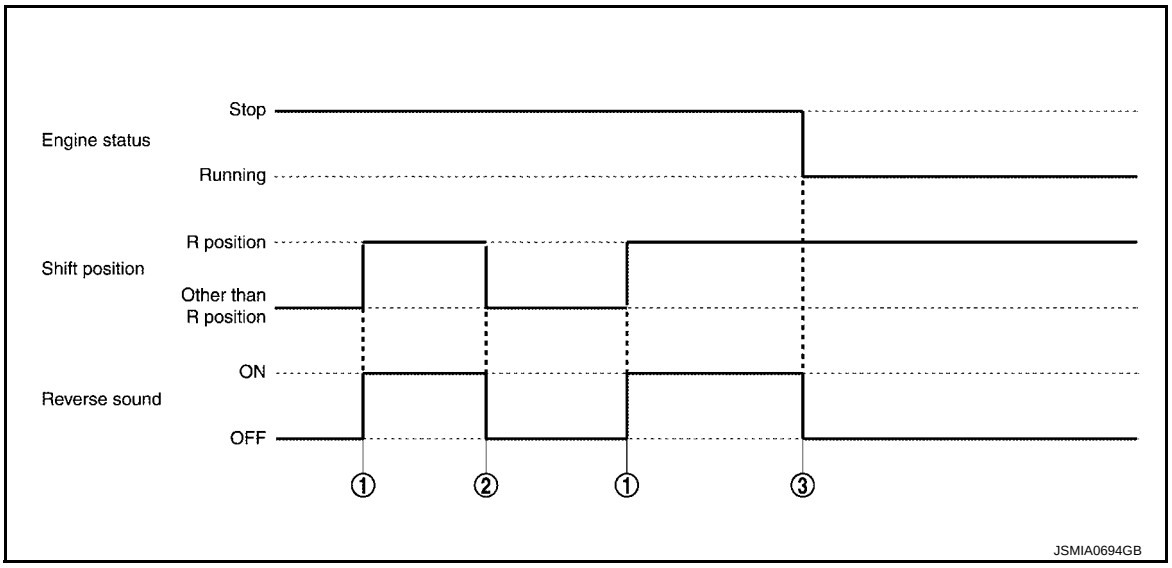
Operation condition	
Engine status	Running (other than motor driving)
Selector lever	Other than “R” position

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	HPCM —CAN→ VSP control unit
Engine speed signal	
Shift position signal	TCM —CAN→ VSP control unit

Timing Chart



No.	Description
①	The reverse sound operates during motor driving (engine is stopped) when the selector lever is moved to the “R” position (the reverse warning buzzer signal is received).
②	The reverse sound stops when selector lever is shifted to any position other than “R” position.
③	Other than during motor driving (engine is running), the reverse sound is inactive.

VSP SYSTEM MALFUNCTION DETECTION FUNCTION

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

Operation Description

When the VSP control unit detects a VSP system malfunction, it sends the VSP OFF indicator lamp signal to the combination meter via CAN communication.

Signal Path

The combination meter turns the VSP OFF indicator lamp ON/OFF when the signal shown below is input.

Signal name	Signal path
VSP OFF indicator lamp signal	VSP control unit —CAN→ combination meter

Fail-Safe

INFOID:0000000014657979

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

DTC	Fail-safe condition
U1000	Function stops when there is a communication break.
U1010	Function stops
B2471	Function stops

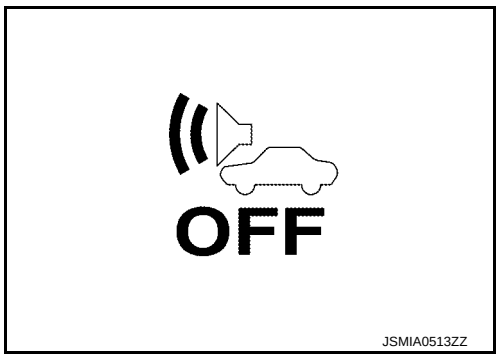
WARNING/INDICATOR/CHIME LIST

WARNING/INDICATOR/CHIME LIST : Approaching Vehicle Sound For Pedestrians (VSP) OFF Indicator

INFOID:0000000014657980

DESIGN/PURPOSE

The VSP OFF indicator lamp warns the driver that VSP function is OFF.



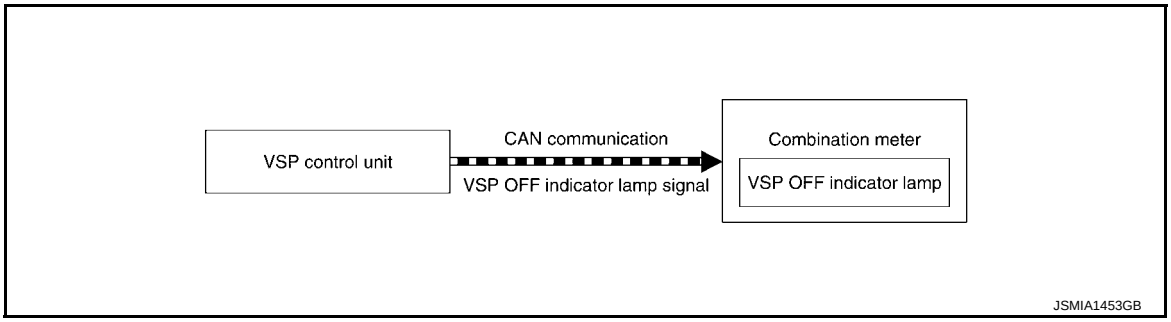
SYNCHRONIZATION WITH MASTER WARNING LAMP

Not applicable

OPERATION AT COMBINATION METER CAN COMMUNICATION CUT-OFF OR UNUSUAL SIGNAL

For actions on CAN communications blackout in the combination meter, refer to MWI-30, "Fail-safe".

SYSTEM DIAGRAM



SIGNAL PATH

When Malfunction Detected

- The VSP control unit transmits a VSP OFF indicator lamp signal to the combination meter via CAN communication when detecting a malfunction in VSP system.
- The combination meter turns ON the VSP OFF indicator lamp when receiving a VSP OFF indicator lamp signal.

LIGHTING CONDITION

VSP system malfunction

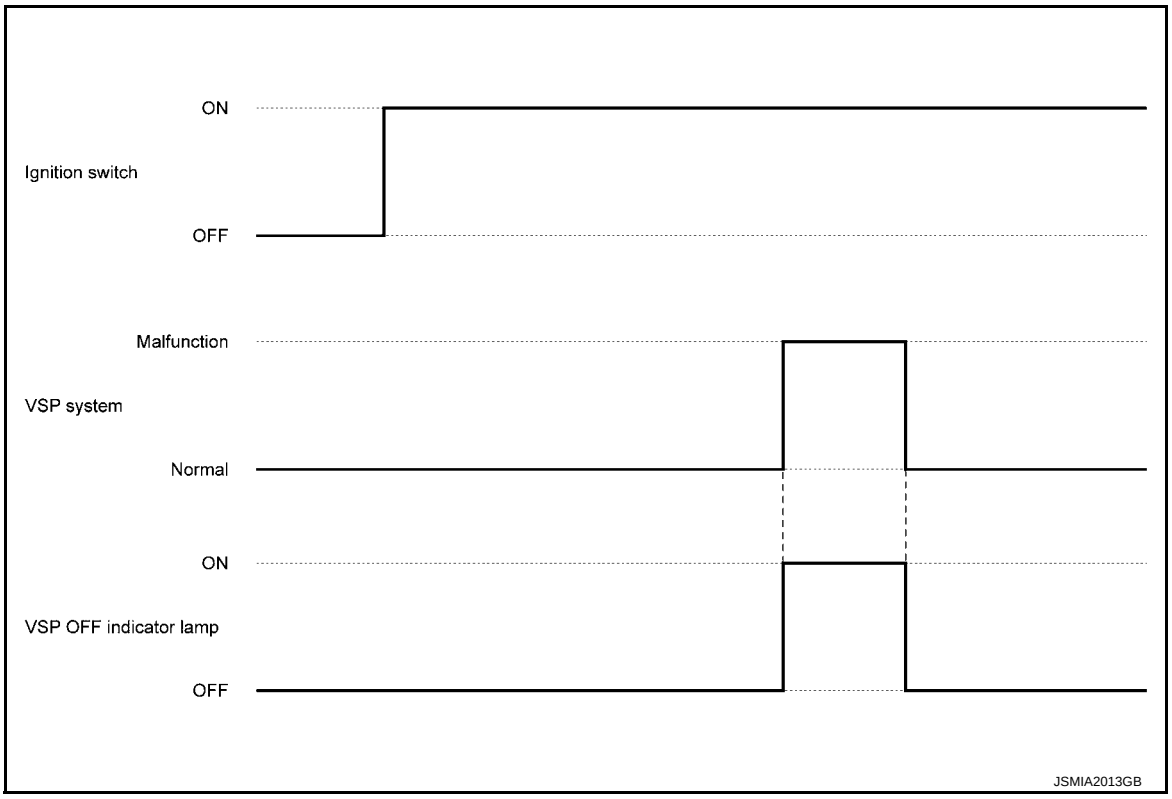
NOTE:

For the relationship between warning lamp and DTC, refer to VSP-19, "DTC Index".

SHUTOFF CONDITION

VSP system returns to the normal condition

TIMING CHART



DIAGNOSIS SYSTEM (VSP)

CONSULT Function

INFOID:0000000014657981

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 Result	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 may not be activated when diagnosing VSP control unit by using CONSULT.

ECU IDENTIFICATION

VSP control unit part number can be read.

SELF DIAGNOSTIC RESULT

For details, refer to VSP-19, "DTC Index".

When “CRNT” is displayed on Self Diagnostic Result,
- The system is presently malfunctioning.

When “PAST” is displayed on Self Diagnostic 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)	The number of times that ignition switch is turned ON after the DTC is detected is displayed. • 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. **NOTE:** Each time when ignition 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.

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)	Status of VSP OFF indicator judged from VSP OFF indicator lamp signal transmitted from the VSP control unit.
VSP SYSTEM SOUND STATUS (OFF/START/DRIVE/REVRSE)	Status of VSP system sound.
IGN STATUS SIG (OFF/ON)	ON/OFF status of ignition switch judged by VSP control unit.
VSP OFF SW (OFF/ON)	**NOTE:** The item is indicated, but not monitored.
VSP SOUND (OFF/ON)	Status of VSP sound cancellation.
ENG STATUS SIG (OFF/ON)	The status of “Engine running/Engine stopped” judged by VSP control unit according to an engine speed signal received from HPCM.

Monitor item	Description
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 HPCM via CAN communication.
CHARGE SOUND REQ (OFF)	**NOTE:** The item is indicated, but not monitored.
REVERSE BUZZER (OFF/ON)	**NOTE:** The item is indicated, but not 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 TCM via CAN communication.
ENGINE RPM (rpm)	Engine speed signal value received from HPCM via CAN communication.
ENG SPEED SIG (NOMAL/INVALID)	Status of engine speed signal received from the HPCM 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.

ECU DIAGNOSIS INFORMATION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Reference Value

INFOID:0000000014657982

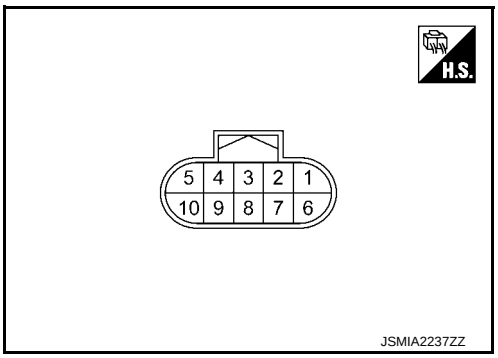
VALUES ON THE DIAGNOSIS TOOL

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	Ignition switch ON	VSP OFF indicator ON.	ON
		VSP OFF indicator OFF.	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 (0 MPH)]	START (Driving start sound operates until 1200 ms)
		While driving. • 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
IGN STATUS SIG	Ignition switch ON position.		ON
	Ignition switch other than ON position.		OFF
VSP OFF SW	**NOTE:** The item is indicated, but not monitored.		OFF
VSP SOUND	Ignition switch ON	When VSP sound is not cancelled. (VSP OFF indicator: OFF)	ON
		When VSP sound is cancelled. (VSP OFF indicator: ON)	OFF
ENG STATUS SIG	Engine running		ON
	Engine stopped		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	**NOTE:** The item is indicated, but not monitored.		OFF
REVERSE BUZZER	**NOTE:** The item is indicated, but not monitored.		OFF
VEHICLE SPEED	Ignition 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	Ignition switch ON	Vehicle speed signal is normal.	NORMAL
		Vehicle speed signal is abnormal.	INVALID

Monitor item	Condition		Value/Status
SHIFT POS SIG	Ignition 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	Engine running		Equivalent to tachometer reading
ENG SPEED SIG	Engine speed signal is normal		NORMAL
	Engine speed signal is abnormal		INVALID

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (P)	—	CAN-L	—	—	—	—
2 (GR)	Ground	Ground	—	Ignition switch ON	—	0 V
3 (LG)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
6 (L)	Ground	CAN-H	—	—	—	—
9 (BR)	Ground	Ignition switch power supply	Input	Ignition switch ON	—	Battery voltage

Fail-Safe

INFOID:0000000014657983

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

DTC	Fail-safe condition
U1000	Function stops when there is a communication break.
U1010	Function stops
B2471	Function stops

DTC Index

INFOID:0000000014657984

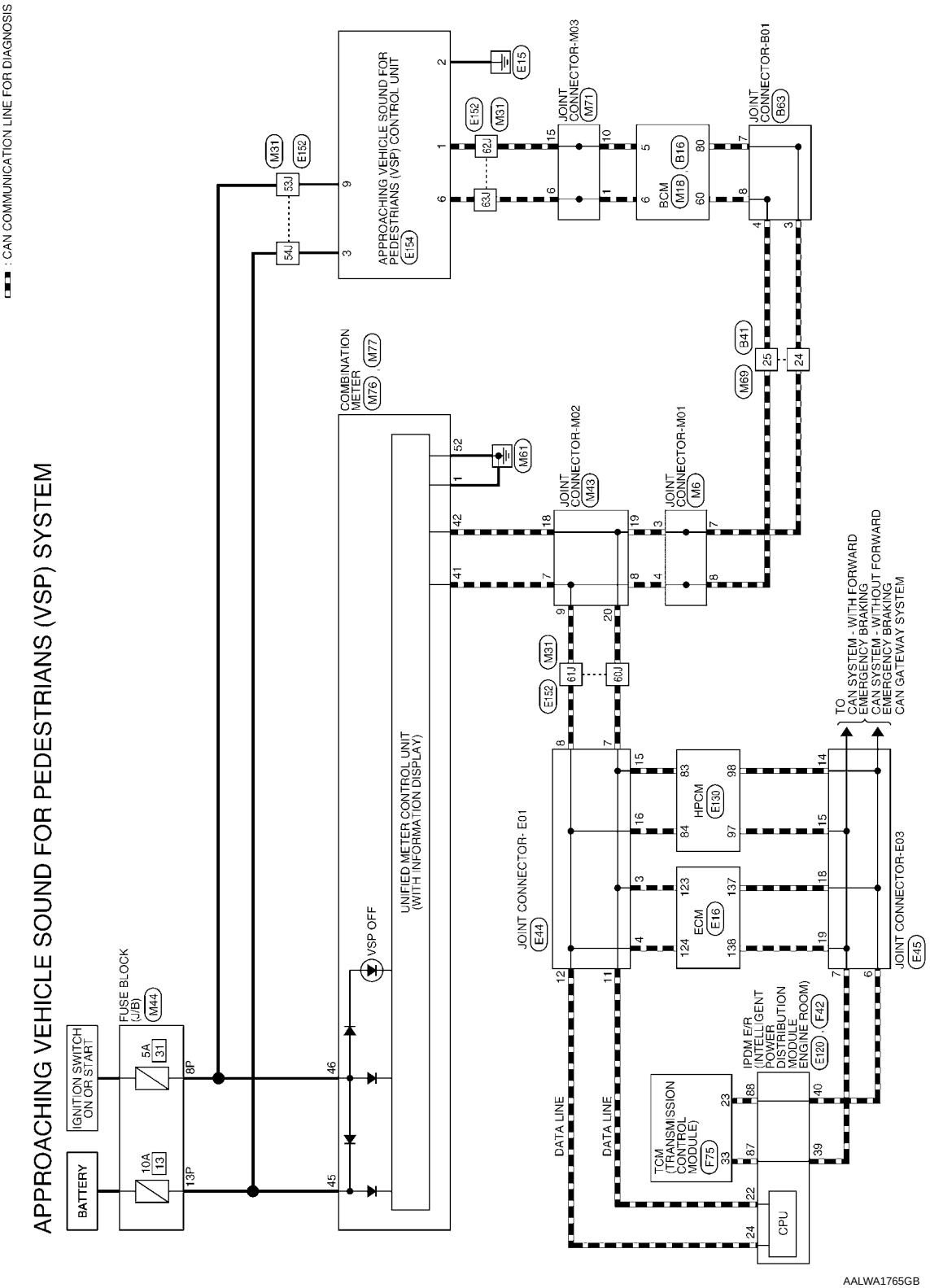
DTC	CONSULT display	VSP OFF indicator lamp	Reference
U1000	CAN COMM CIRCUIT	ON	VSP-29, "DTC Description"
U1010	CONTROL UNIT (CAN)	ON	VSP-30, "DTC Description"
B2741	VSP CONTROL UNIT	ON	VSP-31, "DTC Description"

WIRING DIAGRAM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM

Wiring Diagram

INFOID:0000000014623483



APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	B16
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

H.S.

60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61

Terminal No.	Color of Wire	Signal Name
41	–	–
42	–	–
43	–	–
44	–	–
45	–	–
46	R	I SES BACKDOOR BUTTON SW
47	–	–
48	–	–
49	G	I NO TOUCH TGATE SENSOR
50	W	I RR DOOR SW
51	LG	I TGATE SW
52	R	I RL DOOR SW
53	SB	I AS DOOR2 SW
54	–	–
55	LA/G	I RR AUTOSTOP SW
56	Y	I TGATE OPENER SW
57	SB	I DR DOOR2 SW
58	–	–
59	–	–
60	L	CAN-H
61	V	SES EXT REAR ANTENNA B
62	Y	SES INT MIDDLE ANTENNA B
63	L	SES INT MIDDLE ANTENNA A
64	LG	SES EXT REAR ANTENNA A
65	–	–
66	–	–
67	–	–
68	–	–
69	–	–
70	–	–
71	–	–
72	–	–
73	–	–
74	–	–
75	–	–
76	–	–
77	V	SHIFT LOCK RLY

78	–	–
79	LA/W	O STOP LAMP3
80	P	CAN-L

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	SB	TO MAIN HARNESS
2	SB	TO MAIN HARNESS
3	L	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	W	TO MAIN HARNESS
6	Y	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	BG	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	Y	TO MAIN HARNESS
11	G	TO MAIN HARNESS
12	L	TO MAIN HARNESS
13	W	TO MAIN HARNESS
14	GR	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	P	TO MAIN HARNESS
17	R	TO MAIN HARNESS
18	W	TO MAIN HARNESS
19	R	TO MAIN HARNESS
20	–	TO MAIN HARNESS
21	–	TO MAIN HARNESS
22	–	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	P	TO MAIN HARNESS
25	L	TO MAIN HARNESS
26	G	TO MAIN HARNESS
27	R	TO MAIN HARNESS
28	L	TO MAIN HARNESS
29	SHIELD	TO MAIN HARNESS
30	W	TO MAIN HARNESS
31	B	TO MAIN HARNESS
32	R	TO MAIN HARNESS

Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Type	NH24FW-J
Connector Color	WHITE

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	Y	CAN-L
3	P	CAN-L
4	L	CAN-H
5	L	CAN-H
6	Y	CAN-L
7	P	CAN-L
8	L	CAN-H
9	L	CAN-H
10	Y	CAN-L
11	P	CAN-L
12	L	CAN-H
13	–	–
14	–	–
15	P	CAN-L
16	L	CAN-H
17	–	–
18	–	–
19	–	–
20	–	–
21	L	CAN-H
22	Y	CAN-L
23	P	CAN-L
24	L	CAN-H

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

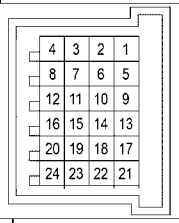
Terminal No.	Color of Wire	Signal Name
121	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN-L
124	L	CAN-H
125	R	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	BG	FUEL TANK TEMPERATURE SENSOR
129	–	–
130	–	–
131	–	–
132	–	–
133	LG	IGNITION SWITCH
134	–	–
135	–	–
136	–	–
137	G	HEV CAN-L
138	L	HEV CAN-H
139	Y	STOP LAMP SWITCH
140	GR	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	–	–
143	–	–
144	–	–
145	G	ECM POWER SUPPLY
146	–	–
147	GR	ECM GROUND
148	B	SENSOR GROUND
149	GR	ECM GROUND
150	–	–
151	–	–
152	GR	ECM GROUND

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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Type	NH24FG-J
Connector Color	GREEN

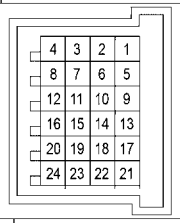
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	SENSOR GROUND
2	LG	I BRAKE SW2
3	P	CAN-L
4	L	CAN-H
5	B	SENSOR GROUND
6	LG	I BRAKE SW2
7	P	CAN-L
8	L	CAN-H
9	W	SENSOR GROUND
10	Y	STOP LAMP SWITCH
11	P	CAN-L
12	L	CAN-H
13	–	–
14	R	STOP LAMP SWITCH
15	P	CAN-L
16	L	CAN-H
17	BR	EVAP CONTROL SYSTEM PRESSURE SENSOR
18	–	–
19	P	CAN-L
20	L	CAN-H
21	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
22	–	–
23	–	–
24	–	–

Connector No.	E45
Connector Name	JOINT CONNECTOR-E03
Connector Type	NH24FW-J
Connector Color	WHITE

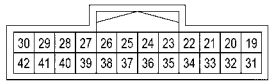
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	G	CAN-L
3	L	CAN-H
4	–	–
5	B	GROUND
6	G	HEV CAN-L
7	L	HEV CAN-H
8	–	–
9	B	GROUND
10	G	CAN-L
11	L	CAN-H
12	–	–
13	SHIELD	SHIELD
14	G	CAN-L
15	L	CAN-H
16	–	–
17	B	GROUND
18	G	HEV CAN-L
19	L	HEV CAN-H
20	–	–
21	B	GROUND
22	–	–
23	–	–
24	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH24FGY-NH
Connector Color	GRAY

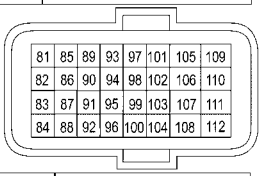
H.S.



Terminal No.	Color of Wire	Signal Name
19	LG	O IGN ECM
20	–	–
21	–	–
22	P	CAN-L
23	–	–
24	L	CAN-H
25	–	–
26	–	–
27	SB	CABIN MOTOR 5
28	R	CABIN MOTOR 6
29	LG	CABIN MOTOR 7
30	Y	CABIN MOTOR 8
31	B	2ND SIGNAL GROUND
32	GR	LI PUSH SW
33	BR	I AUTO STOP WIPER
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	L	HEV CAN-H
40	G	HEV CAN-L
41	W	CABIN MOTOR 3
42	R	CABIN MOTOR 4

Connector No.	E130
Connector Name	HPCM
Connector Type	RH24FB-RZ8-L-RH
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
81	R	12V BATTERY VOLTAGE
82	–	–
83	P	CAN-L
84	L	CAN-H
85	–	–
86	–	–
87	–	–
88	B	DC/DC CONVERTER VOLTAGE STABILIZER SIGNAL
89	–	–
90	–	–
91	–	–
92	–	–
93	Y	IGNITION SIGNAL
94	G	ASCD STEERING SWITCH
95	BR	ASCD STEERING SWITCH GROUND
96	–	–
97	L	HEV SYSTEM CAN-H
98	G	HEV SYSTEM CAN-L
99	R	STOP LAMP SWITCH
100	W	BRAKE PEDAL POSITION SWITCH
101	–	–
102	SB	SENSOR POWER SUPPLY
103	BR	ACCELERATOR PEDAL POSITION SENSOR 2
104	LG	SENSOR GROUND
105	BR	POWER SUPPLY FOR HPCM
106	V	SENSOR POWER SUPPLY
107	–	–
108	B	HPCM GND
109	–	–
110	GR	ACCELERATOR PEDAL POSITION SENSOR 1
111	R	SENSOR GROUND
112	GR	HPCM GND

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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	–	TO MAIN HARNESS
2J	Y	TO MAIN HARNESS
3J	–	TO MAIN HARNESS
4J	–	TO MAIN HARNESS
5J	–	TO MAIN HARNESS
6J	–	TO MAIN HARNESS
7J	–	TO MAIN HARNESS
8J	–	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	–	TO MAIN HARNESS
11J	–	TO MAIN HARNESS
12J	–	TO MAIN HARNESS
13J	–	TO MAIN HARNESS
14J	–	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	–	TO MAIN HARNESS
17J	–	TO MAIN HARNESS
18J	–	TO MAIN HARNESS
19J	–	TO MAIN HARNESS
20J	–	TO MAIN HARNESS
21J	GR	TO MAIN HARNESS
22J	SHIELD	TO MAIN HARNESS
23J	LG	TO MAIN HARNESS
24J	V	TO MAIN HARNESS
25J	L	TO MAIN HARNESS
26J	BR	TO MAIN HARNESS
27J	G	TO MAIN HARNESS
28J	R	TO MAIN HARNESS
29J	L	TO MAIN HARNESS
30J	V	TO MAIN HARNESS
31J	–	TO MAIN HARNESS
32J	–	TO MAIN HARNESS
33J	R	TO MAIN HARNESS
34J	L	TO MAIN HARNESS
35J	BG	TO MAIN HARNESS
36J	LG	TO MAIN HARNESS
37J	GR	TO MAIN HARNESS
38J	BR	TO MAIN HARNESS
39J	–	TO MAIN HARNESS
40J	–	TO MAIN HARNESS
41J	G	TO MAIN HARNESS
42J	W	TO MAIN HARNESS
43J	L	TO MAIN HARNESS
44J	B	TO MAIN HARNESS
45J	SB	TO MAIN HARNESS
46J	BR	TO MAIN HARNESS
47J	W	TO MAIN HARNESS
48J	W	TO MAIN HARNESS
49J	L	TO MAIN HARNESS
50J	P	TO MAIN HARNESS
51J	W	TO MAIN HARNESS
52J	R	TO MAIN HARNESS
53J	SB	TO MAIN HARNESS
54J	LG	TO MAIN HARNESS
55J	W	TO MAIN HARNESS
56J	BG	TO MAIN HARNESS
57J	R	TO MAIN HARNESS
58J	V	TO MAIN HARNESS
59J	BR	TO MAIN HARNESS
60J	P	TO MAIN HARNESS
61J	L	TO MAIN HARNESS
62J	P	TO MAIN HARNESS
63J	L	TO MAIN HARNESS
64J	R	TO MAIN HARNESS
65J	L	TO MAIN HARNESS
66J	BG	TO MAIN HARNESS
67J	–	TO MAIN HARNESS
68J	–	TO MAIN HARNESS
69J	G	TO MAIN HARNESS
70J	L	TO MAIN HARNESS
71J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	–	TO MAIN HARNESS
75J	–	TO MAIN HARNESS
76J	–	TO MAIN HARNESS
77J	–	TO MAIN HARNESS
78J	–	TO MAIN HARNESS
79J	SHIELD	TO MAIN HARNESS
80J	B	TO MAIN HARNESS
81J	W	TO MAIN HARNESS
82J	–	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	–	TO MAIN HARNESS
86J	–	TO MAIN HARNESS
87J	–	TO MAIN HARNESS
88J	–	TO MAIN HARNESS
89J	–	TO MAIN HARNESS
90J	–	TO MAIN HARNESS
91J	–	TO MAIN HARNESS
92J	LG	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	BR	TO MAIN HARNESS
96J	–	TO MAIN HARNESS
97J	GR	TO MAIN HARNESS
98J	P	TO MAIN HARNESS
99J	W	TO MAIN HARNESS
100J	Y	TO MAIN HARNESS

Connector No.	E154
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
Connector Type	RH10FB
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	GR	GND
3	LG	BAT
4	–	–
5	–	–
6	L	CAN-H
7	–	–
8	–	–
9	BR	IGN
10	–	–

Connector No.	F42
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH24FB-NH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
87	L	HEV CAN-H
88	G	HEV CAN-L
89	W	MOTOR CABIN 3
90	R	MOTOR CABIN 4
91	–	–
92	BG	LI NP SW
93	P	LI ECM DRIVER
94	–	–
95	–	–
96	–	–
97	–	–
98	–	–
99	BG	MOTOR CABIN 5
100	GR	MOTOR CABIN 6
101	LG	MOTOR CABIN 7
102	Y	MOTOR CABIN 8
103	W	HOOD SW2
104	–	–
105	–	–
106	BR	LO FAN RELAY2(PWM)
107	–	–
108	–	–
109	–	–
110	–	–

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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	F75
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	RH40FB-RZ8-L-LH
Connector Color	BLACK

H.S.

31	32	33	34	35	36	37	38	39	40	47	48
21	22	23	24	25	26	27	28	29	30	45	46
11	12	13	14	15	16	17	18	19	20	43	44
1	2	3	4	5	6	7	8	9	10	41	42

Terminal No.	Color of Wire	Signal Name
1	–	–
2	SB	L RANGE SW
3	LG	CLUTCH 2 TEMP SENSOR
4	Y	D RANGE SW
5	R	N RANGE SW
6	G	R RANGE SW
7	V	P RANGE SW
8	–	–
9	–	–
10	–	–
11	W	SENSOR GND
12	LG	CVT FLUID TEMP SENS
13	–	–
14	–	–
15	B	SENSOR GND
16	R	SEC PRESS SENS
17	L	PRI PRESS SENS
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	G	HEV CAN-L
24	–	–
25	W	EOP SIG
26	P	SENS PWR SUPPLY
27	–	–
28	–	–
29	–	–
30	BR	LINE PRESS SOL VALVE
31	–	–
32	P	EOP STATE
33	L	HEV CAN-H
34	R	OUTPUT SPEED SENS
35	LG	PRI SPEED SENS
36	–	–
37	BG	SELECT SOL VALVE

38	GR	TCC SOL VALVE
39	SB	SEC PRESS SOL VALVE
40	V	PRI PRESS SOL VALVE
41	B	GND
42	B	GND
43	–	–
44	–	–
45	LG	BATT
46	LG	BATT
47	R	VIGN
48	R	VIGN

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Type	NH24FGY-J
Connector Color	GRAY

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	GR	K-LINE
2	R	IGNITION
3	P	CAN-L
4	L	CAN-H
5	–	–
6	–	–
7	P	CAN-L
8	L	CAN-H
9	GR	K-LINE
10	R	IGNITION
11	P	CAN-L
12	L	CAN-H
13	P	CAN-L
14	L	CAN-H
15	P	CAN-L
16	L	CAN-H
17	P	CAN-L
18	L	CAN-H
19	P	CAN-L
20	L	CAN-H
21	P	CAN-L
22	L	CAN-H
23	P	CAN-L

24	L	CAN-H

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FGY-NH
Connector Color	GRAY

H.S.

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
1	L	LIN 3 D
2	LA/G	O DI FR LEFT D
3	LA/Y	O DI FR RIGHT D
4	P	O SPARE4 RL N
5	R	CAN-L
6	L	CAN-H
7	–	–
8	L	CAN-H
9	R	CAN-L
10	BG	I DOORLOCK SW
11	Y	I HAZARD SW D
12	W	O PWR AUTOLIGHT SENSOR
13	–	–
14	–	–
15	–	–
16	–	–
17	L	O PWR ATDVC
18	–	–
19	LG	I AUTOLIGHT SENSOR
20	–	–
21	–	–
22	–	–
23	G	O WL AUTHORIZATION RL
24	LA/R	O DEFROSTER RL D
25	BR	O BAT TEMP1 RL
26	–	–
27	Y	O IGN1 RL
28	LA/W	O IGN2 RL
29	–	–
30	V	O GND AUTOLIGHT SENSOR
31	–	–
32	–	–
33	LG	O CSW 5
34	Y	I CSW 5
35	BG	O SECURITY LED

36	G	O CSW 3
37	GR	O CSW 4
38	V	O CSW 1
39	W	O CSW 2
40	SB	I DOORUNLOCK SW

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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	–	TO ENGINE ROOM HARNESS
2J	R	TO ENGINE ROOM HARNESS
3J	–	TO ENGINE ROOM HARNESS
4J	–	TO ENGINE ROOM HARNESS
5J	–	TO ENGINE ROOM HARNESS
6J	–	TO ENGINE ROOM HARNESS
7J	–	TO ENGINE ROOM HARNESS
8J	–	TO ENGINE ROOM HARNESS
9J	W	TO ENGINE ROOM HARNESS
10J	–	TO ENGINE ROOM HARNESS
11J	–	TO ENGINE ROOM HARNESS
12J	–	TO ENGINE ROOM HARNESS
13J	–	TO ENGINE ROOM HARNESS
14J	–	TO ENGINE ROOM HARNESS
15J	–	TO ENGINE ROOM HARNESS
16J	–	TO ENGINE ROOM HARNESS
17J	–	TO ENGINE ROOM HARNESS
18J	–	TO ENGINE ROOM HARNESS
19J	–	TO ENGINE ROOM HARNESS
20J	–	TO ENGINE ROOM HARNESS
21J	LA/L	TO ENGINE ROOM HARNESS
22J	SHIELD	TO ENGINE ROOM HARNESS
23J	LG	TO ENGINE ROOM HARNESS
24J	V	TO ENGINE ROOM HARNESS
25J	L	TO ENGINE ROOM HARNESS
26J	BR	TO ENGINE ROOM HARNESS
27J	G	TO ENGINE ROOM HARNESS
28J	Y	TO ENGINE ROOM HARNESS
29J	L	TO ENGINE ROOM HARNESS
30J	V	TO ENGINE ROOM HARNESS
31J	–	TO ENGINE ROOM HARNESS
32J	–	TO ENGINE ROOM HARNESS
33J	R	TO ENGINE ROOM HARNESS
33J	Y	TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM)
34J	L	TO ENGINE ROOM HARNESS
35J	BG	TO ENGINE ROOM HARNESS
36J	GR	TO ENGINE ROOM HARNESS
37J	Y	TO ENGINE ROOM HARNESS
38J	LA/BR	TO ENGINE ROOM HARNESS
39J	–	TO ENGINE ROOM HARNESS
40J	–	TO ENGINE ROOM HARNESS
41J	LA/R	TO ENGINE ROOM HARNESS
42J	W	TO ENGINE ROOM HARNESS
43J	L	TO ENGINE ROOM HARNESS
44J	B	TO ENGINE ROOM HARNESS
45J	SB	TO ENGINE ROOM HARNESS
46J	BR	TO ENGINE ROOM HARNESS
47J	W	TO ENGINE ROOM HARNESS
48J	R	TO ENGINE ROOM HARNESS
49J	SB	TO ENGINE ROOM HARNESS
50J	GR	TO ENGINE ROOM HARNESS
51J	W	TO ENGINE ROOM HARNESS
52J	R	TO ENGINE ROOM HARNESS
53J	BR	TO ENGINE ROOM HARNESS
54J	LG	TO ENGINE ROOM HARNESS
55J	LA/Y	TO ENGINE ROOM HARNESS
56J	LA/V	TO ENGINE ROOM HARNESS
57J	LA/R	TO ENGINE ROOM HARNESS
58J	W	TO ENGINE ROOM HARNESS
59J	BR	TO ENGINE ROOM HARNESS
60J	P	TO ENGINE ROOM HARNESS
61J	L	TO ENGINE ROOM HARNESS
62J	R	TO ENGINE ROOM HARNESS
63J	L	TO ENGINE ROOM HARNESS
64J	R	TO ENGINE ROOM HARNESS
65J	L	TO ENGINE ROOM HARNESS
66J	BG	TO ENGINE ROOM HARNESS
67J	–	TO ENGINE ROOM HARNESS
68J	–	TO ENGINE ROOM HARNESS
69J	G	TO ENGINE ROOM HARNESS
70J	L	TO ENGINE ROOM HARNESS
71J	–	TO ENGINE ROOM HARNESS
72J	–	TO ENGINE ROOM HARNESS
73J	–	TO ENGINE ROOM HARNESS
74J	–	TO ENGINE ROOM HARNESS
75J	–	TO ENGINE ROOM HARNESS
76J	–	TO ENGINE ROOM HARNESS
77J	–	TO ENGINE ROOM HARNESS
78J	–	TO ENGINE ROOM HARNESS
79J	SHIELD	TO ENGINE ROOM HARNESS
80J	B	TO ENGINE ROOM HARNESS
81J	W	TO ENGINE ROOM HARNESS
82J	–	TO ENGINE ROOM HARNESS
83J	–	TO ENGINE ROOM HARNESS
84J	–	TO ENGINE ROOM HARNESS
85J	–	TO ENGINE ROOM HARNESS
86J	–	TO ENGINE ROOM HARNESS
87J	–	TO ENGINE ROOM HARNESS
88J	–	TO ENGINE ROOM HARNESS
89J	–	TO ENGINE ROOM HARNESS
90J	–	TO ENGINE ROOM HARNESS
91J	–	TO ENGINE ROOM HARNESS
92J	Y	TO ENGINE ROOM HARNESS
93J	G	TO ENGINE ROOM HARNESS
94J	L	TO ENGINE ROOM HARNESS
95J	P	TO ENGINE ROOM HARNESS
96J	–	TO ENGINE ROOM HARNESS
97J	SB	TO ENGINE ROOM HARNESS
98J	P	TO ENGINE ROOM HARNESS
99J	LA/R	TO ENGINE ROOM HARNESS
100J	R	TO ENGINE ROOM HARNESS

Connector No.	M43
Connector Name	JOINT CONNECTOR-M02
Connector Type	NH20FG-DC
Connector Color	GREEN

H.S.

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	L	CAN-H
4	L	CAN-H
5	L	CAN-H
6	–	–
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	–	–
14	G	CAN-L
15	G	CAN-L
16	G	CAN-L
17	–	–
18	P	CAN-L
19	P	CAN-L
20	P	CAN-L

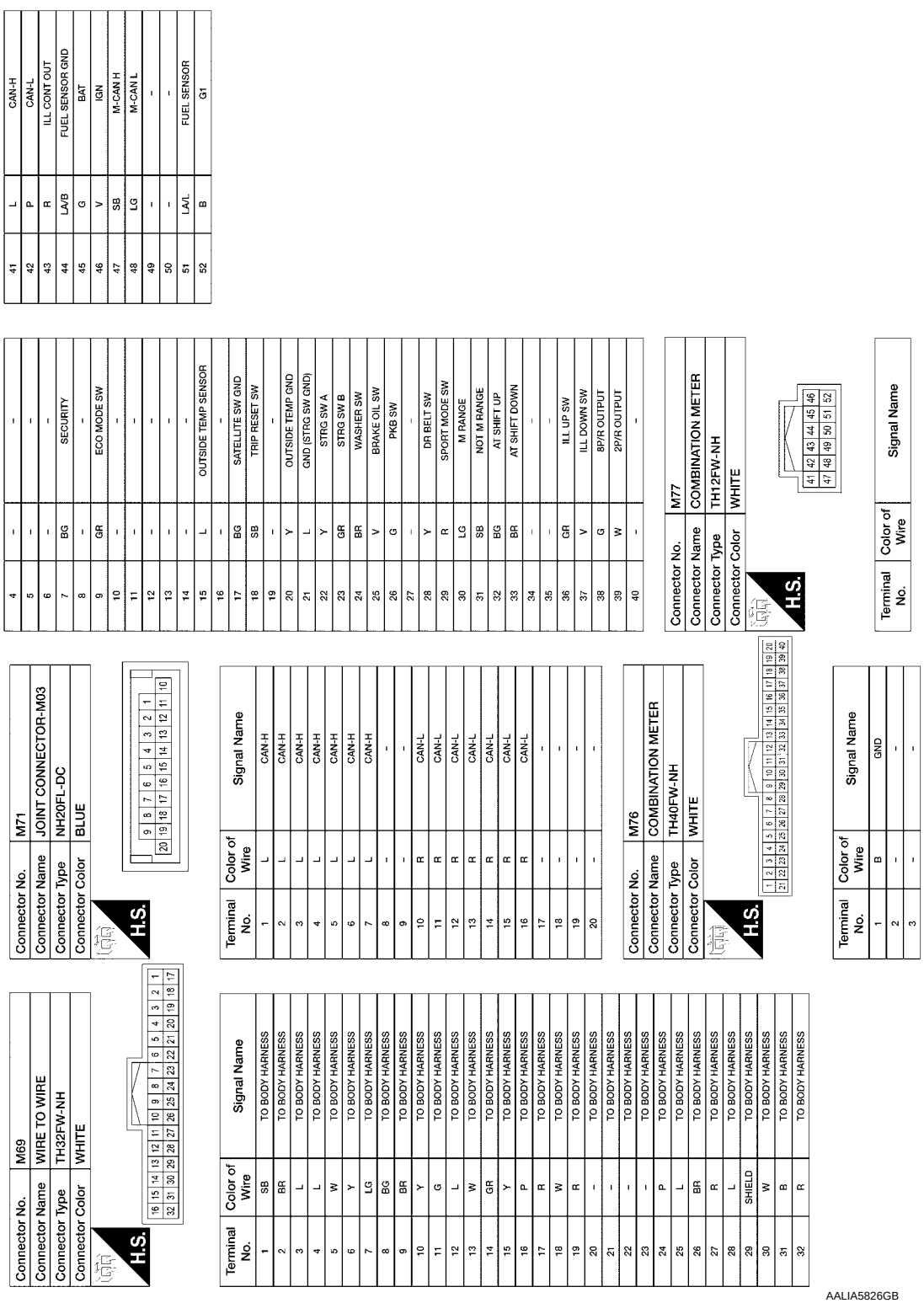
Connector No.	M44
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	G	IGNITION
3P	Y	IGNITION RELAY-2 CONTROL
4P	LG	REAR WINDOW DEFOGGER RELAY OUTPUT
5P	GR	REAR WINDOW DEFOGGER RELAY OUTPUT
6P	LA/R	REAR WINDOW DEFOGGER RELAY CONTROL
7P	Y	IGNITION
8P	V	IGNITION
9P	L	BATTERY
10P	LG	IGNITION
11P	–	–
12P	–	–
13P	G	BATTERY
14P	–	–
15P	L	BATTERY
16P	LA/W	FRONT BLOWER MOTOR RELAY CONTROL

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APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM CONNECTORS



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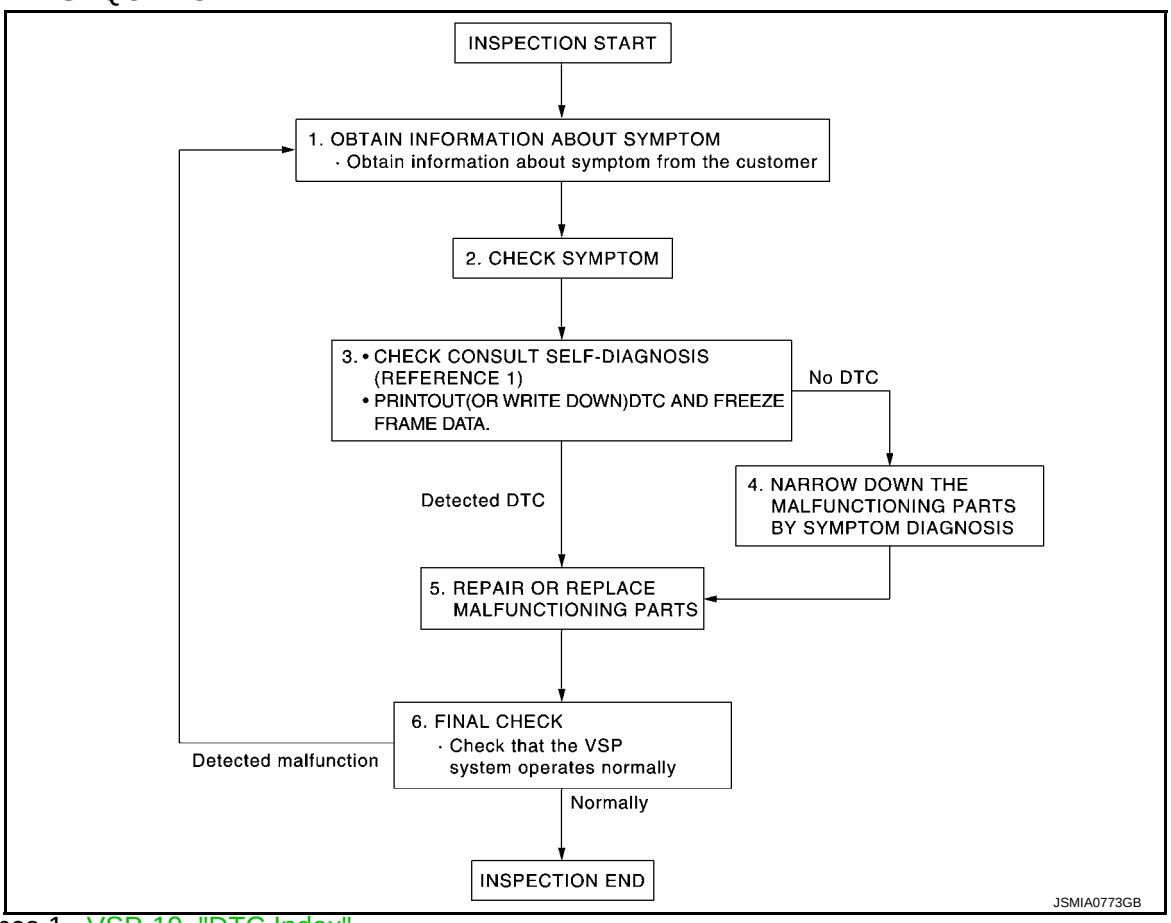
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000014657985

OVERALL SEQUENCE



Reference 1···VSP-19, "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

1. Check the symptom based on the information obtained from the customer.
2. 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-19, "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.

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.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014657986

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 detection 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-44, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When Ignition switch is ON
		Signal (terminal)	CAN communication signal
		Threshold	VSP control unit is not sending or receiving CAN communication
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system.

FAIL-SAFE

VSP function stops when there is a communication break.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition 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 VSP-29, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014657987

1.PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON.
2. Erase “self-diagnosis results”.
3. Perform DTC confirmation procedure again. Refer to VSP-29, "DTC Description".

Is “U1000” detected again?

YES >> Perform the trouble diagnosis for CAN communication system. Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO >> INSPECTION END

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000014657988

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U1010	CONTROL UNIT (CAN) [Control unit (CAN)]	Diagnosis condition	When Ignition switch is ON
		Signal (terminal)	—
		Threshold	Error detected during the initial diagnosis of CAN controller
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

VSP control unit.

FAIL-SAFE

VSP function stops.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Perform self-diagnosis with CONSULT.
3. Check if the DTC “U1010” is detected in self-diagnosis results of “VSP”.

Is “U1010” detected?

YES >> Refer to VSP-30, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014657989

1.PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON.
2. Erase “self-diagnosis results”.
3. Perform DTC confirmation procedure again. Refer to VSP-30, "DTC Description"

Is “U1010” detected again?

YES >> Replace VSP control unit. Refer to VSP-35, "Removal and Installation".
NO >> INSPECTION END

B2741 VSP CONTROL UNIT

DTC Description

INFOID:0000000014657990

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
B2741	VSP CONTROL UNIT (VSP CONTROL UNIT)	Diagnosis condition	When Ignition switch is ON
		Signal (terminal)	—
		Threshold	Internal malfunction
		Diagnosis delay time	1 second or less

POSSIBLE CAUSE

VSP control unit

FAIL-SAFE

VSP function stops.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON.
2. Perform self-diagnosis with CONSULT.
3. Check if the DTC “B2741” is detected in self-diagnosis results of “VSP”.

Is “B2741” detected?

YES >> Refer to VSP-31, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014657991

1.PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON.
2. Erase “self-diagnosis results”.
3. Perform DTC confirmation procedure again. Refer to VSP-31, "DTC Description".

Is “B2741” detected again?

YES >> Replace VSP control unit. Refer to VSP-35, "Removal and Installation".
NO >> INSPECTION END

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

INFOID:0000000014657993

1.CHECK FUSE

Check for blown fuses.

Signal name	Fuse No.
Battery power supply	13
Ignition switch ON signal	31

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 ignition switch ON.
2. Check voltage between VSP control unit harness connector and ground.

+		–	Signal name	Ignition switch position	Value (Approx.)
VSP control unit					
Connector No.	Terminal No.				
E154	3	Ground	Battery power supply	OFF	Battery voltage
	9		Ignition switch ON signal	ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace VSP control unit power supply circuit.

3.CHECK GROUND CIRCUIT

1. Turn ignition 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		
E154	2		Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace VSP control unit ground circuit.

SYMPTOM DIAGNOSIS

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000014657994

Symptoms	Check items	Possible malfunction location	Reference/Action to take
No sound from VSP speaker.	VSP sound does not sound.	VSP control unit	Replace VSP control unit

NORMAL OPERATING CONDITION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM

APPROACHING VEHICLE SOUND FOR PEDESTRIANS(VSP) SYSTEM : Description

INFOID:0000000014657995

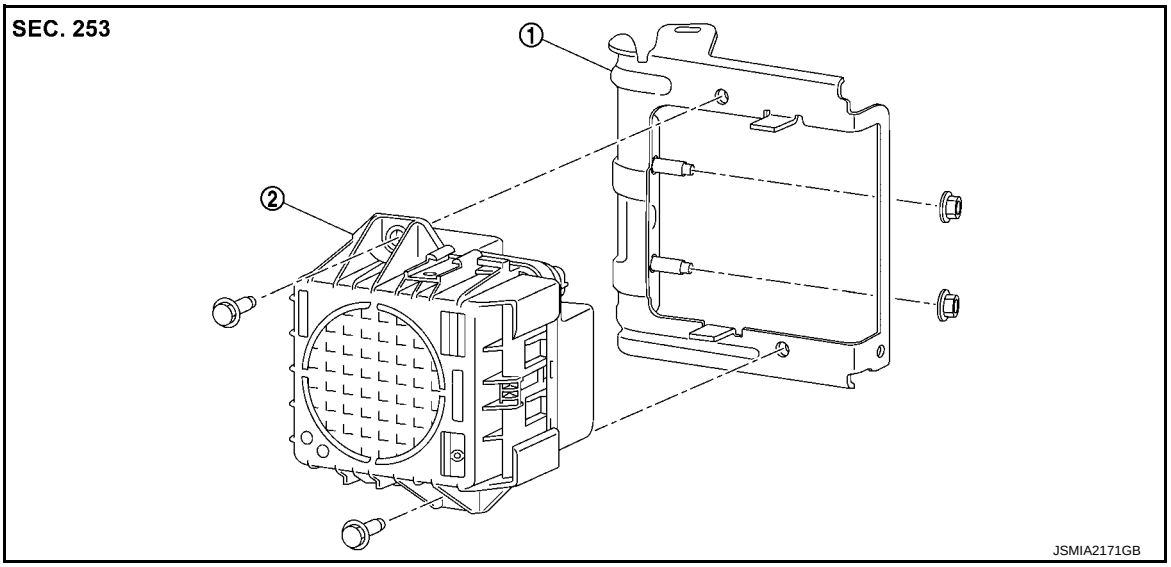
- The VSP during forward driving fades out and stops operating when the vehicle stops [vehicle speed 0 km/h (0 MPH) is detected].
- The VSP during reverse driving continues to operate when the vehicle is stopped.

REMOVAL AND INSTALLATION

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT

Exploded View

INFOID:0000000014623502



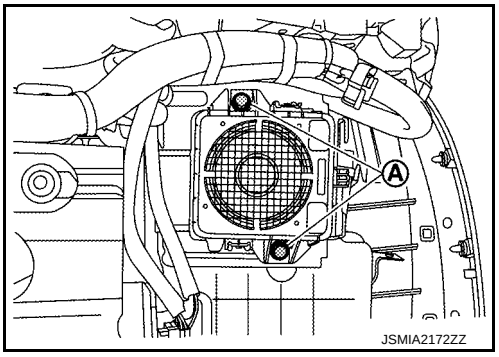
1. VSP control unit bracket
2. VSP control unit

Removal and Installation

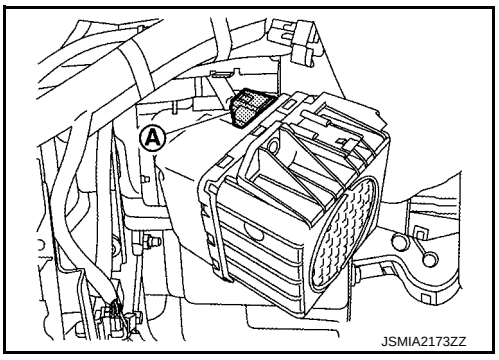
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REMOVAL

1. Remove the front bumper fascia. Refer to EXT-26, "Removal and Installation".
2. Remove bolts (A).

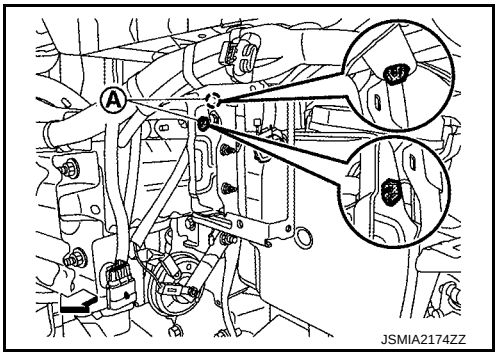


3. Disconnect the harness connector (A) from the VSP control unit and remove the VSP control unit.



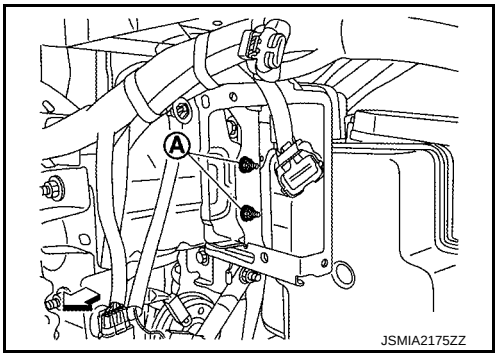
4. Remove harness clips (A) from the VSP control unit bracket.

⇦ : Vehicle front



5. Remove nuts (A) and remove VSP control unit bracket.

⇦ : Vehicle front



INSTALLATION

Installation is in the reverse order of removal.

APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) OFF SWITCH

Removal and Installation

INFOID:0000000014623504

The VSP off switch is serviced as part of the combination meter. Refer to MWI-81, "Removal and Installation".