SECTION AV
AUDIO, VISUAL & NAVIGATION SYSTEM

CONTENTS

TELEMATICS SYSTEM

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:0000000007079309

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 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 or each request switch operation.**
- **If a technician uses other medical electric devices than the implantable cardiac pacemaker or the 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.**

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

INFOID:0000000006838086

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 ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precaution for Trouble Diagnosis

INFOID:0000000006845235

AV COMMUNICATION SYSTEM

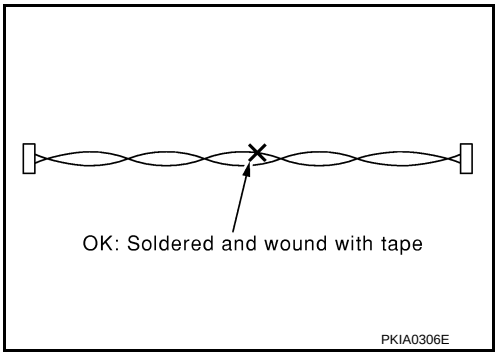
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

Precaution for Harness Repair

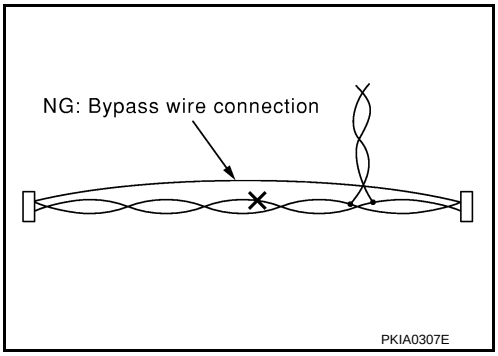
INFOID:0000000006845236

AV COMMUNICATION SYSTEM

- Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in).]



- Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



Precaution for Removing 12V Battery

INFOID:0000000006963825

When removing the 12V battery, turn ON/OFF the power switch and check that the charging status indicator does not blink. The 12V battery must be removed within one hour after checking the indicator lamp.

NOTE:

- The automatic 12V battery charge control may start even when the power switch is in OFF state.
- The automatic 12V battery charge control does not start within approximately one hour when the power switch is turned ON/OFF.

Cautions in Removing 12V Battery Terminal and AV Control Unit (Models with AV Control Unit)

INFOID:0000000006963826

CAUTION:

Remove 12V battery terminal and AV control unit after a lapse of 30 seconds or more after turning the power switch OFF.

NOTE:

After the power switch is turned OFF, the AV control unit continues operating for approximately 30 seconds.

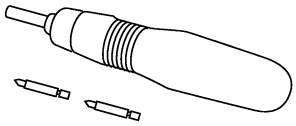
Therefore, data corruption may occur if 12V battery voltage is cut off within 30 seconds.

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000006845241

Tool		Description
Power tool	 PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

DESCRIPTION

Multi AV System

INFOID:0000000006838089

- The special navigation system for EV is used, and a high resolution 7-inch wide LCD monitor, electronic tuner radio, audio, Bluetooth®* audio, navigation, camera controller, USB and hands-free phone functions are integrated.
- SD slot is used to read the map data memorized on the SD card.
- Vehicle information display function is adopted to display the power consumption information, power consumption gauge and maintenance information.
- Voice recognition function is used to operate the navigation and the hands-free phone with the user's voice.

*: Bluetooth® communication is the technical standard to communicate between devices by wireless communication with the electric waves of the 2.4GHz zone.

NAVIGATION

- SD slot is used to read the map data memorized on the SD card.
- Map data is updated replacing an SD card including new map data.

AUDIO

- MP3/WMA files can be played.
- It is compatible with a USB connection. iPod ®*, portable audio or music files in a USB memory can be played.
- The Bluetooth® audio function is adopted. The user can listen to music by connecting to the audio with the Bluetooth® communication function by wireless communication.
- External sound input terminal is adopted for output on the vehicle by connecting an external sound device.

*: iPod® is the trademark of Apple Inc. registered in the United States and other countries.

REAR VIEW MONITOR

- Small CCD* camera is installed at the back of the vehicle. The rear view monitor, which shows the rear view image of the vehicle on the display while driving in reverse, is adopted.
- Vehicle width and approximate distance line from the rear end of the vehicle on the rear view image of the vehicle are developed. This helps a driver to easily judge distances between the vehicle and objects or width. Then, the predicted course line that indicates the vehicle course according to the steering angle is also generated to help the driver to back into a parking space.

*: Abbreviation of Charge Coupled Device. CCD can turn incident light from the lens into electrons and memorize the image like a photo.

HANDS-FREE PHONE (BLUETOOTH® ONLY)

- A hands-free phone can be used by connecting a cellular phone to the AV control unit in Bluetooth® communication.
- For available cellular phone support models, refer to nissan web site.

COMPONENT PARTS

Component Parts Location

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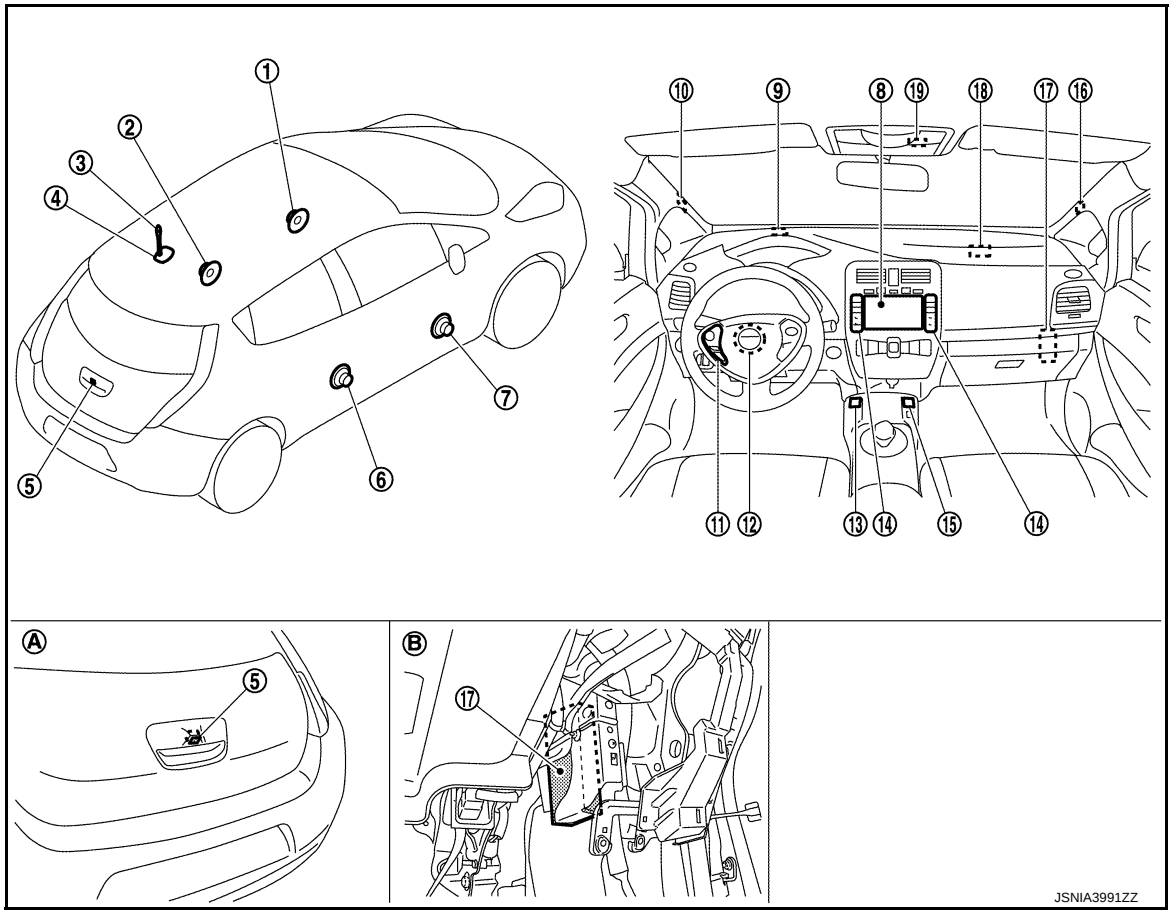


A. Center of the back door

B. Instrument panel lower finisher (RH) is removed.

No.	Component	Function
1,7.	Front door speaker	Refer to AV-13, "Speaker".
2,6.	Rear door speaker	
3.	Antenna rod	Refer to AV-14, "Radio Antenna and Antenna Feeder".
4.	Antenna base	
5.	Rear view camera	Refer to AV-18, "Rear View Camera".
8.	AV control unit	Refer to AV-11, "AV Control Unit".
9.	GPS antenna	Refer to AV-17, "GPS Antenna".
10,16	Tweeter	Refer to AV-13, "Speaker".
11.	Steering switch	Refer to AV-17, "Steering Switch".
12.	Steering angle sensor	Refer to AV-19, "Steering Angle Sensor".
13.	USB connector	Refer to AV-18, "USB Connector"
14.	Multifunction switch	Refer to AV-17, "Multifunction Switch".
15.	AUX jack	Refer to AV-19, "AUX Jack".
17.	TCU	Refer to AV-17, "TCU".

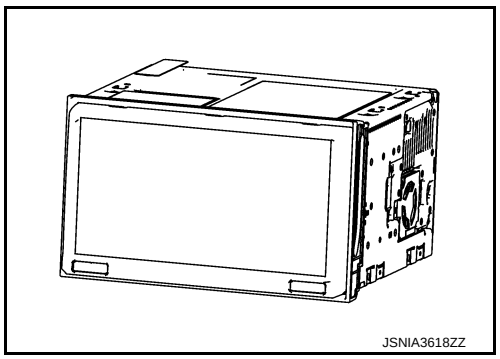
No.	Component	Function
18.	TEL antenna	Refer to AV-18, "TEL Antenna".
19.	Microphone	Refer to AV-18, "Microphone".

AV Control Unit

INFOID:0000000006964616

DESCRIPTION

- High-resolution 7-inch wide VGA display integrated AV control unit is installed at the center of the instrument panel.
- The AV control unit is equipped with the following parts. It is the master unit integrated with functions and controls the multi-AV system.



Units equipped
SD card slot
High resolution 7-inch wide VGA LCD monitor
Audio amplifier
AM/FM electronic tuner
Satellite radio tuner
CD drive
USB interface
Camera controller
Bluetooth® module

- Signals necessary for the vehicle information display function are received from ECM and the combination meter via CAN communication.
- It is connected to TCU in USB communication, and signals necessary for the Telematics function and CARWINGS function are sent and received.
- Signals necessary for vehicle setting functions are sent and received with BCM via CAN communication.
- It inputs the signal for driving status recognition (vehicle speed signal, reverse signal, and parking brake signal).
- A possible route line is generated on the camera image from the rear view camera, and it is shown on the display.
- It has the built-in gyro sensor and acceleration sensor as a vehicle position calculation sensor. Map data is read from an SD card in the SD slot.

- SD card
- It records the map data, traffic control data, and guide information, etc.
- Gyroscope
- Detects vehicle cornering condition.
- Acceleration sensor
- Detects the inclination angle and height variation of the vehicle.

NOTE:
For details of each functions, refer to AV-21, "MULTI AV SYSTEM : System Description".

SD Card Slot

With the display opened, the map card slot is located on the right (main slot), and the card slot used for import/export of stored location is located on the left (sub slot).

Display

- High resolution 7-inch wide VGA LCD monitor is adopted to display a high definition image including digital image signals.
- Touch panel function is adopted to improve operability.
- RGB digital image signals (navigation image/menu image) and composite image signals (rear view camera image) are displayed.

Audio Amplifier

- 45W x 4ch amplifiers are installed.
- Audio sound, TEL voice and guiding voice are output to each speaker.

AM/FM Electronic Tuner
- The AM/FM electric tuner includes the PLL frequency synthesizer system.

Satellite Radio Tuner
- The adoption of the PPL synthesizer method allows the signal reception at more accurate frequencies.
- The satellite radio tuner receives a satellite radio antenna signal and converts the signal into an audio sound signal and a data signal.
- The audio sound signal is transmitted to the audio amplifier and the data signal is transmitted to the display.

CD Drive
- It is CD-R/CD-RW compliant and enables MP3 and WMA files to play music.
- It displays the artist name, album title or song title recorded to the file by the ID3 tag/WMA tag display function.

USB Interface
- Music can be played by connecting an iPod® or USB memory.

Camera Controller
- Warning message, width/distance guiding line and possible route line are generated on the image from the rear view camera.
- The possible route line is drawn based on the steering signal received from the steering sensor via CAN communication.

Bluetooth®Module
- Wireless connection to the audio device equipped with Bluetooth®communication can play music.
- Once a Bluetooth® communication compliant phone has been registered in the AV control unit, hands-free phone communication and connection to the CARWINGS information center can be carried out without connecting the cellular phone to the TEL harness.
- Five units of Bluetooth® communication devices including audio devices and cellular phones can be registered to the AV control unit.

Specification

Manufacturer name			Clarion Co., Ltd.
Display	Screen size		7-inch wide VGA (157.2 mm × 82.32 mm)
	Number of pixels		800 × 480 pixels
	Drive type		TFT active matrix method
	Touch panel detection		Analog resistive touch
Amplifier output			45 W × 4 ch
CD drive	Used disc		ϕ12 cm
	Playable disc	CD	CD-ROM (CD-DA)
			CD-R*1
			CD-RW*1
	Playable format	Music	MP3
			WMA
	Text display function	ID3 / WMA tag	Artist name
			Album title
			Song title

USB	High communication standard		USB2.0
	Playable format	Music	MP3
			WMA
	Text display function	ID3 / WMA tag	Artist name
			Album title
			Song title
	iPod®Action*2		iPod Classic
			iPod nano 5th generation
			iPod nano 4th generation
			iPod nano 3rd generation
			iPod nano 2nd generation
			iPod nano 1st generation
			iPod 5th generation
			iPod touch
			iPhone
Bluetooth®audio	Compliant communication type	Wireless connection	Bluetooth® communication
	Compliant profile		A2DP 1.2
			AVRCP 1.3
Hands-free phone	Compliant communication type	Wireless connection	Bluetooth® communication compliant type
	Compliant profile		HFP 1.0,1.5
			DUN 1.1
			OPP 1.1
Camera controller	Guideline display function		Width/distance display
			Possible route line display/non-display switch
	Steering signal input method		CAN communication
Other functions			Speed sensitive volume function
			Steering switch compliant
			Voice recognition function

*1: If the reflectance of the surface of the media is low, the data may not be read.
*2: It may not be used if it is not updated to the latest firmware or partial functions may not work if it is used.

Speaker

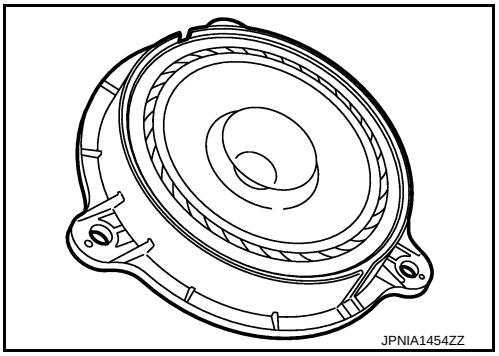
INFOID:0000000006838092

The 6-speaker system is adopted.

Front door speaker

- ϕ16.0 cm speaker is installed to the bottom of the front door.
- Sound signal is input from the AV control unit to output mid and low range sounds.

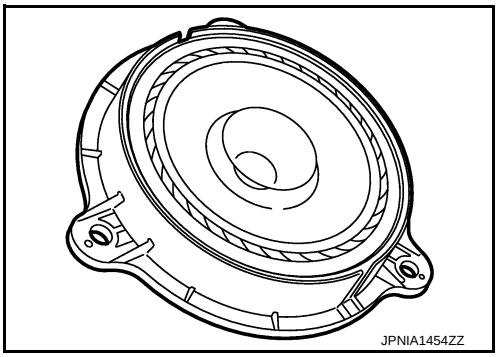
Maximum input : 40 W
Rated input : 20 W
Impedance : 2 Ω



Rear door speaker

- ϕ16.0 cm speaker is installed to the bottom of the rear door.
- Sound signal is input from the AV control unit to output high, mid and low range sounds.

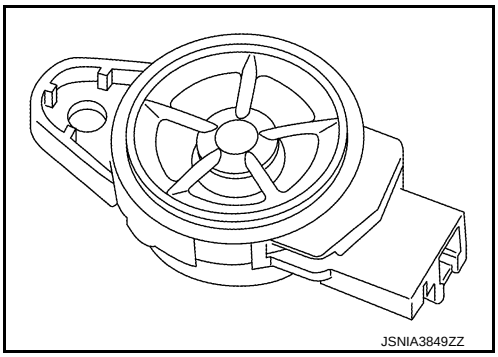
Maximum input	**: 40 W**
Rated input	**: 20 W**
Impedance	**: 2 Ω**



Tweeter

- ϕ3.5 cm tweeter for high-range sounds is installed in the front pillar.
- Sound signal is input from the AV control unit to output high range sounds.

Maximum input	**: 40 W**
Rated input	**: 1 W**
Impedance	**: 4 Ω**



Radio Antenna and Antenna Feeder

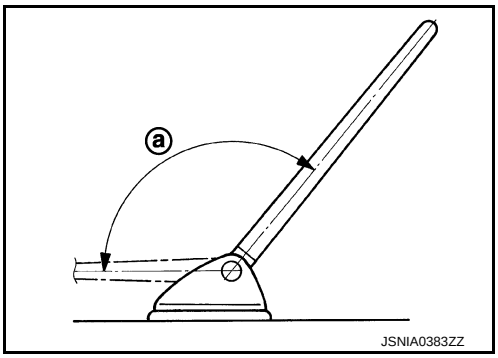
INFOID:0000000006964615

RADIO ANTENNA

Antenna Rod

Foldable rod antenna is installed to the rear center of the roof.

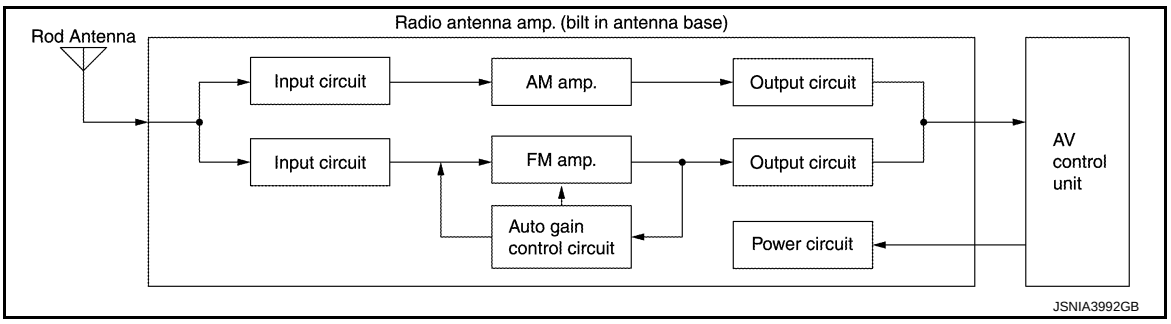
a : 140°



Antenna Base

- To obtain sufficient reception sensitivity, an antenna amplifier is built into the antenna base.
- Power of the antenna amplifier is supplied from the AV control unit.

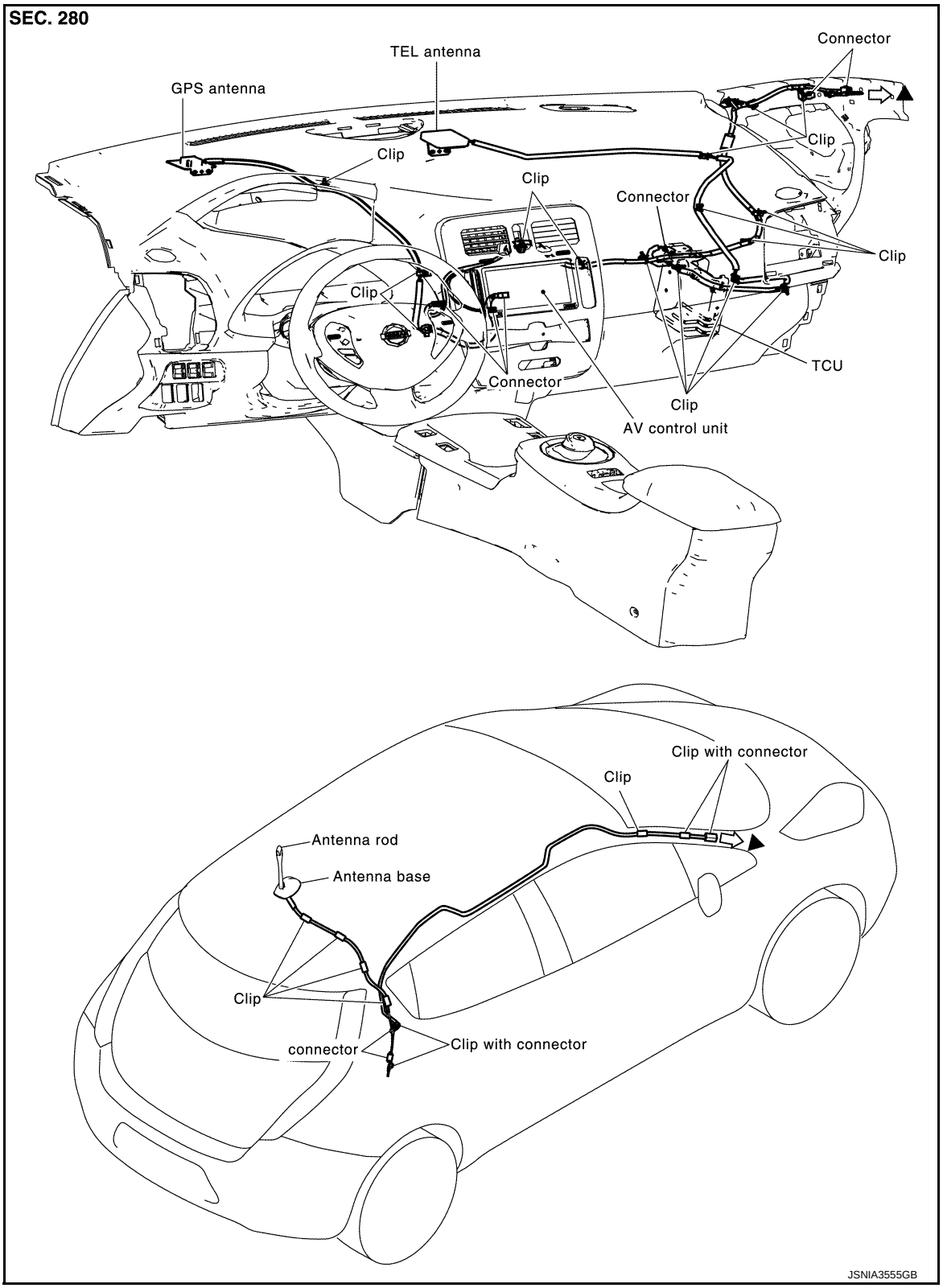
- The radio signal received by the antenna rod is input to the antenna base and the antenna signal is amplified and sent to the AV control unit.



Satellite radio Antenna

- Receives satellite radio waves and outputs it to AV control unit.

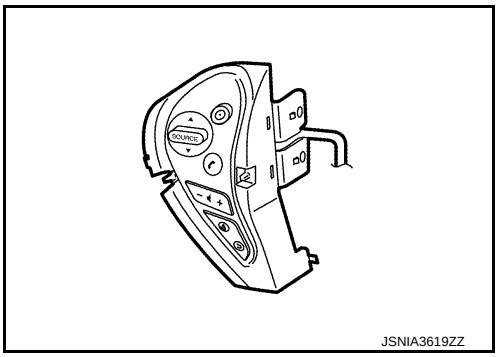
Antenna circuit



Steering Switch

INFOID:0000000006964602

- Hands-free phone, possible driving distance display, voice control, and audio operations can be performed.
- This switch is connected to the AV control unit, and the switch operation signal is transmitted to the AV control unit via voltage multiplex communication.



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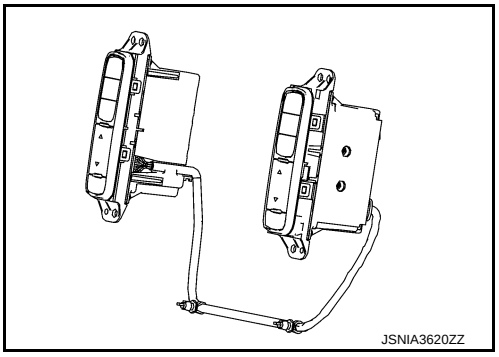
Multifunction Switch

INFOID:0000000006964603

- Audio, navigation, Telematics, etc. can be controlled.
- Switch operation signals are input to the AV control unit via AV communication.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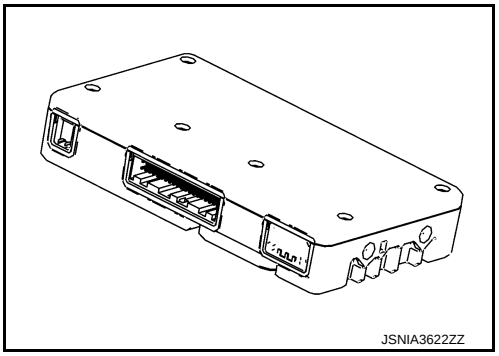
TCU

INFOID:0000000006964604

- TCU is installed on the lower right of the instrument panel.
- A radio communication terminal is built into the unit, and data is sent and received in SMS and packet communication with the NISSAN CARWINGS data center through the TEL antenna.
- VIN information necessary for the Telematics service is memorized.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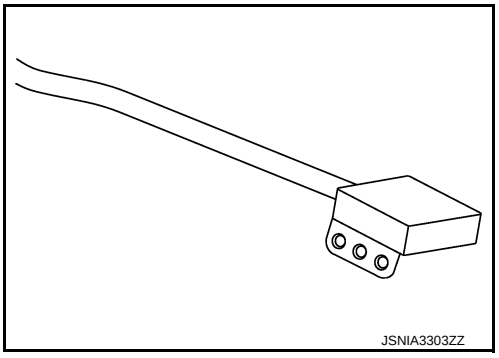
GPS Antenna

INFOID:0000000006964605

- GPS antenna is installed in the instrument panel.
- Power is supplied from the AV control unit.
- This antenna amplifies radio waves received from the GPS satellite and transmits the GPS signal to the AV control unit.

NOTE:
An object on the instrument panel may cause the reception sensitivity to be decreased.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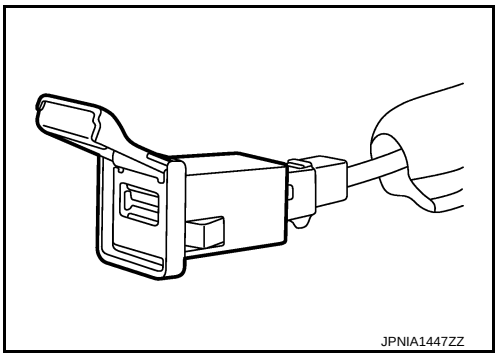
USB Connector

INFOID:0000000006964606

- USB connector is installed on the lower left side of the instrument panel.
- iPod® and USB memory can be connected to the AV control unit.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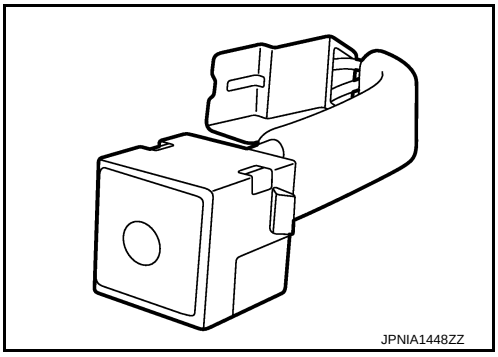
Microphone

INFOID:0000000006964607

- The voice control/TEL microphone is installed on the right side of the map lamp assembly.
- The power is supplied from the AV control unit to the microphone, transmitting sound signals to the AV control unit at the voice control or during hands-free phone communication.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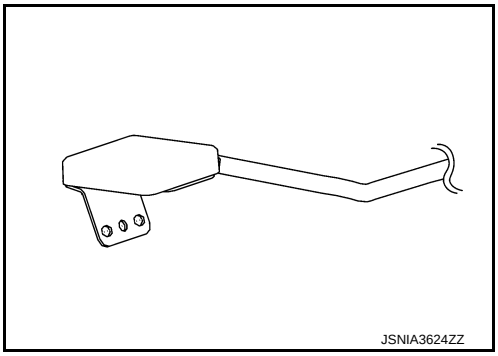
TEL Antenna

INFOID:0000000006964608

- The TEL antenna is installed in the instrument panel.
- Power is supplied with TCU activated.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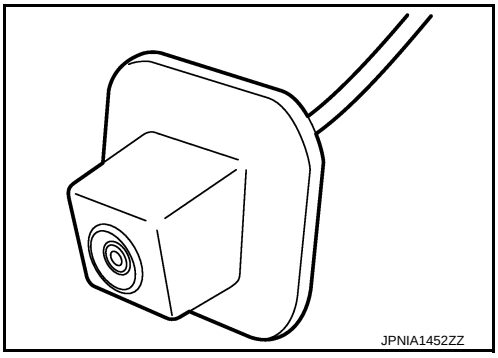
Rear View Camera

INFOID:0000000006964609

- The rear view camera is installed at the center of the back door finisher.
- Super-small CCD camera (color) using CCD* for the image pickup element is adopted.
- With the mirror processing function, a mirror image is sent as if it is viewed by a rear view mirror.
- Power for the camera is supplied from the AV control unit, and the image at the rear of the vehicle is sent to the AV control unit.

NOTE:

*: Abbreviation of Charge Coupled Device. CCD can turn incident light from the lens into electrons and memorize the image like a photo.


JPNIA1452ZZ

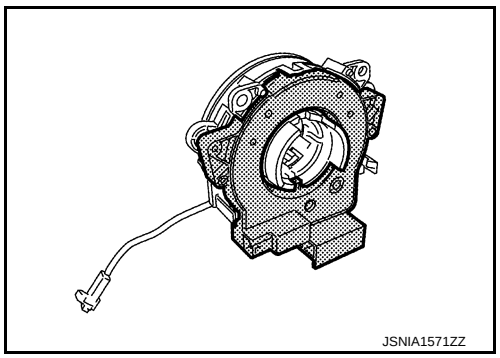
Specification

Manufacturer name	Panasonic Corp.
Image pickup element	1/4-inch interline CCD color
Effective number of pixels	Approx. 250,000 pixels (510 × 492)
Minimum brightness	2 lx
Angle of view	H: 137° V: 92°
Image	With mirror processing function

Steering Angle Sensor

INFOID:0000000006964610

- Steering sensor is installed to the spiral cable.
- Steering angle sends the steering signal necessary for possible route line of the rear view monitor function to the AV control unit via CAN communication.


JSNIA1571ZZ

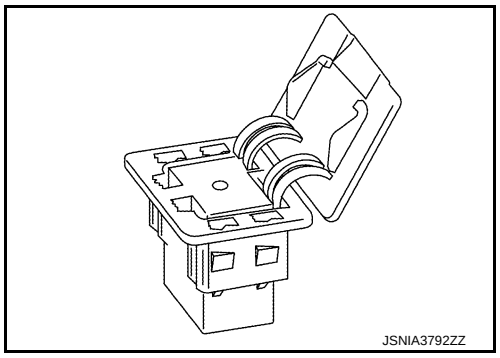
AUX Jack

INFOID:0000000006964611

- AUX jack is installed at the lower right of the instrument panel.
- Connection to an external audio device can provide sound output.

External input terminal for connection ϕ3.5 mm stereo mini-jack

NOTE:
When connected to monaural mini-jack plug cable, sound may not be output.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SD Card

INFOID:0000000006964612

- Map data is memorized in an 8 GB SDHC* card.
- Map data is sent to the AV control unit from the SD slot.

NOTE:
*SDHC: Abbreviation of SD High-Capacity. It is the upper level standard of the SD memory card. A large quantity of data can be memorized, and the transfer speed of data is high.

SYSTEM
MULTI AV SYSTEM
MULTI AV SYSTEM : System Diagram

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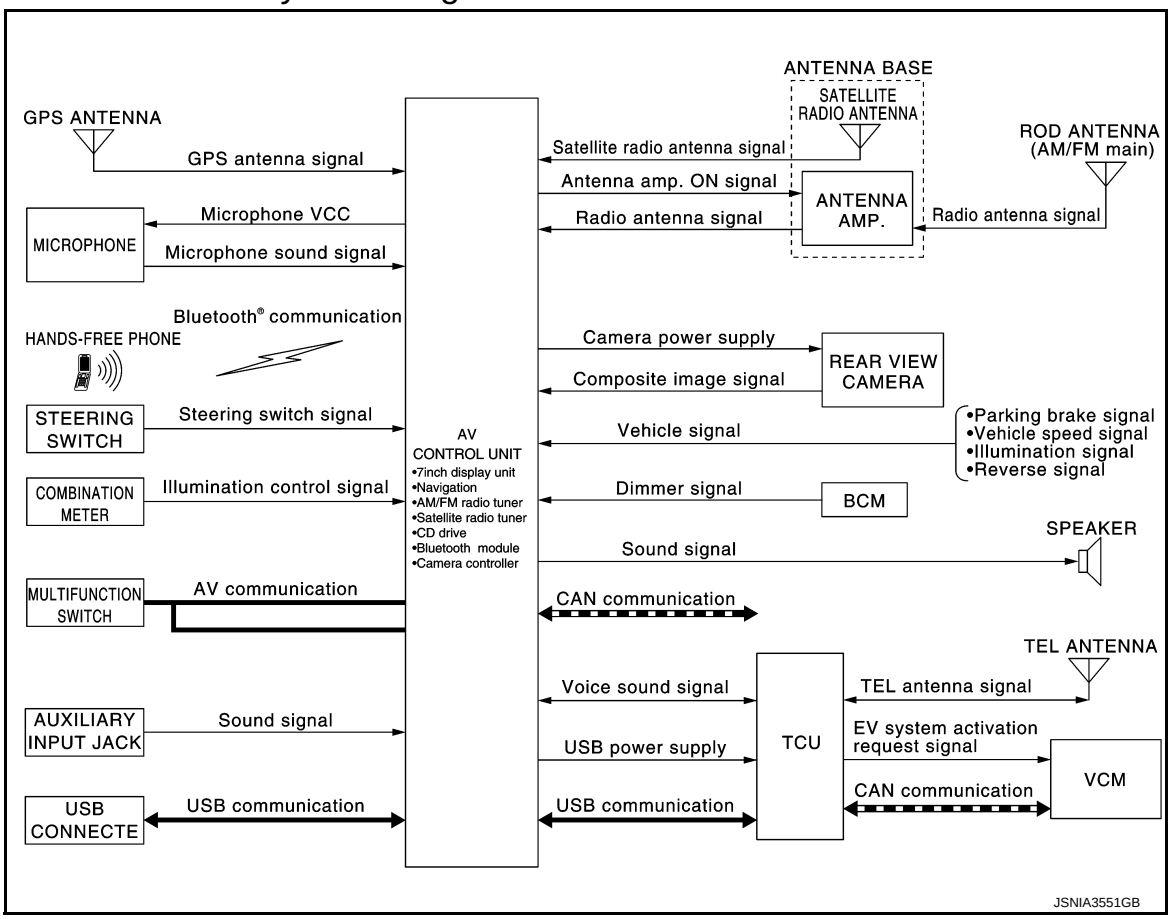


CAN communication

AV control unit Input Signal

Transmit unit	Signal name
Steering angle sensor	Steering angle sensor signal
Combination meter	Odometer signal
	Vehicle speed signal (Meter)
	A/C OFF average electricity consumption for driving range signal
	A/C ON average electricity consumption for driving range signal
	Driving range difference signal
ABS actuator and electric unit (control unit)	Vehicle speed signal
	ABS warning lamp signal
	Brake warning lamp signal
	ESP OFF switch signal
	ESP warning lamp signal

Transmit unit	Signal name
VCM	A/C consumption power status display signal
	A/C consumption signal
	Current motor power signal
	ECO tree signal
	Li-ion battery charging data signal
	Others consumption signal
	Pre-A/C priority signal
	Pre-A/C timer signal
	Remaining time to charge completion (200 V) signal
	Remaining time to charge completion (100 V) signal
	Traction motor consumption signal
	VCM activation/deactivation command signal
	VCM status signal

TCU Input Signal

Transmit unit	Signal name
VCM	A/C expected consumption signal
	Charge status signal
	Pre-A/C status signal
	Remaining time to charge completion (200 V) signal
	Remaining time to charge completion (100 V) signal
	VCM activation/deactivation command signal
	VCM status signal
	Li-ion battery available charge signal
	Li-ion battery capacity signal
	Li-battery gradual capacity loss signal
On board charger	AC input type signal

MULTI AV SYSTEM : System Description

INFOID:0000000006838111

- AV control unit is connected to the following parts. It performs power supply, signal input and communication, and it controls the multi-AV system.
- GPS antenna
- Radio antenna (radio antenna amplifier)
- Rear view camera
- USB connector
- BCM
- VCM
- Combination meter
- Steering switch
- Multifunction switch
- Microphone
- TCU
- Speakers
- Vehicle signals (reverse signal, vehicle speed signal and illumination signal)
- Data of external device connected to the USB connector is played and transferred.
- When the reverse signal is input, power is supplied to the rear view camera. Image of the rear view camera is input to show the rear view monitor image on the display.
- Dimming signal is input from BCM to adjust the brightness of the display.

COMMUNICATION SIGNAL

AV control unit is connected to TCU via USB communication, and it receives the Telematics information received by TCU and gives the display and sound output. Telematics operation signals and sound signals are also sent to TCU.

Auto light adjustment function

Auto light adjustment function automatically dims/brightens the display according to the ambient light when the lighting switch is in the 1st or 2nd position. Whether or not the display is dimmed when the lighting switch is in the 1st position or 2nd position is determined by the output condition of the dimming signal output from the BCM to the AV control unit. Even if the lighting switch is in the 1st position or 2nd position, the display may not be dimmed depending on the ambient light sensed by the auto light sensor. For details, refer to INL-12, "ILLUMINATION CONTROL SYSTEM : System Description".

CAN COMMUNICATION

- AV control unit is connected via CAN communication, receives data signal from VCM and combination meter, and indicates power consumption information, etc. on the display based on the information obtained.
- The AV control unit, which has the vehicle setting function, transmits and receives data on vehicle setting condition via CAN communication with the BCM.
- AV control unit receives steering angle signal from steering angle sensor via CAN communication and performs control of possible route line in rear view monitor image.
- AV control unit receives and sends signals necessary for timer charge and A/C-heater timer operation with VCM via CAN communication.

Energy Flow Display Function

The AV control unit receives data signals from the VCM and combination meter via CAN communication and computes each value using the obtained information to display it.

Display function	Receiving signal (transmit unit)	Display method
Instantaneous power consumption display	• Battery consumption monitor signal (VCM) • Vehicle speed signal (combination meter)	Computes the instantaneous power consumption using the vehicle speed and battery consumption monitor signals, and displays the instantaneous power consumption bar.
Possible driving distance display	• Possible driving distance signal (Combination meter)	Displays a possible driving distance, based on a possible driving distance signal. When the meter indication of a possible driving distance is "----", it is displayed by "✻✻✻✻"on the NAVI screen. Data is retained even with the power switch OFF.
Average power consumption display	• Battery consumption monitor signal (VCM) • Vehicle speed signal (combination meter)	Computes the average power consumption using the battery consumption monitor and vehicle speed signals, and displays it. The average power consumption is displayed only when 30 seconds have elapsed and the vehicle has been driven 500 m after the average power consumption was reset. Data is retained even with the power switch OFF.

Vehicle Setting Function

The AV control unit transmits and receives data signals via CAN communication with the BCM, allowing the following vehicle settings.

- To turn on the automatic interior room lamp (ON/OFF) when the door is unlocked
- To adjust the auto light sensitivity (+/–)
- To operate the intermittent wiper linked with the vehicle speed (ON/OFF)
- Vehicle setting initialization

NOTE:
The setting items vary depending on the vehicle specification

TYPE OF VOICE SIGNAL

Reception Voice Signal

- Hands-free phone reception voice is output from the cellular phone through the AV control unit to the front speaker via Bluetooth® communication.
- If the hands-free phone is used while the audio is ON and/or the voice guidance is being output, these sounds are muted and only the reception voice is output.

Speech Sound Signal

Hands-free phone speech sound is transmitted from the microphone via the AV control unit and Bluetooth® communication to the cellular phone.

CARWINGS Reading Voice Signal

- In the case of the CARWINGS reading voice, the AV control unit receives text data from the Nissan CARWINGS Data Center through the USB harness and outputs them to the front speaker.
- If CARWINGS data is read while the audio is ON and/or the voice guidance is being output, these audio sounds are muted and only the CARWINGS reading voice is output.
- Depending on the information from the Nissan CARWINGS Data Center, not only the CARWINGS reading voice but also background music may be output. In this case, audio output of the front speaker is turned down 10 dB and then the CARWINGS reading voice is output.

Guide Sound Signal

- Voice signals output during the route guidance of the navigation system are output from the AV control unit to the front speaker.
- If the voice guidance is output with the audio ON, audio output of the front speaker is turned down 10 dB and then voice guidance is output.
- Adjusting the volume while the voice guidance is being output can change the volume of the guidance.

AUDIO FUNCTION

- The MP3/WMA playback function enables music to play for a long time: the user need not change the CD during a long trip. The text display function is also adopted so that the title name and artist name of the ID3 tag/WMA tag can be displayed.
- Bluetooth® audio function is adopted to play music data in the portable audio via wireless communication.
- The adoption of the vehicle speed interlock sound volume function reduces the burden of the volume adjustment by the difference between the noises when the vehicle is stopped or running. In addition, the vehicle speed interlock sound volume function can perform ON/OFF setting and sound volume adjustment on a scale of one to five.

MP3/WMA Playback Function

This function enables the playback of compressed music files, such as MP3 music files used for the most widespread broadband music distribution and WMA music files played back with a music player generally built in Windows® personal computers.

NOTE:

- MP3 stands for MPEG AUDIO LAYER3. It is the compression standard defined by “MPEG”, a joint activity organization of ISO and IEC (the international standardization groups).
- WMA stands for Windows Media Audio. It is the sound data compression standard formulated by Microsoft Corporation.

Playable data

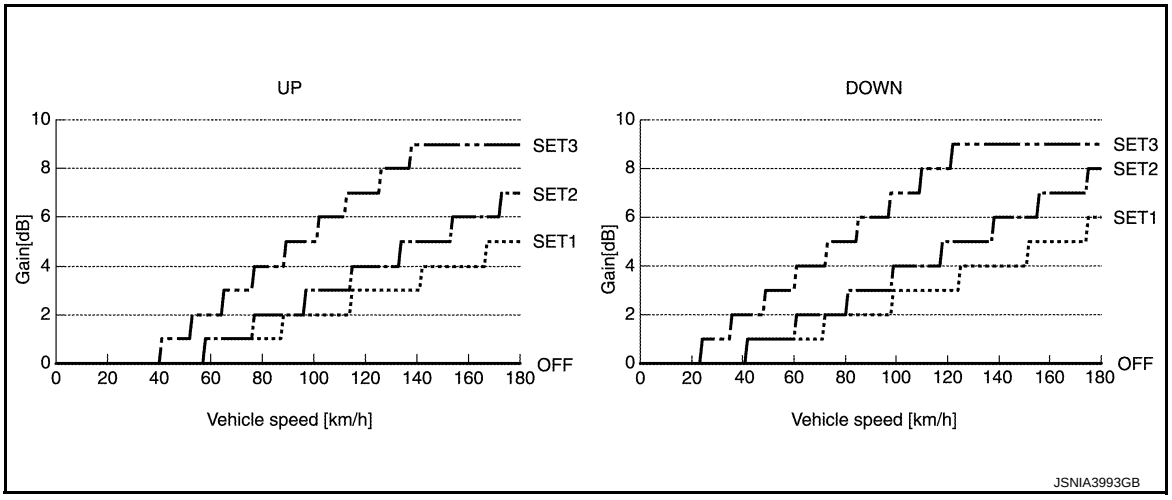
<table>
<tr><th colspan="2"></th><th colspan="2">MP3</th><th colspan="2">WMA*1</th></tr>
<tr><td colspan="2">Media compliant</td><td colspan="4">• CD-R
• CD-RW</td></tr>
<tr><td colspan="2">Directory hierarchy</td><td colspan="4">8</td></tr>
<tr><td colspan="2">Max. number of files</td><td colspan="4">510 (Max. 255 files for one folder)</td></tr>
<tr><td colspan="2">Max. number of folders</td><td colspan="4">255 (including the root folder)</td></tr>
<tr><td>Compliant file system</td><td>CD</td><td colspan="4">ISO9660 LEVEL 1, 2, Joliet, Romeo</td></tr>
<tr><td rowspan="3">Supported versions*2</td><td rowspan="2">Playable sampling frequency</td><td>Version: MPEG1 Audio Layer3</td><td>32kHz, 44.1kHz, 48kHz</td><td rowspan="3">Version: WMA7, WMA8, WMA9</td><td rowspan="3">• 32kbps/22.05kHz, 32kHz, 44.1kHz
• 36kbps/32kHz
• 40kbps/32kHz
• 44kbps/32kHz
• 48kbps/32kHz 44.1kHz
• 64kbps/32kHz, 44.1kHz
• 80kbps/44.1kHz
• 96kbps/44.1kHz
• 128kbps/44.1kHz, 48kHz
• 160kbps/44.1kHz, 48kHz,
• 192kbps/44.1kHz, 48kHz</td></tr>
<tr><td>Version: MPEG2 Audio Layer3</td><td>16kHz, 22.05kHz, 24kHz</td></tr>
<tr><td>Playable bit rate</td><td colspan="2">8 - 320 kbps / VBR*4</td></tr>
</table>

	MP3	WMA*1
Viewable ID3 / WMA tag (Song Title, Artist Name)	Ver. 1.0, Ver. 1.1, Ver. 2.2, Ver. 2.3, Ver. 2.4	Ver.8, Ver.9, Ver.10
Limit to number of text letters	WMA-TAG: 60 characters ID3-TAG(Ver. 1.0/1.1): 30 characters ID3-TAG(Ver. 2.2/2.3/2.4): 60 characters	
Letter code that can be displayed*3	• 01: SHIFT-JIS • 02: UNICODE • 03: UTF-16	

- *1: Protected WMA files (DRM) cannot be played.
- *2: Files created with a combination of 48 kHz sampling frequency and 64 kbps bit rate cannot be played.
- *3: Available codes depend on what kind of media, versions and information are going to be displayed.
- *4: When VBR files are played, the playback time may not be displayed correctly.

Vehicle Speed Interlock Volume Function

- The AV control unit receives the vehicle speed signal from the combination meter via CAN communication and changes the sound volume in conjunction with the vehicle speed.
- Using the vehicle speed interlock sound volume function, ON/OFF setting can be carried out as preferred by users, and sound volume variation caused by vehicle speed change can be adjusted on a scale of one to three.



Bluetooth®Audio Function

- Bluetooth®audio function is adopted to play music data in the portable audio in wireless communication.
- Five units of Bluetooth® communication devices including audio devices and cellular phones can be registered to the AV control unit.
- When the Bluetooth® audio is connected to the portable audio through Bluetooth®, it can play the music data in the portable audio.
- When the Bluetooth® audio is playing the data, operations of the other applications are as shown in the following table.

Cellular phone operation (control) status		Bluetooth® audio playback status
Hands-free phone communication	Hands-free phone incoming call	Answering the call stops audio playback temporarily.
CARWINGS service	Information channel and E-mail	Audio playback does not stop.
		Audio playback stops temporarily during data communication. After the communication has been completed, playback resumes.

Cellular phone operation (control) status	Bluetooth® audio playback status
Telephone book transfer	Audio playback does not stop.
	For Bluetooth®audio, audio playback stops temporarily. After the telephone book has been transferred, playback resumes.

Bluetooth® compliant profile

Profile name	Abbreviation	Version
Advanced Audio Distribution Profile	A2DP	Ver. 1.2
Audio Video Remote Control Profile	AVRCP	Ver. 1.3

Satellite Radio
- Satellite radio tuner is built into AV control unit.
- Audio signal and data signal (satellite radio) are received by satellite antenna. There are input to AV control unit. AV control unit outputs audio signal to each speaker and data signal to display unit.

USB CONNECTING FUNCTION

USB connector enables iPod® compliant and playback of music files in the USB memory.

*: iPod® is the trademark of Apple Inc. registered in the United States and other countries.

iPod® Compliant
- By connecting a user's iPod®to the USB connector, music can be played.
- While iPod®is connected, iPod®is charged.
- It is compliant with various playback methods.

NOTE:
- Use the USB cable that comes with the iPod®.
- The system supports no display of static and motion pictures.
- It is updated to the latest firmware before use.

Playback method type

Playback method	Description
Play list	Select music from play list.
Artist	Select music from artist list.
Album	Select music from album list.
Music	Select music from song title list.
Podcast	Select music from podcast list.
Genre	Select music from genre list such as classic, jazz, etc.
Composer	Select music from composer list.
Shuffle music	All music in the iPod®is automatically played in random order.

USB Memory
- A music file recorded in the USB can be played.
- It is compliant with the playback method such as designation of folder or file. Setting of voice and subtitle is allowed.
- Compliant USB memory and data recorded are limited.

Compliant USB memory

USB memory	USB2.0
File system	FAT16
	FAT32

NOTE:
- USB memory cannot be formatted.
- The system supports no display of static and motion pictures.
- A USB device that has multiple partitions may not be used.
- File that is encrypted or copy protected cannot be played.

Playable data

		MP3		WMA*1	
Directory hierarchy		8			
Max. number of files		510 (Max. 255 files for one folder)			
Max. number of folders		255 (including the root folder)			
Compliant file system		FAT16, FAT32			
Supported versions*2	Playable sampling frequency	Version: MPEG1 Audio Layer3	32kHz, 44.1kHz, 48kHz	Version: WMA7, WMA8, WMA9	• 32kbps/22.05kHz, 32kHz, 44.1kHz • 36kbps/32kHz • 40kbps/32kHz • 44kbps/32kHz • 48kbps/32kHz 44.1kHz • 64kbps/32kHz, 44.1kHz • 80kbps/44.1kHz • 96kbps/44.1kHz • 128kbps/44.1kHz, 48kHz • 160kbps/44.1kHz, 48kHz, • 192kbps/44.1kHz, 48kHz
		Version: MPEG2 Audio Layer3	16kHz, 22.05kHz, 24kHz		
	Playable bit rate	8 - 320 kbps / VBR*4			
Viewable ID3 / WMA tag (Song Title, Artist Name)		Ver. 1.0, Ver. 1.1, Ver. 2.2, Ver. 2.3, Ver. 2.4		Ver.8, Ver.9, Ver.10	
Limit to number of text letters		WMA-TAG: 60 characters ID3-TAG(Ver. 1.0/1.1): 30 characters ID3-TAG(Ver. 2.2/2.3/2.4): 60 characters			
Letter code that can be displayed*3		• 01: SHIFT-JIS • 02: UNICODE • 03: UTF-16			

- *1: Protected WMA files (DRM) cannot be played.
- *2: Files created with a combination of 48 kHz sampling frequency and 64 kbps bit rate cannot be played.
- *3: Available codes depend on what kind of media, versions and information are going to be displayed.
- *4: When VBR files are played, the playback time may not be displayed correctly.

Setting Item

To music file list	Audio screen appears (only when music file is available)
Play mode change	Changes the play mode.

NAVIGATION SYSTEM FUNCTION

Description

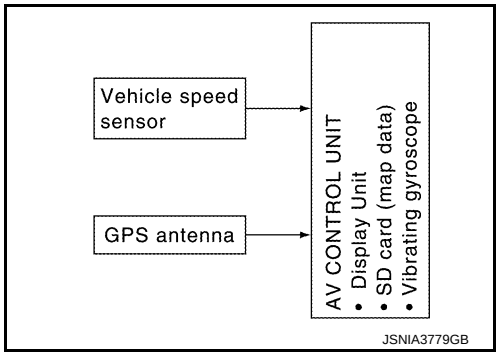
- The AV control unit controls navigation function while GPS tuner has built-in map data, GYRO (angle speed sensor), on the SD card.
- The AV control unit inputs operation signal with communication signal, through front display unit (touch panel) and multifunction switch and steering switch.
- Guide sound is output to front speaker through from AV control unit when operating navigation system.
- A vehicle position is calculated with the GYRO (angle speed sensor), vehicle sensor, signal from GPS satellite and map data stored on SD card, and transmits the map image signal (RGB image, RGB area, RGB image synchronizing) to the display.

Position Detection Principle

The navigation system periodically calculates the current vehicle position according to the following three types of signals.

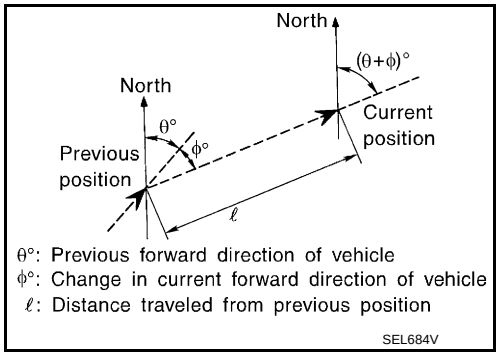
- Travel distance of the vehicle as determined by the vehicle speed sensor
- Vehicle turning angle determined by the gyroscope (angular speed sensor)
- The travel direction of the vehicle determined by the GPS antenna (GPS information)

The current position of the vehicle is then identified by comparing the calculated vehicle position with map data, which is stored in the SD card (map-matching), and indicated on the screen with a current location mark. More accurate data is used by comparing position detection results from GPS to the map-matching.



The current position is calculated by detecting the travel distance from the previous calculation point, and its direction change.

- Travel distance
  The travel distance is generated from the vehicle speed sensor input signal. The automatic distance correction function is adopted for preventing a miss-detection of the travel distance because of tire wear etc.
- Travel direction
  The gyroscope (angular velocity sensor) and GPS antenna (GPS information) generate the change of the travel direction. Both have advantages and disadvantages as per the following descriptions.

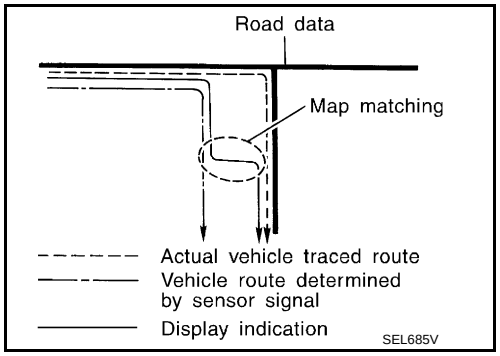


Type	Advantage	Disadvantage
Gyroscope (angular velocity sensor)	The turning angle is precisely detected.	Errors are accumulated when driving a long distance without stopping.
GPS antenna (GPS information)	The travel direction (North/South/East/West) is detected.	The travel direction is not precisely detected when driving slowly.

Input signals are prioritized in each situation. However, this order of priority may change in accordance with more detailed travel conditions so that the travel direction is detected more accurately.

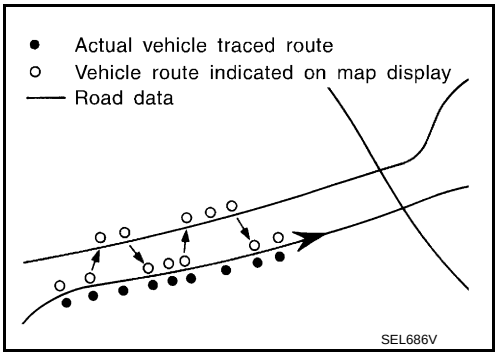
Map-matching

Map-matching repositions the vehicle on the road map when a new location is judged to be more accurate. This is done by comparing the current vehicle position (calculated by the normal position detection method) from the map data stored in the SD card.

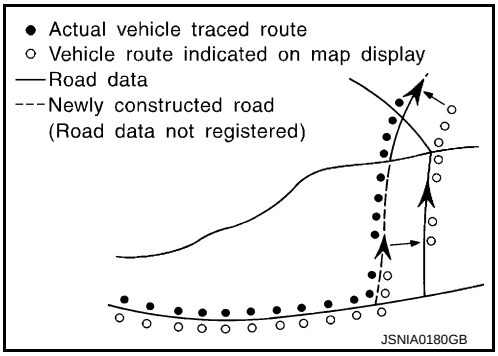


There is a possibility that the vehicle position may not be corrected in the following case, and when vehicle is driven over a certain distance or time in which GPS information is hard to receive. Correct manually the current location mark on the screen.

- In map-matching, several alternative routes are prepared and prioritized in addition to the road judged as currently driving on.
  Therefore, due to errors in the distance and/or direction, an incorrect road may be prioritized, and the current location mark may be repositioned to the incorrect road.
  If two roads are running in parallel, they are of the same priority. Therefore, the current location mark may appear on either of them alternately, depending on maneuvering of the steering wheel and configuration of the road, etc.

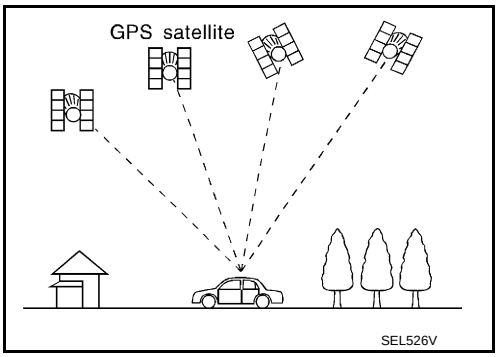


- Map-matching does not function correctly when road on which the vehicle is driving is new, etc. and not recorded in the map data. Also, map-matching does not function correctly when road pattern stored in the map data and the actual road pattern are different due to repair, etc.
  Therefore, the map-matching function judges other road as a currently driving road if the road is not in the map, and displays the current location mark on it. Later, the current location mark may be repositioned to the road if the correct road is detected.
- Effective range for comparing the vehicle position and travel direction calculated by the distance and direction with the road data is limited. Therefore, correction by map-matching is not possible when there is an excessive gap between current vehicle position and the position on the map.



GPS (Global Positioning System)

GPS (Global Positioning System) is developed for and is controlled by the US Department of Defense. The system utilizes GPS satellites (NAVSTAR), transmitting out radio waves while flying on an orbit around the earth at an altitude of approximately 21,000 km (13,049 mile).
The receiver calculates the travel position in three dimensions (latitude/longitude/altitude) according to the time lag of the radio waves that four or more GPS satellites transmit (three-dimensional positioning). The GPS receiver calculates the travel position in two dimensions (latitude/longitude) with the previous altitude data if the GPS receiver receives only three radio waves (two-dimensional positioning). GPS position correction is not performed while stopping the vehicle.



Accuracy of the GPS will deteriorate under the following conditions:
- In two-dimensional positioning, GPS accuracy will deteriorate when altitude of the vehicle position changes.
- The position of GPS satellite affects GPS detection precision. The position detection may not be precisely performed.
- The position detection is not performed if GPS receiver does not receive radio waves from GPS satellites. (Inside a tunnel, parking in a building, under an elevated highway etc.) GPS receiver may not receive radio waves from GPS satellites if any object is placed on the GPS antenna.

NOTE:
- The detection result has an error of approximately 10 m (32.81 ft) even with a high-precision three dimensional positioning.
- There may be cases when the accuracy is lowered and radio waves are stopped intentionally because the GPS satellite signal is controlled by the US trace control center.

BLUETOOTH® HANDS-FREE PHONE FUNCTION

- When the cellular phone is connected to the AV control unit in Bluetooth® communication, hands-free phone communication can be performed.
- Simply operating the steering switch without releasing hands from the steering wheel allows the driver to make a phone call or receive a phone call.
- For the available cellular phone support model, refer to "Compliant model list" on the CARWINGS site.

- When a Bluetooth® communication compliant phone is registered to the AV control unit, hands-free phone communication can be performed. Five units of Bluetooth® communication devices including audio devices and cellular phones can be registered to the AV control unit.
- The content of the memory (telephone book) of the cellular phone can be recorded in the AV control unit.

Bluetooth® compliant profile

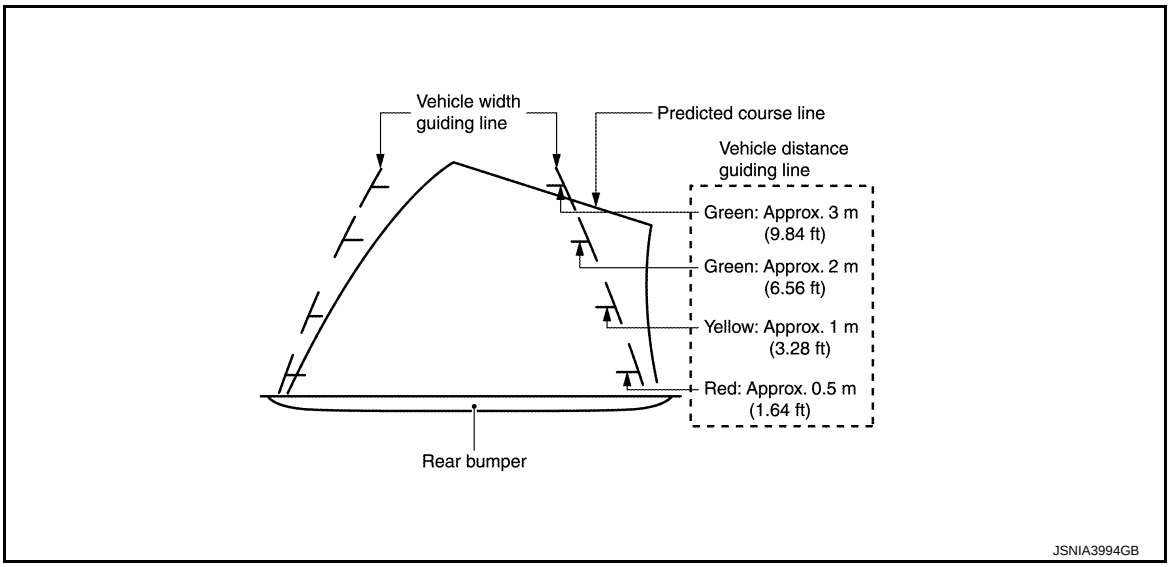
Profile name	Abbreviation	Version
Hands-Free Profile	HFP	1.5
Dial-Up Networking Profile	DUN	1.1
Object Push Profile	OPP	1.1

REAR VIEW MONITOR FUNCTION

Operation Description
- When the selector lever is shifted to the reverse position, the rear view monitor image is displayed.
- When the selector lever is shifted to any position other than the reverse position, the original image (the image displayed before the rear view monitor image) is displayed.

Camera Image Operation Principle
- The AV control unit that receives the reverse signal input supplies power to the rear view camera and gives input of image signal.
- The AV control unit outputs the rear view camera image to the display when the reverse signal is inputted.
- The AV control unit generates the warning message, side distance guiding lines and the possible route lines on the image from the rear view camera, and transmits the rear view camera image signal to the front display unit.

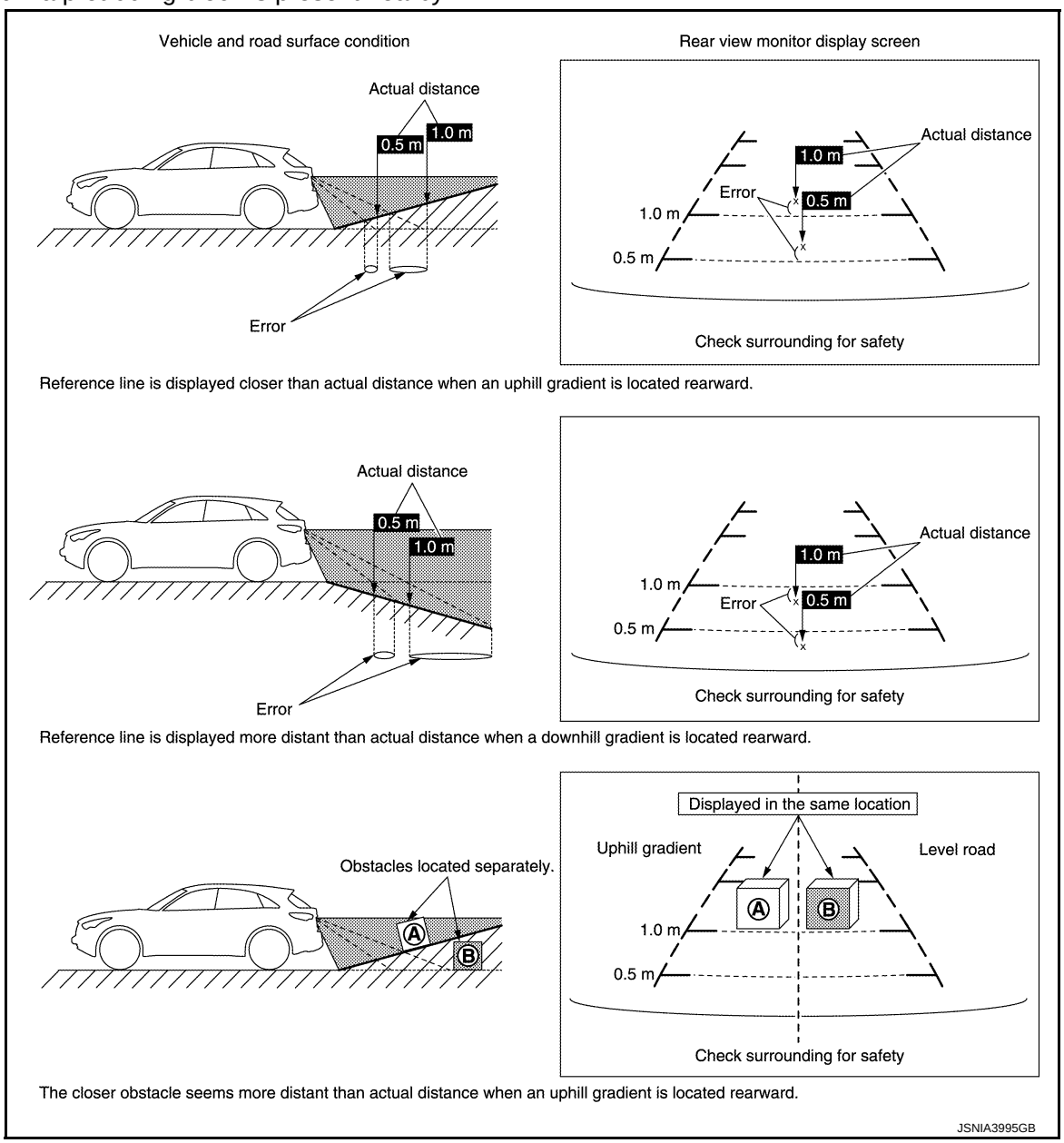
Side Distance Guide Lines and Possible Route Lines Display Function at Rear View Monitor Display
- The side distance guide lines and the possible route lines that indicate the vehicle route according to the steering angle are displayed at the rear view monitor display to allow the driver to more easily judge distances between the vehicle and objects and help the driver back into a parking space.
- The AV control unit receives the steering signal from the steering sensor via CAN communication and draws a possible route line according to the steering angle.
- When the possible route lines are displayed, the side distance guide lines are displayed translucently.
- The possible route lines are not displayed when the steering is in the neutral position.
- The possible route line can be displayed/not displayed by selecting “Other Settings” - “Camera from the setting function”.



Precautions for Side Distance Guide Lines and Possible Route Lines Display on the Rear View Monitor Display
Side distance guide lines and possible route lines on the display may be different from actual lines depending on vehicle conditions and road conditions.

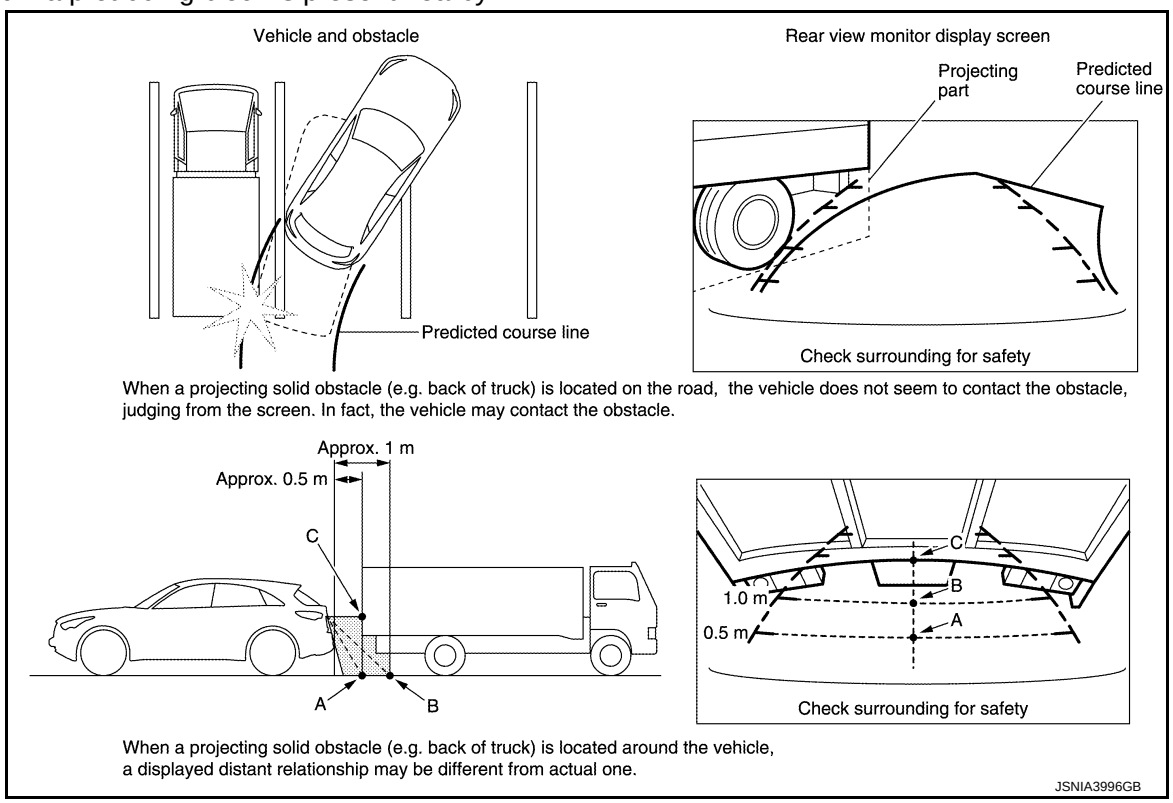
Precautions for road conditions

- Since guide lines and possible route lines are drawn based on the road, a different distance may be displayed if a protruding block is present nearby.



Precautions for block

- Since guide lines and possible route lines are drawn based on the road, a different distance may be displayed if a protruding block is present nearby.



VOICE RECOGNITION FUNCTION

- By speaking a command, operations of navigation and hands-free phone can be performed.
- To perform the voice control, press the switch of the steering switch. The system changes to the speech reception status. When a command is spoken, the speech recognition result is displayed, and the operation is executed.
- The voice control cannot be performed under the conditions listed below.

- When the hand-free phone is used
- When the vehicle is moving backwards

Major Functions

With this function, the list of commands used for telephone, and navigation operation can be checked.

TIMER CHARGE AND A/C-HEATER TIMER FUNCTION

- Time for timer charge and A/C-heater timer can be set from the navigation setting screen.
- The AV control unit sends the current time signal received with GPS antenna to VCM via CAN communication, and it compensates the current VCM time.

Timer Charge Function

- Set the timer charge start time on the navigation setting screen. When the charging plug is connected, the time mode is activated.
- If the charging plug fitting is not sufficient, unplugged status is notified. For details of unplugged status notification, refer to AV-147, "TELEMATICS SYSTEM : System Description".
- After the power switch is OFF, VCM is activated at the set charge start time and charge is started. (The time of the timer function is controlled by VCM.)
- VCM sends the VCM status signal and VCM wakeup signal to TCU via CAN communication to notify that VCM is activated. For details of the charging function, refer to VC-13, "System Description".
- Charge is completed.

NOTE:

Information of charge completion sent to the user is also given if charge is abnormally completed for some reason (e.g. disconnection of charging plug).

A/C-Heater Timer Function

- Set the A/C-heater timer start time on the navigation setting screen. When the charging plug is connected, the time mode is activated.

- After the power switch is OFF, VCM is activated at the set air conditioning start time and air conditioning is started. (The time of the timer function is controlled by VCM.)
- VCM sends the VCM status signal and VCM wakeup signal to TCU via CAN communication to notify that VCM is activated. For details of air conditioner system, refer to HA-25, "REFRIGERATION SYSTEM : System Description".

NOTE:

- A/C-heater timer performs air conditioning with the settings of temperature 25°C, AUTO, fan AUTO and REC.
- Power consumption of the compressor or the PTC heater is limited according to allowable power from VCM. Sufficient air conditioning may not be performed if charge has priority or 100 V charge is performed.

MULTI AV SYSTEM : Map Data Update

INFOID:0000000006838112

To update map data, use an SD card including new map data.

MULTI AV SYSTEM : Fail-safe

INFOID:0000000006838113

When a malfunction occurs within the system, the AV control unit outputs a message on the display, and it restricts the AV control unit functions.

FAIL-SAFE CONDITIONS

SD card not inserted, SD card malfunction, internal malfunction of navigation, etc.

Display Indication

- When the system is in the fail-safe status at the start of the AV control unit, an error message is shown on the display.
- When the system is in the fail-safe status after the start of the AV control unit, an error message is not shown on the display. The MULTI AV system may be rebooted in the fail-safe state. If the fail-safe state is maintained after the system is rebooted, an applicable message is shown.

Cause	Display monitor
Malfunction of flash ROM information	TARGET INFO NG
No SD card	NO SD CARD
Unsuccessful security unlock	SD UNLOCK NG
Malfunction of SD card mount	SD INIT NG
Malfunction of SD card access	SD ACCESS NG
No program data	NO NAVI-2 DATA
Malfunction of program data (SUM NG)	NAVI-2DATA READ NG
Inconsistent program version (Flash/SD)	NAVI VERSION NG
Difference of map destination	DIFFERENT MAP CODE
Not compliant with map database version	MAP DATA BASE UNMATCH
Malfunction of navigation	NAVI STARTUP NG

CONTROL

When the system is in the fail-safe status at or after start of the AV control unit, the following functions are restricted.

Function		In fail-safe mode
A/C	Display	No display (fail-safe status display)
Audio	Operation	Mute audio
	Display	No display (fail-safe status display)

Function		In fail-safe mode
Camera	Operation	It cannot be operated
	Display	Only composite (camera image) is displayed and superimpose (warning display and image quality display) is not displayed.
Hands-free phone	Operation	It cannot be operated
Navigation	Operation	It cannot be operated
Display	Operation	Open/close operation is available
	Display	Fail-safe factors are displayed
Self-diagnosis		It cannot be diagnosed
CONSULT diagnosis		It cannot be diagnosed
AV communication diagnosis		It cannot be diagnosed
Frequency transmission for VCM		Normal
SD read access		Access cannot be gained.
SD write access		Access cannot be gained.

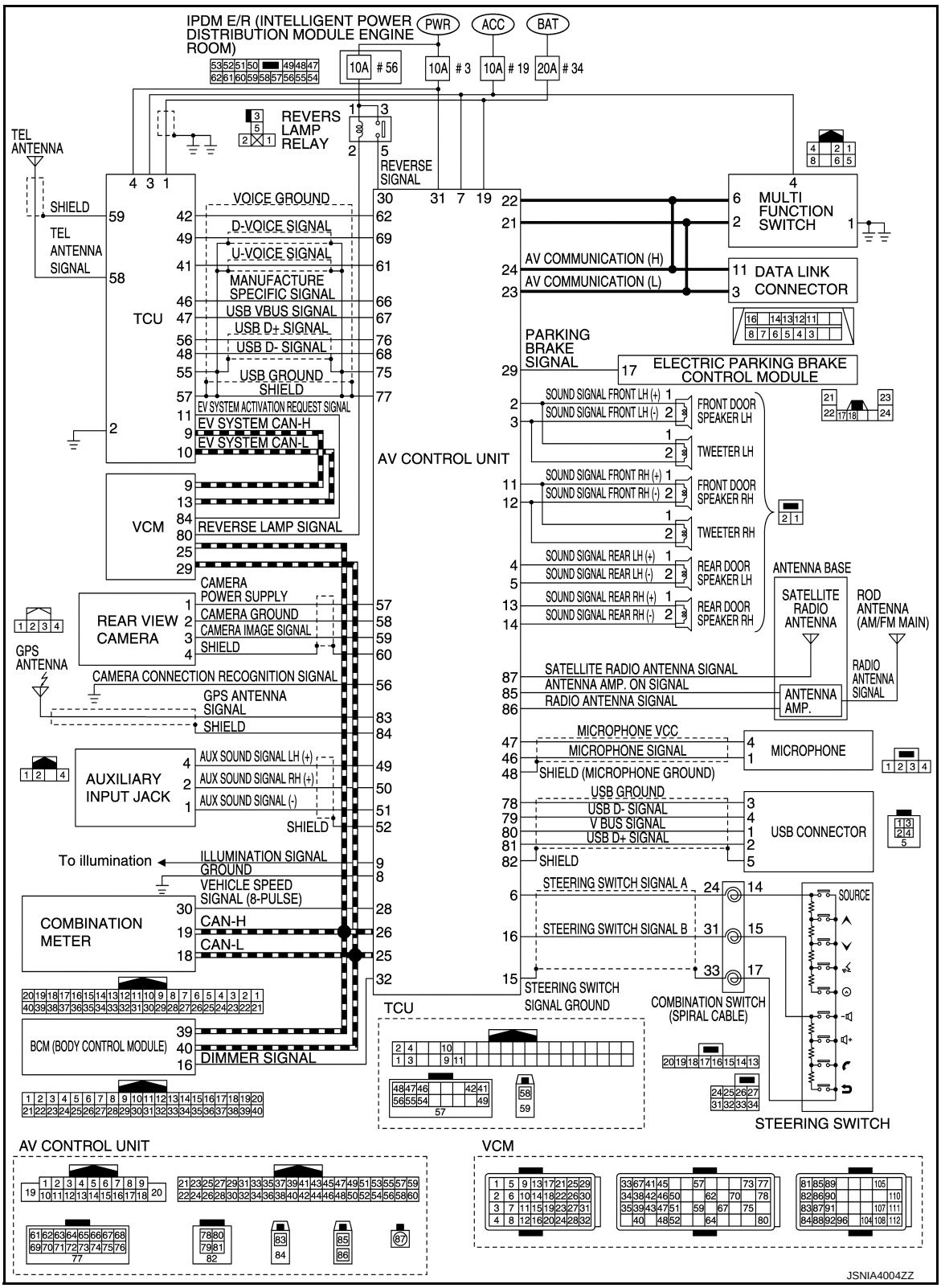
CANCELLATION CONDITIONS

The fail-safe status is canceled under the following conditions, and then the system returns to the normal mode.

- When the SD card is not inserted, the SD card is inserted and the power of the AV control unit is turned ON again.
- When the SD card is not functional at the start of navigation due to a malfunction of the SD card, a normal SD card is inserted and the power of the AV control unit is turned ON again.

MULTI AV SYSTEM : Schematic

INFOID:0000000006838114



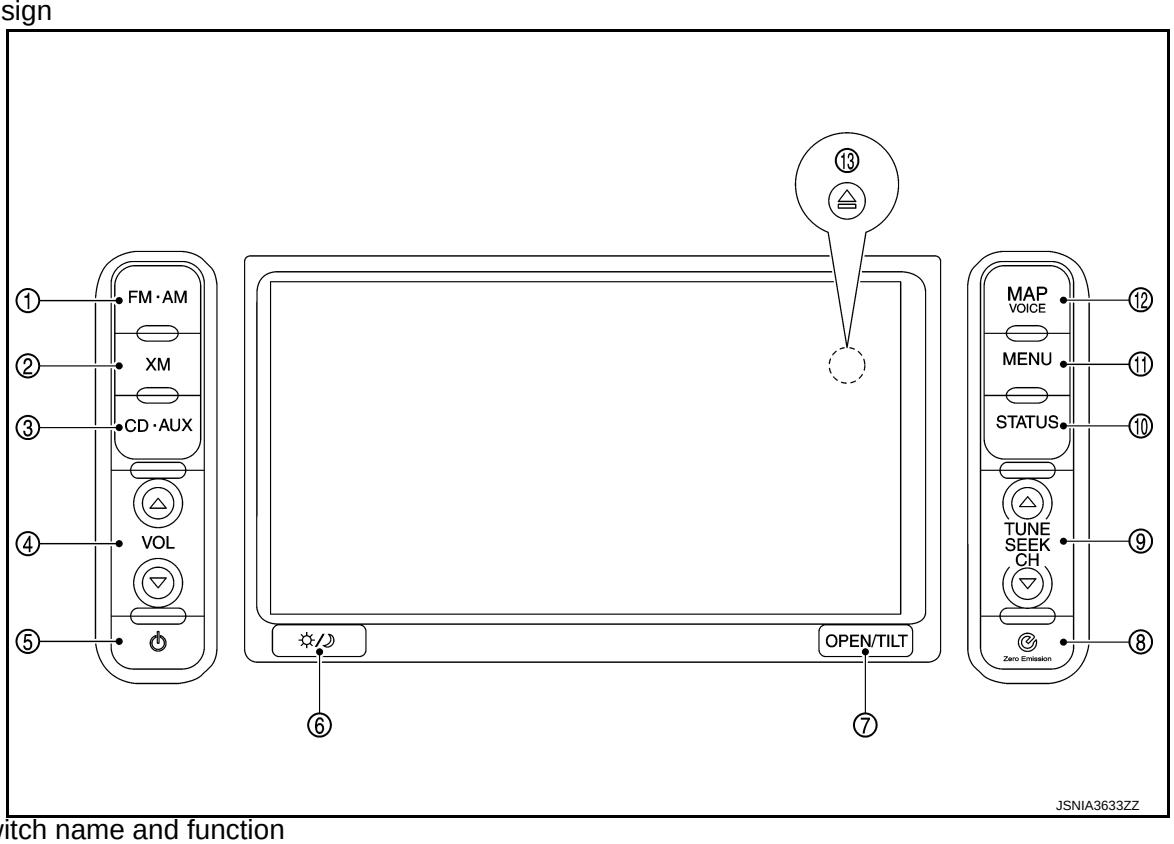
OPERATION

Switch name and Function

INFOID:0000000006838115

Names and functions of AV control unit switches

1. Design



2. Switch name and function

No.	Switch name	Function
1	FM·AM	Press to switch between the FM radio band and the AM radio band.
2	XM	Press to switch to an XM satellite radio band.
3	CD·AUX	Press to switch between USB memory/iPod player*1/CD/Bluetooth® streaming audio*2 / AUX screens.
4	VOL (volume control)	Press to adjust the volume of the stereo.
5	⏻ (audio system ON·OFF)	Press to turn the audio system ON or OFF.
6	☀/☽ (Day/Night)	• Press to switch between the day screen (bright) and the night screen (dark). • Press and hold to turn off the display, then press again to turn on the display.
7	OPEN/TILT	• Press to open the monitor to access the CD slot and the SD card slot. • Press and hold to adjust the monitor angle. (6 angles)
8	(Zero emission)	Press to display the setting screen where several useful functions for electric vehicle driving are determined.
9	TUNE/SEEK/CH	• Press to select a track/station. • Press and hold to search for a track/station automatically or to fast-forward/back-forward when listening to music.
10	STATUS	Press to display the current status of the air conditioner, radio, audio, vehicle information (estimated distance, drivable distance and average energy economy) and navigation systems.
11	MENU	Press to display the setting menu (destination, route, information, settings, phoneand carwings) screen.

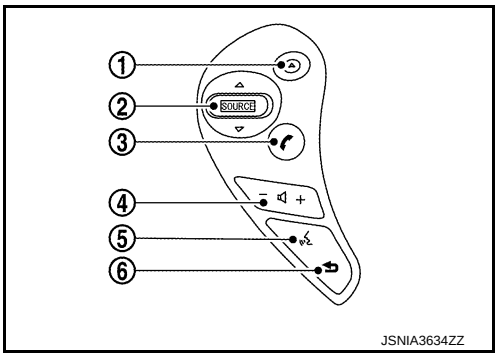
No.	Switch name	Function
12	MAP/VOICE	• Press to display the current location map screen. • Press and hold to repeat voice guidance.
13	(Disk eject)	Press to eject a disk.

- *1: Displayed when iPod® is connected.
- *2: Displayed when Bluetooth®audio is registered and “Bluetooth connection” setting is ON.

Names and functions of steering switch

By using the steering switch, various operations on the audio, navigation, telephone, and others can be performed without releasing hands from the steering wheel.

1. Design



2. Switch name and function

No.	switch name	Major functions	
1	(Driving range)	Press to display the driving range screen. Press again to return to the previous screen.	
2	SOURCE	Press to change source menu.	
		Tilt up/down for a short period of time	• During the radio switches the preset channel. • During the CD mode, USB mode, iPod mode, and Bluetooth audio mode selects the track.
		Tilt up/down for a long period of time	• During the radio mode, good sensitivity frequency is automatically selected. • The CD mode, iPod mode, or Bluetooth audio mode allows the fast-forwarding and rewinding of a music file. • During the CD mode, a folder selection can be made when an MP3/WMA disc contains a folder. • The USB mode allows folder selection.
3	(Phone)	• Displays the hands-free phone menu. • When this is pressed during call, telephone communication can be started.	
4	- + (Volume control)	• Adjust the audio volume. • Other than the audio volume, the volume levels of guide sound (at guide interruption), hands-free phone, and others can be adjusted.	
5	(Talk)	Press to enter the voice recognition mode.	
6	(Cancel)	Press to cancel the voice command.	

Menu Display by Pressing Each Switch

INFOID:0000000006838116

NOTE:
For Navigation system and Telematics system operation detailed information, refer to Navigation system Owner's Manual.

MENU

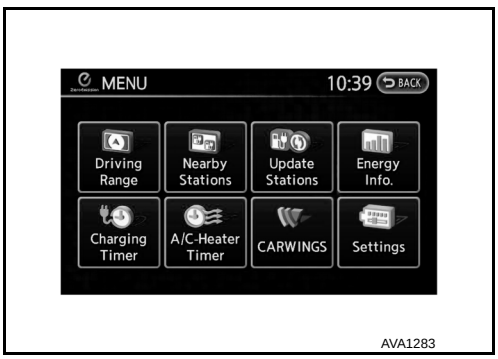
When the MENU switch is pressed, the menu screen is displayed.

Menu list		Description
Destination	Change Country	When setting a destination, the country can be selected. The country that was last selected is automatically selected by the system as the default.
	New Address	Searches for a destination by address.
	Home	Searches for a route from the current location to the previously stored home destination.
	Points of interest	Searches for a destination from various categories of businesses or locations.
	Charging Station	Searches for the charging stations near the current vehicle location.
	Quick Stop	Searches for points of interest near the current vehicle location, such as restaurants and charging stations, etc.
	Address Book	Searches for a destination from the list of the stored locations.
	History	• Sets the previous starting point as destination. • Searches for the destination from the previous destinations.
	M-way Entrance/Exit	Searches for a destination from a motorway entrance/exit.
	Stored Routes	Selects a stored route.
	Latitude/Longitude	Searches for a destination by entering the latitude and the longitude.
	Junction	Searches for a destination from junctions.
Route	Cancel Route/ Resume Route	Cancels the current route guidance. A canceled route can also be reactivated. If the suggested route is canceled, “Cancel Route” changes to “Resume Route”.
	Edit Route	Edit or add a destination or waypoints to the route that is already set.
	Route Info	Confirm the route by the route information or simulation. The confirmed route can also be stored.
	Guidance Voice	Activates or deactivates route, voice guidance and/or traffic announcement and adjust the volume level of voice guidance.
	Recalculate	Manually search for the route again after changing the search condition and have the system calculate a route.
	Detour	A detour of a specified distance can be calculated.
	Traffic Detour	Manually search for an alternative detour route taking the traffic information into consideration.
	Route Calculation Criteria	Changes the route calculation conditions anywhere along the route.

Menu list		Description
Info.	Traffic Information	Displays the Traffic Information.
	Energy Info.	Energy information is displayed on the screen.
	Maintenance	Displays the vehicle maintenance information.
	Charging Station Info	Displays charging station information for the current location.
	Where am I?	Displays information regarding the current vehicle location.
	Voice Recognition	Displays the voice command list.
	GPS Position	Displays GPS information regarding the current vehicle location.
	Navigation Version	Displays the current navigation system version.
Settings		The system can be customized the following items.
Phone	Phonebook	Select a telephone number from the phonebook, and then make a call. Before making a call, the telephone number must be registered in the phonebook.
	Call History	Select a telephone number from the incoming or outgoing history lists, and then make a call.
	Handset Memory	Download the phonebook from a cellular phone that is connected to the vehicle, select a telephone number from the phonebook, and then make a call. Phonebook data should be registered in the system after downloading the phonebook from the cellular phone that is connected to the vehicle. If the phonebook is not registered, a message that reminds you of phonebook data download will be displayed.
	Keypad	Input the phone number manually using the keypad displayed on the screen.
	Volume	Adjust various settings of phone volume.
	Pair Phone	• When a PIN code appears on the screen, operate the compatible Bluetooth® cellular phone to enter the PIN code. • When the connection process is completed, the screen will return to the Phone menu display.
	Paired Phone	The list of the registered cellular phones is displayed.
CARWINGS	Favorite Channels	A maximum of 16 favorite channels selected from the information channels can be stored in a folder.
	Information Channels	Touch the preferred folder. An information channel list is displayed.
	CARWINGS Records	The information channels that were referred to previously are displayed. A maximum of 3 channels are stored in the history.
	Update Stations	Charging station information is updated through connection to the Nissan CARWINGS Data Center.
	CARWINGS Settings	The CARWINGS system can be customized.

ZERO EMISSION MENU

When the ZERO EMISSION switch is pressed, the menu screen is displayed.



Menu list	Description
Driving Range	The estimated driving area within range, including the current position is displayed on the map screen.
Nearby Stations	Charging station information for the current position area is displayed.
Update Stations	Charging station information is updated through connection to the Nissan CARWINGS Data Center.
Energy Info.	Energy information is displayed on the screen.
Charging Timer	The timer charge function can be set.
A/C-Heater Timer (Climate Ctrl. Timer)	The A/C-Heater Timer (Climate Ctrl. Timer) function can be set.
CARWINGS	Information channels are displayed and settings for CARWINGS can be performed.
Settings	Setting of the warning message display or the charging status notification can be performed.

MAP MENU

Map menu at current location

If the following operation is performed at the current location, the available map menu is displayed.

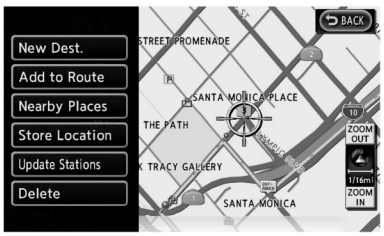
- Touch the “Map Menu” switch on the map.

Menu item		Description
Store Location		Stores the current vehicle location in the Address Book. The stored location can be retrieved as necessary to set it as a destination (waypoint).
Quick Stop		Searches for points of interest near the current vehicle location, such as restaurants and charging stations, etc.
Map Settings	Map View	The screen display [Planview view, Birdview ®, split screen (2D/2D), split screen (2D/2D)] can be changed.
	Split Screen	
	Map Settings	Map Orientation (sets the map direction to North Up or Heading Up), Long Range (on/off), Birdview Angle (Changes the Birdview® angle), Left Settings (sets the map settings for the left screen of the split map) and Automatic Display of Highway Mode (on/off) can be set.
	Back to Map.	Return to the current position screen.
Landmark Icons		Displays map icons of certain points of interest (such as restaurants and charging stations, etc.) on the map around the current vehicle location
Update Station		Charging station information is updated through connection to the Nissan CARWINGS Data Center.

Map menu after scroll of map

If the following operation is performed after scrolling the map, the available map menu is displayed.

• Touch the “Map Menu” switch on the map.



Menu item	Description
New Dest.	Sets the destination to the map location where [New Dest.] was touched. If a destination is already set, the location will be set as the new destination.
Add to Route	Sets the map location where [Add to Route] was touched as the destination or a waypoint. This is available only when a suggested route is already set.
Quick Stop	Searches for points of interest such as restaurants and charging stations, etc. near the location by scrolling the map.
Store Location	Store the map location where [Store location] was touched in the Address Book. The stored location can be retrieved to set it as a destination or waypoint.
Update Stations	Contact the Nissan CARWINGS Data Center to update charging station around the point of the cursor.
Delete	Deletes a destination, waypoint or stored location. To delete, place the cross pointer over the corresponding icon.

HANDLING PRECAUTION

Display

INFOID:0000000006967937

- When the compartment temperature is low, the display images may look slower because the LCD response is deteriorated. The system will recover its normal operation when the cabin temperature increases to an appropriate level.
- When the compartment temperature is low (0°C or less), the display images may look slower. It is characteristic of the LCD monitor and should not be considered to be a malfunction. When the temperature is at the operating temperature (0°C to 50°C), the display returns to normal.
- There may be small dark or bright dots in the screen or remaining display content may be found (image lag). These are inherent symptoms to any LCD monitor and should not be considered to be a malfunction.
- The image may look bright or dark when viewed obliquely from the rear. It is inherent to any LCD monitor and should not be considered to be a malfunction.
- Do not apply pressure on the LCD monitor. Doing so may cause irregularities in the screen image or render it inoperative.
- Do not use hard cloth, organic solvent (alcohol, benzine, and thinner), or chemical wipe to clean the LCD monitor. Doing so may affect the panel surface. When cleaning the LCD monitor, always wipe it with a soft cloth after shutting off the power. For severe contamination, use a soft cloth dampened with mild detergent (no droplets can be present).

Audio

INFOID:0000000006967938

- When an MP3/WMA disc is replayed, it may take some time to start the playback after the disc is inserted, because the contents of the disc files must be analyzed.
- The extensions for MP3/WMA files are ".MP3", ".WMA", ".mp3", and ".wma". Any file with a different extension or no extension cannot be played back.
- If trying to play a music CD (CD-DA) containing MP3/WMA file, MP3/WMA file is not played.
- The compatibility of a CD–R depends on the combination of the writing software/hardware and the writing rate. The disc has digital pulse signals written on it. If the specifications for writing depth and width (area) are not compatible, these signals may not be played back correctly or the sounds may be lost or skipped.
- The file recorded with high bit rate* may have sound skipping.
- The playback order of MP3/WMA files may differ from the intended order because the writing software could change the folder and file positions when writing data to a CD-R/CD-RW disc.
- For an MP3 file, the folder name and file name can be displayed as the title on the condition that each name string consists of up to 16 alphanumeric letters (except for the extension). Any MP3 file with a name containing other letters or that is longer than the maximum length cannot be displayed correctly.
- Some MP3/WMA making software, text information editing software, writing software, or software configurations may create files and discs in a format different from the proper specifications. In such a case, the text information display or the playback function may not be available.
- A disc for which no session close or disc close process has been finished may not be played back.
- Some files may have incorrect playback time displays and therefore a part of the music cannot be played back.
- 8 cm disc cannot be used.
- When playing back a Bluetooth® audio data, the sound may be interrupted for a moment. This is due to data communication and should not be considered to be a malfunction. After the data communication finishes, the playback will restart normally.
- If any CARWINGS operation or incoming call takes place during Bluetooth® audio playback, the screen changes to the relevant mode and the audio playback is interrupted.
- Sound skipping may occur depending on the location where the Bluetooth audio device is installed.
- If any operation for traffic information reception is performed during Bluetooth® audio playback, the audio playback is interrupted.
- Music data stored in a Bluetooth® audio device at low bit rate has poor sound quality.
- Radio reception may decrease in performance during charge.

NOTE:

*: Bit rate means how many bits of data are processed or transmitted per the unit time.

iPod®

INFOID:0000000006967939

- If a headphone is connected to the iPod®, the iPod® may not be controlled.

- Some iPod® may not be compliant with connection. It is necessary to check compliant models of iPod®.
- If a USB extension cable is used for iPod® connection, iPod® may not be recognized or sound skipping may occur in playback.
- In playing back iPod® audio, if the EQ function (equalizer function) of the iPod® is ON, sound may be distorted.
- If the number of music in one category is increased to a large number, response may be poor. If the number of music is large and shuffle is ON, operation of the iPod® itself may be slower.

RESTRICTIONS ON iPod®

The following symptoms may occur, but the functions are not compliant and they should not be considered to be a malfunction.

- When a Podcast divided into chapters is played back with iPod nano 3G, the play time may be displayed incorrectly.
- The number of Audiobook is not displayed normally. When iPod®is disconnected and reset, it is displayed.
- When jacket photos are played with iPod nano 3G and iPod Classic, iPod®may be frozen or reset.

USB Connection

INFOID:0000000006967940

If a USB-HUB or USB extension cable is used when a USB is connected, USB is not recognized.

CARWINGS

INFOID:0000000006967941

Refer to AV-158, "Telematics&CARWINGS".

Hands-Free Phone

INFOID:0000000006967942

- In the following cases, the hands-free telephone function is not available.
- When the vehicle moves out of the communication zone of the cellular phone.
- When the vehicle is in a location that may block radio waves such as in an underground parking lot, behind a building, or in mountainous areas.
- When the cellular phone is subject to dial-up limitations such as dial lock, and auto lock, transmission restriction.
- It is not compliant with call waiting function and three-party call function.
- No incoming call can be received just after the key switch is turned to ON.
- For further details about the supported models, consult the Supported Cellular Phone Models in the CARWINGS site.
- Depending on the cellular phone connected, the ring volume may decrease.
- Before connecting a cellular phone, make sure that the operation limitations such as dial lock, auto lock and transmission restriction are cancelled. If any of these settings is found to remain active, disconnect the phone, cancel the setting, and reconnect it.
- When a menu or information is displayed on a cellular phone or when application of standby tool is activated, the function may not be used. Use the cellular phone in the standby status.
- Once a cellular phone is removed, wait at least 10 seconds before reconnecting it.
- When attempting to use a cellular phone, always make sure that the battery charge level is sufficient.
- A snap sound may be heard or the audio signal may be interrupted during a call. This is not a malfunction. It is caused by a switchover to an adjacent cellular zone due to weakening radio waves.
- When the reception status is poor or the surrounding sound level is too large, the voice on the phone may be hard to hear.
- Because the system uses a digital line, the voice on the phone may be distorted or have unpleasant noises due to the surrounding sounds.
- If the vehicle is equipped with a speed trap tracker (radar detector), the speaker may generate noises.
- This unit cannot be used to charge a cellular phone.

Rear View Camera

INFOID:0000000006967943

- Since the range shown on the rear view monitor is limited, be sure to check safety visually around the area. Never drive while viewing only the image. It must be used only as a supplementary measure to gain field of view at the back of the vehicle.
- Since the rear view camera is using a wide lens, distance of the image shown on the display is different from the actual distance.

- Since the rear view camera is a precision device, do not apply a strong impact to it. Doing so may cause a malfunction, fire or electric shock.
- Raindrop, snow, mud, body wax, etc. on the lens may give poor image. Damage to the lens may adversely affect the image.
- Do not use hard cloth, organic solvent (alcohol, benzine, and thinner), or chemical wipe to clean the lens. Doing so may cause discoloration. When cleaning the lens, always wipe it with a dry soft cloth. For severe contamination, use a soft cloth dampened with mild detergent (no droplets can be present).
- In a high-pressure car wash, do not expose the camera directly to water. It may cause entry of water on the lens or cause condensation, resulting in a malfunction, fire or electric shock. Do not use a car wash brush on the lens.
- When it is extremely hot or cold, the image may be poor, but it should not be considered to be a malfunction.
- The image may be poor or bluish at a dark place or at night, but it should not be considered to be a malfunction. In this case, image quality may be adjusted using the image quality adjusting function.
- Flickering may appear on the screen under fluorescent light, but it should not be considered to be a malfunction.
- When the rear view monitor is used, some of the audio and hand-free phone functions can be operated.
- It may take some time to switch to the camera image or non-camera image. Image may be instantaneously disturbed before a complete image appears.
- If highly brilliant point (sun reflecting on the vehicle body) is shown on the camera, a smear or ghost inherent to CCD occur, but it should not be considered to be a malfunction.
- The back view monitor image is a mirror image with reverse left and right to suit the situation when the rear is viewed with the rearview mirror.
- Possible route lines and side distance guide lines are subject to the number of passengers, fuel level, vehicle position, road condition, road gradient, etc. There may be a difference from the actual driving route.
- If tires are replaced with a size not specified, possible route lines may not be correctly displayed.
- The possible route line center position may be misaligned. In this case, perform the correction of the neutral position according to the following procedure.

- Drive 100 m or more straight ahead at 30 km/h or more.

SD Card

INFOID:0000000006967944

To remove the SD card, wait for 15 seconds or more after turning the power switch OFF.

DIAGNOSIS SYSTEM (AV CONTROL UNIT)

Diagnosis Description

INFOID:0000000006838125

- Diagnosis is performed with the on board diagnosis and CONSULT. Select an appropriate function based on the condition. Perform the on board diagnosis if it starts. If the on board diagnosis does not start such as no display, perform diagnosis with CONSULT.
- In the on board diagnosis, a multifunction switch operation starts the AV (NAVI) control unit diagnosis function and AV control unit performs a diagnosis for each system unit. Diagnosis results are displayed on the screen.
- In the CONSULT diagnosis, a communication signal starts the AV control unit diagnosis function and the AV control unit performs a diagnosis for each system unit.

On Board Diagnosis Function

INFOID:0000000006838126

ON BOARD DIAGNOSIS ITEM

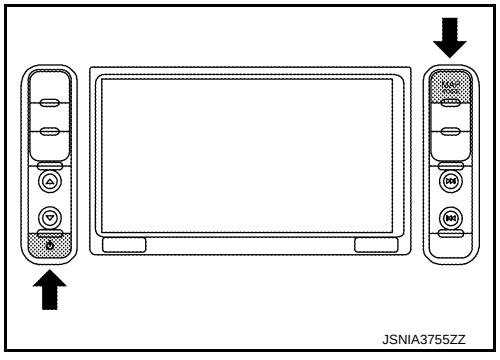
- The on board diagnosis function has a self-diagnosis mode for conducting trouble diagnosis automatically and a confirmation/adjustment mode for operating manually.
- Self-diagnosis mode performs the diagnosis at the AV control unit, connections between each unit that composes the system, and connections between AV control unit and GPS antenna. It displays the results on the display.
- The confirmation/adjustment mode allows the technician to check, modify or adjust the vehicle signals and set values, as well as to monitor the system error records and system communication status. The check, modify or adjust actions generally require human intervention and judgment (the system cannot judge automatically).

Mode	Description
Self Diagnosis	• AV control unit diagnosis. • Diagnoses the connections across system components, between AV control unit and GPS antenna.

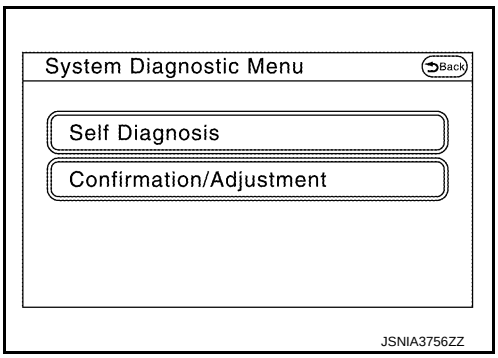
Mode			Description
Confirmation/ Adjustment	Display Diagnosis		The following check functions are available: color tone check by color bar display and white display, light and shade check by gray scale display and touch panel calibration response check.
	Vehicle Signals		Diagnosis of signals can be performed for vehicle speed, parking brake, lights, power switch and reverse.
	Navigation	Steering Angle Adjustment	When there is a difference between the actual turning angle and the vehicle mark turning angle, it can be adjusted.
		Speed Calibration	When there is a difference between the current location mark and the actual location, it can be adjusted.
		Sensor infomation	Displays the reception status of the GPS antenna connector.
		XM SAT Subscription Status	The XM NavTraffic subscription status can be checked.
	Error location display		The system malfunction and the frequency when occurring in the past are displayed. When the malfunctioning item is selected, the time and place that the selected malfunction last occurred are displayed.
	AV COMM Diagnosis		The communication condition of each unit of Multi AV system can be monitored.
	Hands-free Phone, CARWINGS		• The received volume adjustment of hands-free phone and microphone speaker check can be performed. • Mileage display of remote maintenance can be turned ON/OFF.
	Camera		The signal connected to camera control unit can be checked and the guiding line position that overlaps rear view camera image can be adjusted.
	Clock setting		The current time can be set.
	Delete Unit Connection Log		Erase the connection history of unit and error history.
	User Data Initialisation		Initializes the AV control unit memory.
	Version Information		Version information of the AV control unit is displayed.
	XM	Change Channel	Any necessary channels required to receive traffic information etc. from the satellite radio system can be set.
		Change Application ID	Any application ID'-s required to receive traffic information etc. from the satellite radio system can be set.
		Diag	XM authentication diagnosis.

Starting procedure

1. Turn the power switch ON.
2. Turn the audio system off.
3. Press the “MAP” switch 3 times. Press the “PWR” switch 2 times. Press the “MAP” switch once.
   NOTE:
   If the on board self-diagnosis does not start, perform diagnosis using CONSULT. Refer to AV-53, "CONSULT Function".



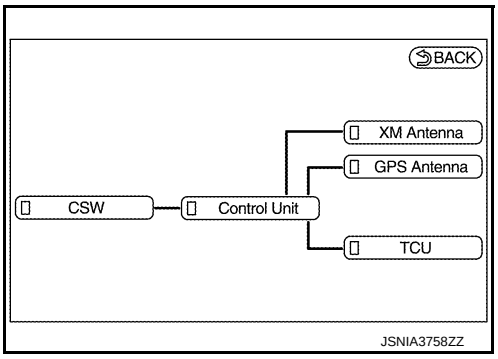
4. The initial trouble diagnosis screen displays two choices: “Self-Diagnosis” and “Confirmation/Adjustment”.



SELF-DIAGNOSIS MODE

1. Start the self-diagnosis function and select “Self Diagnosis”.
- Self-diagnosis subdivision screen is displayed, and the self-diagnosis mode starts.
- The bar graph visible on the center of the self-diagnosis subdivision screen indicates progress of the trouble diagnosis.

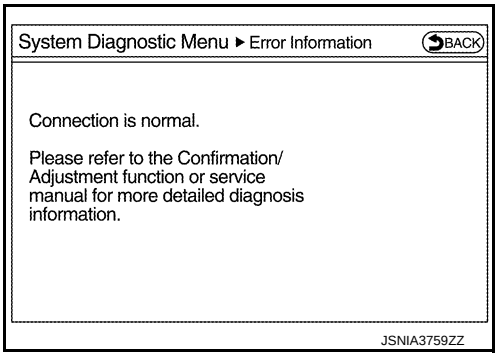
2. Diagnosis results are displayed after the self-diagnosis is completed. The unit names and the connection lines are color-coded according to the diagnostic results.



Diagnosis results	Unit	Connection line
Normal	Green	Green
Connection malfunction	Gray	Yellow
Unit malfunction Note	Red	Green

NOTE:
Control unit (AV control unit) is displayed in red.
- Replace AV control unit if “Self-Diagnosis did not run because of a control unit malfunction” is indicated. The symptom is AV control unit internal error. Refer to AV-119, "Removal and Installation".
- If multiple errors occur at the same time for a single unit, the screen switch colors are determined according to the following order of priority: red > gray.

- The comments of the self-diagnosis results can be viewed with a component in the diagnosis result screen.



Detection Range of Self-diagnosis Mode
- The self-diagnosis mode allows the technician to diagnose the connection in the communication line between AV control unit and each unit and the internal operation of the AV control unit.

- Because the start condition of diagnosis function is a switch operation, the on board diagnosis function cannot be started up if any malfunction is detected in the communication circuit between AV control unit and multifunction switch.

SELF-DIAGNOSIS RESULTS

Check the applicable display at the following table, and then repair the malfunctioning parts.

Only Unit Part Is Displayed In Red.

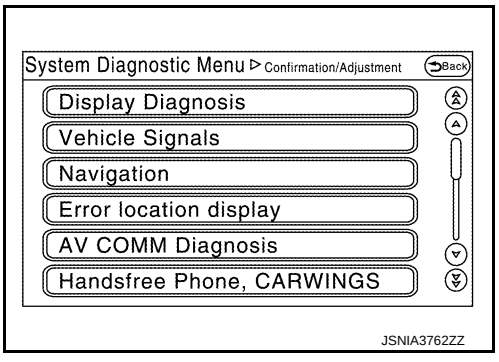
Screen switch	Description	Possible malfunction location / Action to take
Control Unit	Malfunction is detected in AV control unit power supply and ground circuits.	• Check the power supply and ground circuit. Refer to AV-95, "AV CONTROL UNIT : Diagnosis Procedure". • When the power switch is OFF, remove and insert the SD card to check for contact malfunction of the SD card, and check for an error again. - If there is no malfunction, poor contact of the SD card may be possible. Wait and see the condition. - If an malfunction is found, replace the AV control unit. Refer to AV-119, "Removal and Installation".

A Connecting Cable Between Units Is Displayed In Yellow.

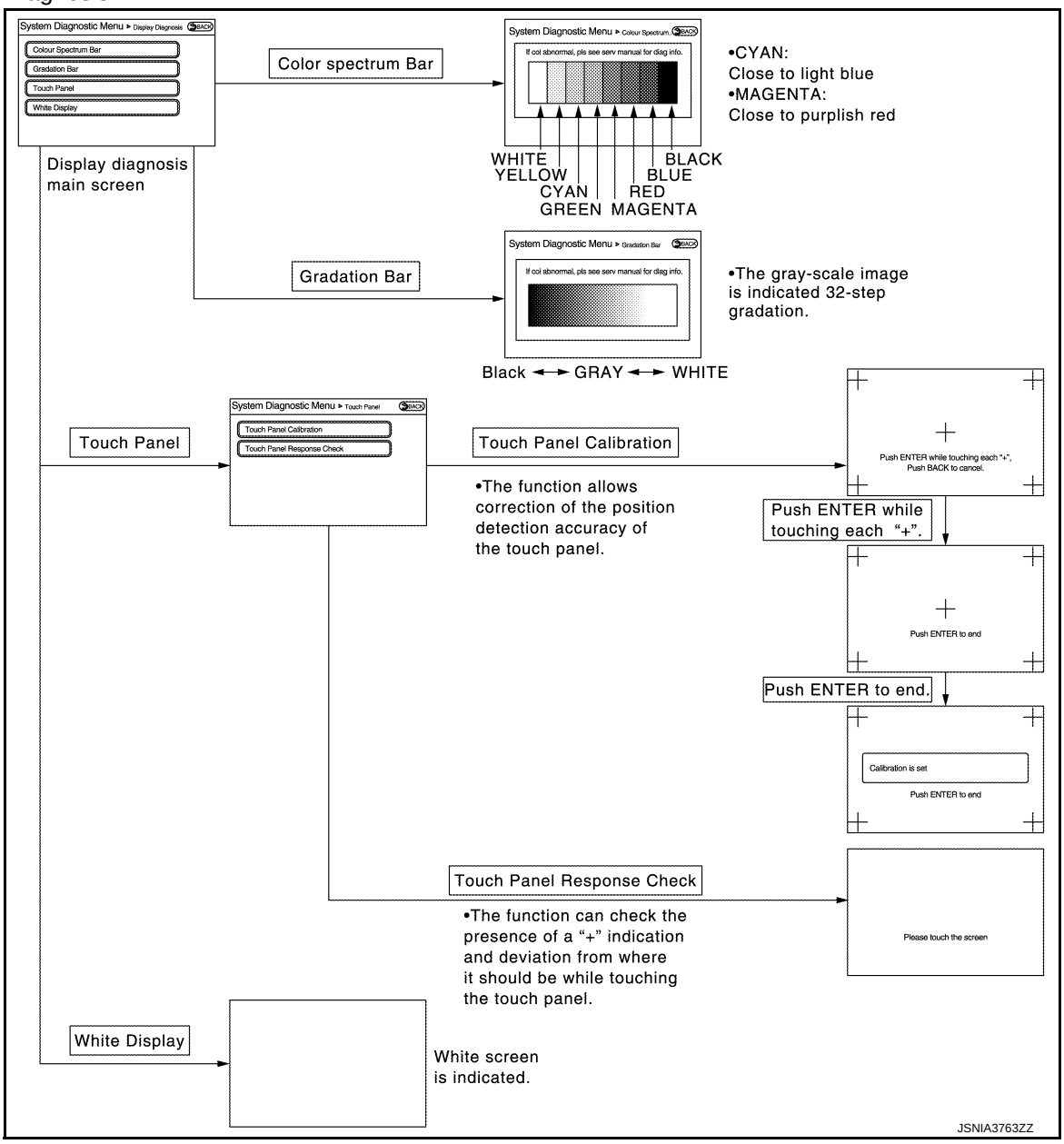
Area with yellow connection lines	Description	Possible malfunction location / Action to take
Control unit ⇔ GPS Antenna	GPS antenna connection malfunctions detected.	GPS antenna
Control unit ⇔ TCU	Malfunction is detected in communication circuits between AV control unit and TCU.	Communication circuits between AV control unit and TCU.
Control unit ⇔ SAT Antenna	Satellite radio antenna connection malfunction is detected.	Satellite radio antenna disconnection

CONFIRMATION/ADJUSTMENT MODE

1. Start the diagnosis function and select “Confirmation/Adjustment”. The confirmation/adjustment mode indicates where each item can be checked or adjusted.
2. Select each switch on the “Confirmation/Adjustment Mode” screen to display the relevant trouble diagnosis screen. Press the “Back” switch to return to the initial Confirmation/Adjustment Mode screen.

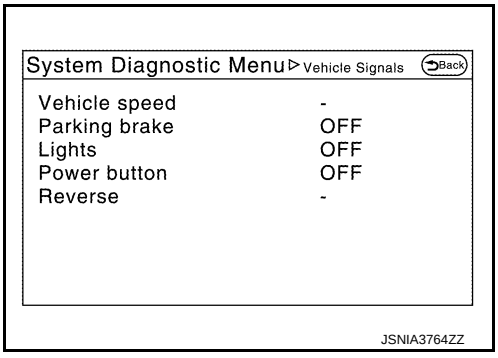


Display Diagnosis



Vehicle Signals

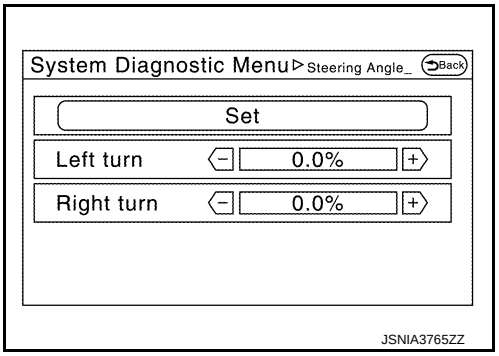
A comparison check can be made of each actual vehicle signal and the signals recognized by the system.



Diagnosis item	Display	Vehicle status	Remarks
Vehicle speed	ON	Vehicle speed > 0 km/h (0 MPH)	Changes in indication may be delayed. This is normal.
	OFF	Vehicle speed = 0 km/h (0 MPH)	
Parking brake	ON	Parking brake is applied.	
	OFF	Parking brake is released.	
Lights	ON	Block the light beam from the auto light optical sensor when the light switch is ON.	—
	OFF	Either of the following conditions • Lighting switch OFF • Expose the auto light optical sensor to light when the light switch is ON.	
Power bottun	ON	Power bottun ON	—
	OFF	Power bottun in ACC position	
Reverse	ON	Shift the selector lever to “R” position	Changes in indication may be delayed. This is normal.
	OFF	Shift the selector lever other than “R” position	

Navigation

STEERING ANGLE ADJUSTMENT
- The steering angle output value detected with the gyroscope is adjusted.



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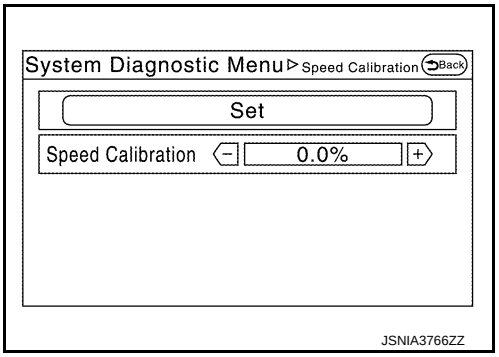
SPEED CALIBRATION
- During normal driving, distance error caused by tire wear and tire pressure change is automatically adjusted for by the automatic distance correction function. This function, on the other hand, is for immediate adjustment, in cases such as driving with tire chain fitted on tires.



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SENSOR INFORMATION
- Displays the reception status of the GPS antenna connector.

XM SAT SUBSCRIPTION STATUS
- The XM NavTraffic subscription status can be checked.

Error location display

The self-diagnosis results are judged depending on whether any error occurs from when “Self-diagnosis” is selected until the self-diagnosis results are displayed.

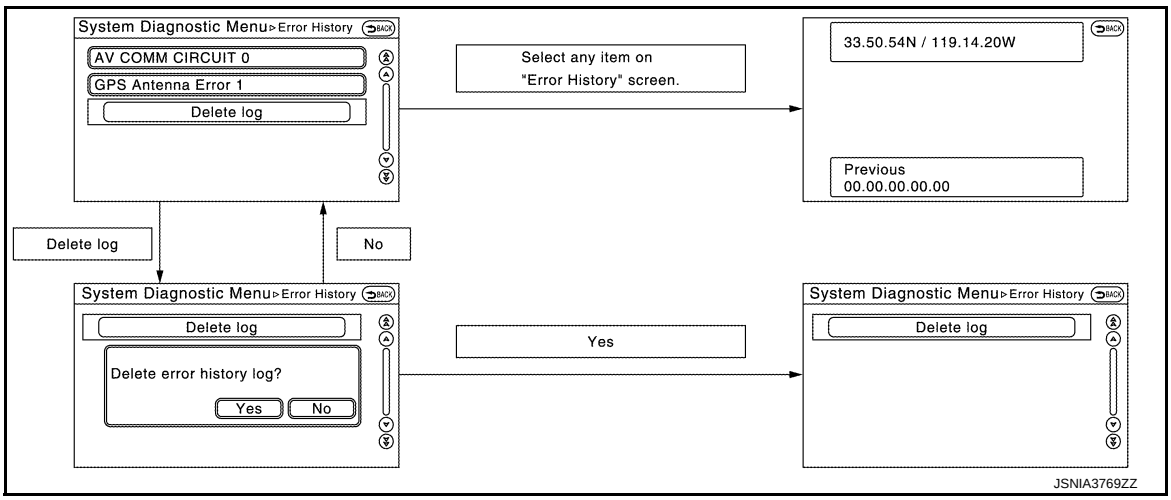
However, the diagnosis results are judged normal if an error has occurred before the ignition switch is turned ON and then no error has occurred until the self-diagnosis start. Check the “Error Record” to detect any error that may have occurred before the self-diagnosis start because of this situation.
The error record displays the time and place of the most recent occurrence of that error. However, take note of the following points.

- If there is a malfunction with the GPS antenna circuit board in the AV control unit, the correct date and time of occurrence may not be able to be displayed.
- Place of the error occurrence is represented by the position of the current location mark at the time an error occurred. If current location mark has deviated from the correct position, then the place of the error occurrence cannot be located correctly.
- The frequency of occurrence is displayed in a count up manner. The actual count up method differs depending on the error item.

Count up method A

- The counter resets to 0 if an error occurs when ignition switch is turned ON. The counter increases by 1 if the condition is normal at a next ignition ON cycle.
- The counter upper limit is 39. Any counts exceeding 39 are ignored.“ The counter can be reset (no error record display) with the “Delete log” switch or CONSULT.

Display type of occurrence frequency	Error history display item
Count up method A	CAN communication line, control unit (CAN), AV communication line, control unit (AV)



Error item

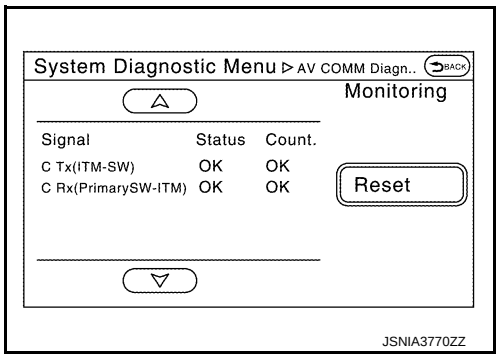
Some error items may be displayed simultaneously according to the cause. If some error items are displayed simultaneously, the detection of the cause can be performed by the combination of display items

Error item	Description	Possible malfunction factor/Action to take
CAN COMM CIRCUIT	CAN communication malfunction is detected.	Perform diagnosis with CONSULT, and then repair the malfunctioning parts according to the diagnosis results. Refer to AV-53, "CONSULT Function".
CONTROL UNIT (CAN)	CAN initial diagnosis malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly. Refer to AV-119, "Removal and Installation".
CONTROL UNIT (AV)	AV communication circuit initial diagnosis malfunction is detected.	
Control Unit Internal Error	AV control unit malfunction is detected.	
Switch Initial Communication Error	AV control unit or multifunction switch internal malfunction are detected.	Replace the AV control unit or multifunction switch if the malfunction occurs constantly. Refer to AV-119, "Removal and Installation" (AV control unit), AV-120, "Removal and Installation" (multifunction switch).
Steer. Angle Sensor Calibration	Predictive course line center position adjustment of the steering angle sensor is incomplete.	Adjust the predictive course line center position of the steering angle sensor. Refer to AV-53, "CONSULT Function".

Error item	Description	Possible malfunction factor/Action to take
GPS Antenna Error	GPS antenna connection malfunction is detected.	Check the connection of the GPS antenna connector.
XM Antenna Connection Error	Satellite radio antenna connection malfunction is detected.	Satellite radio antenna disconnection.
USB electric current error	Detection of overcurrent in USB connector.	Check USB harness between the AV control unit and USB connector.
TCU Connection Error	TCU connection malfunction is detected.	Check that the connection to the TCU connector is normal.
• AV COMM CIRCUIT • Switches Connection Error	When either one of the following items are detected: • multifunction switch power supply and ground circuits are malfunctioning. • AV communication circuits between AV control unit and multifunction switch are malfunctioning.	• Multifunction switch power supply and ground circuits. • AV communication circuits between AV control unit and multifunction switch.

AV COMM Diagnosis

- Displays the communication status between AV control unit (master unit) and each unit.
- The error counter displays “OK” if any malfunction was not detected in the past and displays “0” if a malfunction is detected. It increases by 1 if the condition is normal at the next ignition switch ON cycle. The upper limit of the counter is 39.
- The error counter is erased if “Reset” is pressed.



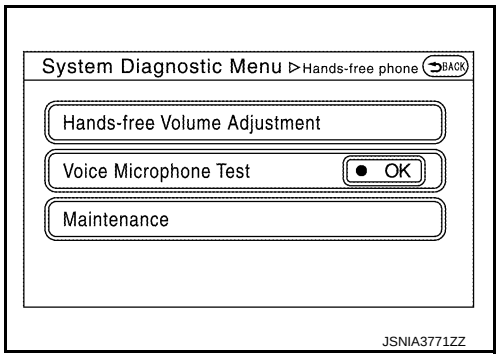
Items	Status (Current)	Counter (Past)
C Tx(ITM–PrimarySW)	OK / ???	OK / 0 – 39
C Rx(PrimarySW–ITM)	OK / ???	OK / 0 – 39

NOTE:
“???” indicates UNKWN

Hands-Free Phone, CARWINGS

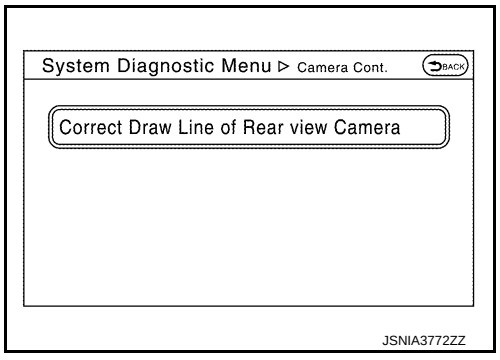
The hands-free phone reception volume adjustment and microphone and speaker test functions are also available.

NOTE:
If voice cannot be output when the Voice Microphone Test is started, stop and restart the test again.



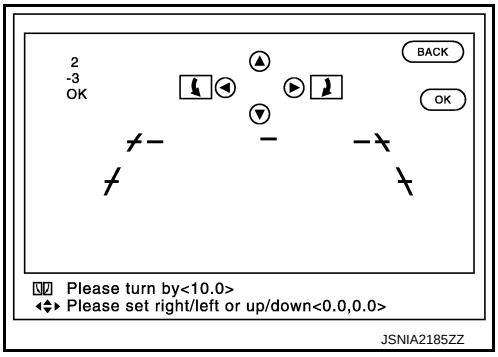
Camera

The four functions of “Correct Draw Line of Rear view Camera” is available.



Correct Draw Line of Rear view Camera

- Use this mode to adjust the guide line display position of the rear view monitor if necessary after removing the rear view monitor camera.



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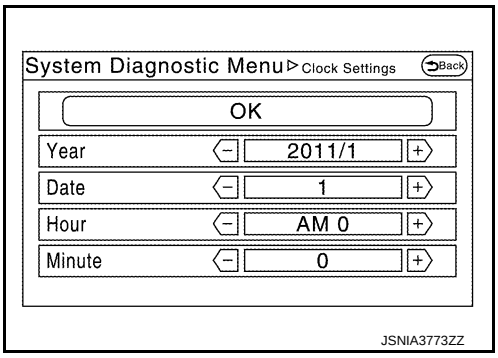
Clock Setting

The clock can be set.



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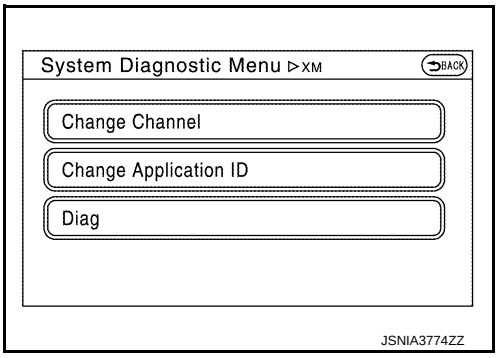
XM

- Change Channel
  - Any necessary channels required to receive traffic information from the satellite radio system can be set.
- Change Application ID
  - Any application ID'-s required to receive traffic information from the satellite radio system can be set.
- Diag
  - XM authentication diagnosis.



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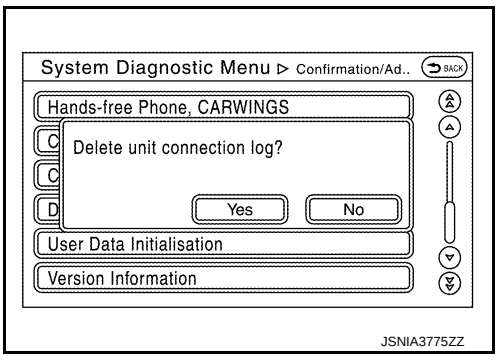
Delete Unit Connection Log

Deletes any unit connection records and error records from the AV control unit memory. (Clear the records of the unit that has been removed.)



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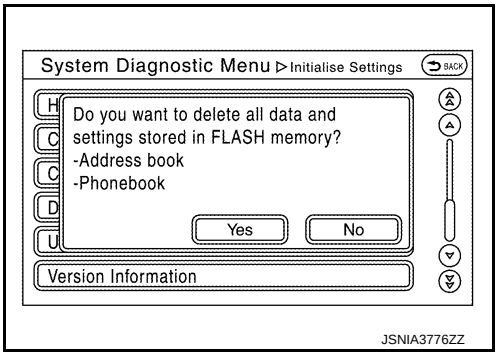
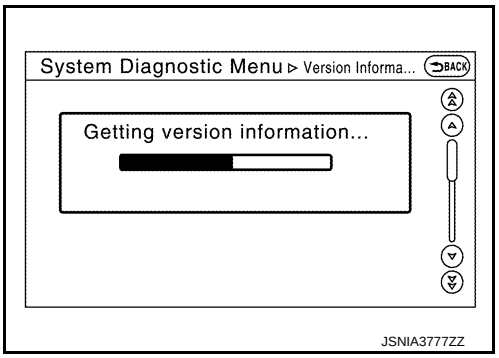
User Data Initialization

Initializes the AV control unit memory.



Version Information

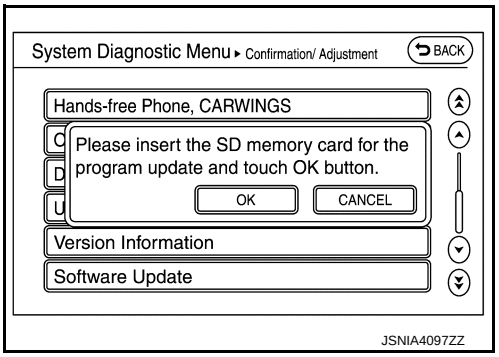
Version information of the AV control unit is displayed.



Software Update

Software version of the AV control unit can be update.

For detail of the operation, refer to AV-82, "SOFTWARE UPDATE (AV CONTROL UNIT) : Work Procedure".



CONSULT Function

INFOID:0000000006838127

APPLICATION ITEMS

CONSULT performs the following functions via the communication with the AV control unit.

Diagnosis mode	Description
Ecu Identification	The part number of AV control unit can be checked.
Self Diagnostic Result	Performs a diagnosis on the AV control unit and a connection diagnosis for the communication circuit of the Multi AV system, and displays the current and past malfunctions collectively.
Data Monitor	The diagnosis of vehicle signal that is input to the AV control unit can be performed.
Work Support	Steering angle sensor can be adjusted.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing AV control unit.

AV communication

When “AV communication” of “CAN Diag Support Monitor” is selected, the following function will be performed.

AV communication	AV&NAVI C/U	Displays the communication status from AV control unit to each unit as well as the error counter.
	AUDIO	Displays the AV control unit communication status and the error counter.

ECU IDENTIFICATION

The part number of AV control unit is displayed.

SELF DIAGNOSIS RESULT

- In CONSULT self-diagnosis, self-diagnosis results and error history are displayed collectively.
- The current malfunction indicates “CRNT”. The past malfunction indicates “PAST”.
- The timing is displayed as “0” if any of the error codes [U1000], [U1010], [U1300] and [U1310] is detected. The counter increases by 1 if the condition is normal at the next ignition switch ON cycle.

Self-diagnosis Results Display Item

Error item	Description	Possible malfunction factor/Action to take
CAN COMM CIRCUIT [U1000]	CAN communication malfunction is detected.	Refer to AV-85, "Diagnosis Procedure".
CONTROL UNIT (CAN) [U1010]	CAN initial diagnosis malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly. Refer to AV-119, "Removal and Installation".
CONTROL UNIT (AV) [U1310]	AV communication circuit initial diagnosis malfunction is detected.	
CONTROL UNIT [U121F]	AV control unit malfunction is detected.	
ST ANGLE SEN CALIB [U1232]	Predictive course line center position adjustment of the steering angle sensor is incomplete.	Adjust the predictive course line center position of the steering angle sensor. Refer to BRC-59, "Work Procedure".
GPS ANTENNA CONN [U1244]	GPS antenna connection malfunction is detected.	Check the connection of the GPS antenna connector.
XM ANTENNA CONN [U1258]	Satellite radio antenna connection malfunction is detected.	Satellite radio antenna disconnection.
USB OVERCURRENT [U1263]	Detection of overcurrent in USB connecter.	Check USB harness between the AV control unit and USB connector.
TCU CONN [U1266]	Malfunction of USB connection is detected.	Check USB connection between AV control unit and TCU.
• AV COMM CIRCUIT [U1300] • SWITCH CONN [U1240]	When either one of the following items are detected: • multifunction switch power supply and ground circuits are malfunctioning. • AV communication circuits between AV control unit and multifunction switch are malfunctioning.	• Multifunction switch power supply and ground circuits. • AV communication circuits between AV control unit and multifunction switch.

DATA MONITOR

ALL SIGNALS

- Displays the status of the following vehicle signals inputted into the AV control unit.
- For each signal, actual signal can be compared with the condition recognized on the system.

Display Item	Display	Vehicle status	Remarks
VHCL SPD SIG	On	Vehicle speed > 0 km/h (0 MPH)	Changes in indication may be delayed. This is normal.
	Off	Vehicle speed = 0 km/h (0 MPH)	
PKB SIG	On	Parking brake is applied.	
	Off	Parking brake is released.	

Display Item	Display	Vehicle status	Remarks
ILLUM SIG	On	Block the light beam from the auto light optical sensor when the light switch is ON.	—
	Off	Either of the following conditions • Lighting switch OFF • Expose the auto light optical sensor to light when the light switch is ON.	
IGN SIG	On	Ignition switch ON	
	Off	Ignition switch in ACC position	
REV SIG	On	Selector lever in R position	Changes in indication may be delayed. This is normal.
	Off	Selector lever in any position other than R	

WORK SUPPORT

Neutral position adjustment of the steering angle sensor can be performed.

CAUTION:

Perform adjustment at the support side of the ABS actuator control unit for vehicle with VDC. For detail, Refer to BRC-59, "Work Procedure"

Item name	DESCRIPTION
ST ANGLE SENSOR ADJUSTMENT	Perform neutral position adjustment of the steering angle sensor.

ECU DIAGNOSIS INFORMATION

AV CONTROL UNIT

Reference Value

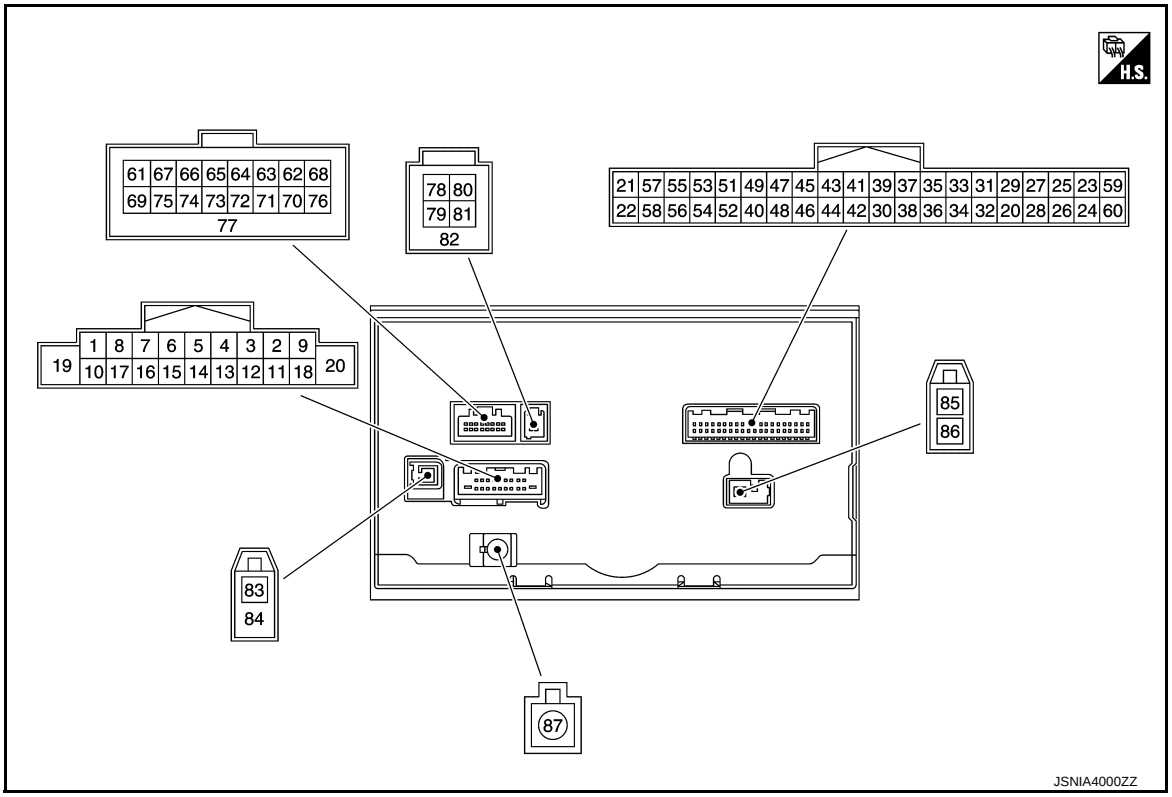
INFOID:0000000006838128

CONSULT DATA MONITOR REFERENCE VALUES

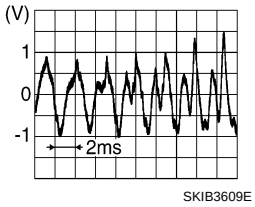
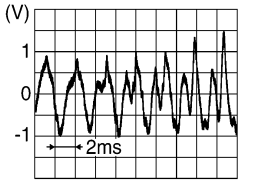
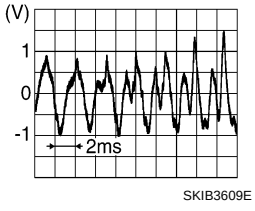
-CONSULT DATA MONITOR ITEMS

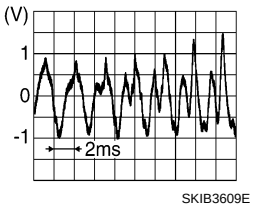
Monitor item	Test condition		Reference value/Status
VHCL SPD SIG	Ignition switch ON	Vehicle speed > 0 km/h (0 MPH)	On
		Vehicle speed = 0 km/h (0 MPH)	Off
PKB SIG	Ignition switch ON	Parking brake is applied.	On
		Parking brake is released.	Off
ILLUM SIG	Ignition switch ON	Block the light beam from the auto light optical sensor when the light switch is ON.	On
		Expose the auto light optical sensor to light when the light switch is OFF or ON.	Off
IGN SIG	Ignition switch ON	—	On
	Ignition switch ACC	—	Off
REV SIG	Ignition switch ON	Selector lever in R position	On
		Selector lever in any position other than R	Off

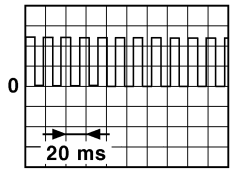
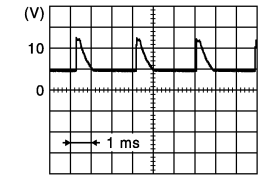
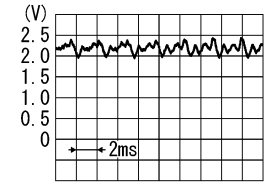
TERMINAL LAYOUT

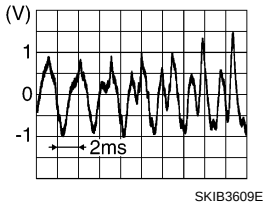
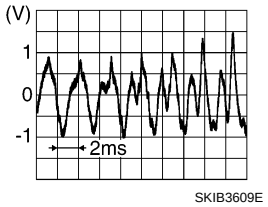
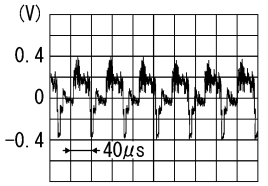


PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
2 (L)	3 (P)	Sound signal front LH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
4 (V)	5 (R)	Sound signal rear LH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
6 (BR)	15	Steering switch signal A	Input	Power switch ON	Keep pressing SOURCE switch.	0 – 5.5 V	0 V
					Keep pressing ▲ switch.		1.0 V
					Keep pressing ▼ switch.		2.0 V
					Keep pressing switch.		3.0 V
					Keep pressing switch.		4.0 V
					Except for above.		5.0 V
7 (L)	Ground	ACC power supply	Input	Power switch ACC	—	8.6 – 16 V	Battery voltage
8 (B)	—	Ground	—	—	—	—	—
9 (W)	Ground	Illumination signal	Input	Power switch ON	Lighting switch is ON.	Battery voltage (Max. 16V)	12 V
					Lighting switch is OFF.	Ground level	0 V
11 (G)	12 (R)	Sound signal front RH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
13 (LG)	14 (GR)	Sound signal rear RH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
16 (Y)	15	Steering switch signal B	Input	Power switch ON	Keep pressing – switch.	0– 5.5 V	0 V
					Keep pressing + switch.		1.0 V
					Keep pressing switch.		2.0 V
					Keep pressing switch.		3.0 V
					Except for above.		5.0 V
19 (BR)	Ground	Battery power supply	Input	Power switch OFF	—	9 – 16 V	Battery voltage
21 (LG)	—	AV communication signal (L)	Input/ Output	—	—	—	—
22 (SB)	—	AV communication signal (H)	Input/ Output	—	—	—	—
23 (LG)	—	AV communication signal (L)	Input/ Output	—	—	—	—
24 (SB)	—	AV communication signal (H)	Input/ Output	—	—	—	—
25 (P)	—	CAN–L	Input/ Output	—	—	—	—
26 (L)	—	CAN–H	Input/ Output	—	—	—	—

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
28 (GR)	Ground	Vehicle speed signal (8-pulse)	Input	Power switch ON	When vehicle speed is approx. 40 km/h (25 MPH)	Input waveform that repeats 1.5 V or less – 8.6 V or more.	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0012GB
29 (BR)	Ground	Parking brake signal	Input	Power switch ON	Parking brake is ON.	1.5 V or less	0 V
					Parking brake is OFF.	3.5 V or more	 JSNIA1938ZZ
30 (G)	Ground	Reverse signal	Input	Power switch ON	R position	6.97 V or more	12 V
					Other than R position	3.42 V or less	0 V
31 (V)	Ground	Ignition signal	Input	Power switch ON		5.42 V or more	12 V
				Other than power switch ON		4.52 V or less	0 V
32 (R)	Ground	Dimmer signal	Input	Power switch ON	Either of the following conditions • Lighting switch OFF • Expose the auto light optical sensor to light when the light switch is ON.	3.41 V or less	0 V
					Block the light beam from the auto light optical sensor when the light switch is ON.	6.97 V or more	12 V
46 (L)	Ground	Microphone signal	Input	Power switch ON	Give a voice	The value between the maximum input voltage and the minimum input voltage is 4.72V or less.	 PKIB5037J
47 (Y)	Ground	Microphone VCC	Output	Power switch ON	—	5 V	5 V

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
48	—	Shield (microphone ground)	—	—	—	—	—
49 (R)	51 (B)	AUX sound signal LH	Input	Power switch ON	When AUX mode is selected.		 SKIB3609E
50 (W)	51 (B)	AUX sound signal RH	Input	Power switch ON	When AUX mode is selected.		 SKIB3609E
52	—	Shield	—	—	—	—	—
56 (B)	Ground	Camera connection recognition signal	Output	Power switch ON	Connected to camera connector	1.5V or less	0 V
					Not connected to camera connector	3V or more	12 V
57 (R)	Ground	Camera power supply	Output	Power switch ON	At rear view camera image is displayed.	6.2 V	6 V
58 (W)	Ground	Camera ground	—	Power switch ON	—		0 V
59 (R)	Ground	Camera image signal	Input	Power switch ON	At rear view camera image is displayed.	Input the waveform synchronized with the rear view camera image.	 SKIB2251J
60	—	Shield	—	—	—	—	—
61 (SB)	62 (P)	U–VOICE signal	Output	Power switch ON	—	—	—
66 (P)	Ground	Manufacturer Specific signal	—	—	Not used.	—	—
67 (L)	75	USB V BUS signal	Output	Power switch ON	—	5 V	—

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
68 (Y)	75	USB D – signal	Input/ Output	—	—	—	—
69 (O)	75	D–VOICE signal	Input	—	—	—	—
76 (LG)	75	USB D+ signal	Input/ Output	—	—	—	—
77	—	Shield	—	—	—	—	—
79 (R)	78 (G)	USB D– signal	Input/ Output	—	—	—	—
80 (W)	78 (G)	V BUS signal	Output	Power switch ON	—	5 V	5 V
81 (L)	78 (G)	USB D+ signal	Input/ Output	—	—	—	—
82	—	Shield	—	—	—	—	—
83	Ground	GPS antenna signal	Input	Power switch ACC	Not connected GPS antenna connector.	5 V	5 V
84	—	Shield	—	—	—	—	—
85	Ground	Antenna amp. ON signal	Output	Power switch ACC	—	9 – 16 V	12 V
86	—	AM-FM main	Input	—	—	—	—
87	Ground	Satellite radio antenna signal	Input	Power switch ON	Not connected satellite antenna connector.	5 V	5 V

Fail-safe

INFOID:0000000006968028

When a malfunction occurs within the system, the AV control unit outputs a message on the display, and it restricts the AV control unit functions.

FAIL-SAFE CONDITIONS

SD card not inserted, SD card malfunction, internal malfunction of navigation, etc.

Display Indication

- When the system is in the fail-safe status at the start of the AV control unit, an error message is shown on the display.

- When the system is in the fail-safe status after the start of the AV control unit, an error message is not shown on the display. The MULTI AV system may be rebooted in the fail-safe state. If the fail-safe state is maintained after the system is rebooted, an applicable message is shown.

Cause	Display monitor
Malfunction of flash ROM information	TARGET INFO NG
No SD card	NO SD CARD
Unsuccessful security unlock	SD UNLOCK NG
Malfunction of SD card mount	SD INIT NG
Malfunction of SD card access	SD ACCESS NG
No program data	NO NAVI-2 DATA
Malfunction of program data (SUM NG)	NAVI-2DATA READ NG
Inconsistent program version (Flash/SD)	NAVI VERSION NG
Difference of map destination	DIFFERENT MAP CODE
Not compliant with map database version	MAP DATA BASE UNMATCH
Malfunction of navigation	NAVI STARTUP NG

CONTROL

When the system is in the fail-safe status at or after start of the AV control unit, the following functions are restricted.

Function		In fail-safe mode
A/C	Display	No display (fail-safe status display)
Audio	Operation	Mute audio
	Display	No display (fail-safe status display)
Camera	Operation	It cannot be operated
	Display	Only composite (camera image) is displayed and superimpose (warning display and image quality display) is not displayed.
Hands-free phone	Operation	It cannot be operated
Navigation	Operation	It cannot be operated
Display	Operation	Open/close operation is available
	Display	Fail-safe factors are displayed
Self-diagnosis		It cannot be diagnosed
CONSULT diagnosis		It cannot be diagnosed
AV communication diagnosis		It cannot be diagnosed
Frequency transmission for VCM		Normal
SD read access		Access cannot be gained.
SD write access		Access cannot be gained.

CANCELLATION CONDITIONS

The fail-safe status is canceled under the following conditions, and then the system returns to the normal mode.

- When the SD card is not inserted, the SD card is inserted and the power of the AV control unit is turned ON again.

- When the SD card is not functional at the start of navigation due to a malfunction of the SD card, a normal SD card is inserted and the power of the AV control unit is turned ON again.

DTC Index

INFOID:0000000006838130

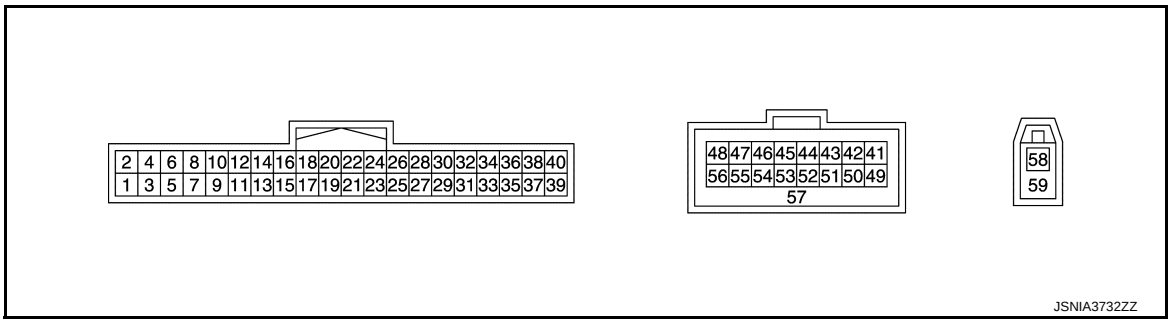
DTC	Display item	Refer to
U1000	CAN COMM CIRC [U1000]	AV-85, "Diagnosis Procedure"
U1010	CONTROL UNIT (CAN) [U1010]	AV-86, "DTC Logic"
U121F	CONTROL UNIT [U121F]	AV-87, "DTC Logic"
U1232	ST ANGLE SEN CALIB [U1232]	AV-88, "Diagnosis Procedure"
U1244	GPS ANTENNA CONN [U1244]	AV-89, "Diagnosis Procedure"
U1258	XM ANTENNA CONN [U1258]	AV-90, "Diagnosis Procedure"
U1263	USB OVERCURRENT [U1263]	AV-91, "Diagnosis Procedure"
U1266	TCU CONN[U1266]	AV-92, "DTC Logic"
U1310	CONTROL UNIT (AV) [U1310]	AV-94, "DTC Logic"
U1300 U1240	• AV COMM CIRCUIT [U1300] • SWITCH CONN [U1240]	AV-93, "Description"

TCU

Reference Value

INFOID:0000000006838132

TERMINAL LAYOUT



INPUT/OUTPUT SIGNAL STANDARD

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
1 (BR)	2 (B)	Battery power supply	Input	Power switch OFF	—	9 - 16 V	Battery Voltage
3 (G)	2 (B)	ACC power supply	Input	Power switch ACC	—	9 - 16 V	12 V
4 (V)	2 (B)	Power switch ON signal	Input	Power switch ON	—	9 - 16 V	12 V
9 (L)	—	EV-CAN (H)	Input/ Output	—	—	—	—
10 (G)	—	EV-CAN (L)	Input/ Output	—	—	—	—
11 (LG)	2 (B)	EV system activation request signal	Output	Power switch OFF	When remote operation is started	9 - 16 V	12 V
41 (Y)	42 (B)	U-VOICE signal	Input	—	—	—	—
46 (V)	2 (B)	Manufacturer Specific signal	—	—	—	—	—
47 (BR)	55 (B)	USB V BUS signal	Input	Power switch ON	—	—	5 V

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
48 (L)	55 (B)	USB D- signal	Input/ Output	—	—	—	—
49 (G)	42 (B)	D-VOICE signal	Output	—	—	—	—
56 (R)	55 (B)	USB D+ signal	Input/ Output	Power switch ON	—	—	—
57	—	Shield	—	—	—	—	—
58	—	TEL antenna signal	Input	—	—	—	—
59	—	Shield	—	—	—	—	—

DTC Index

INFOID:0000000006838133

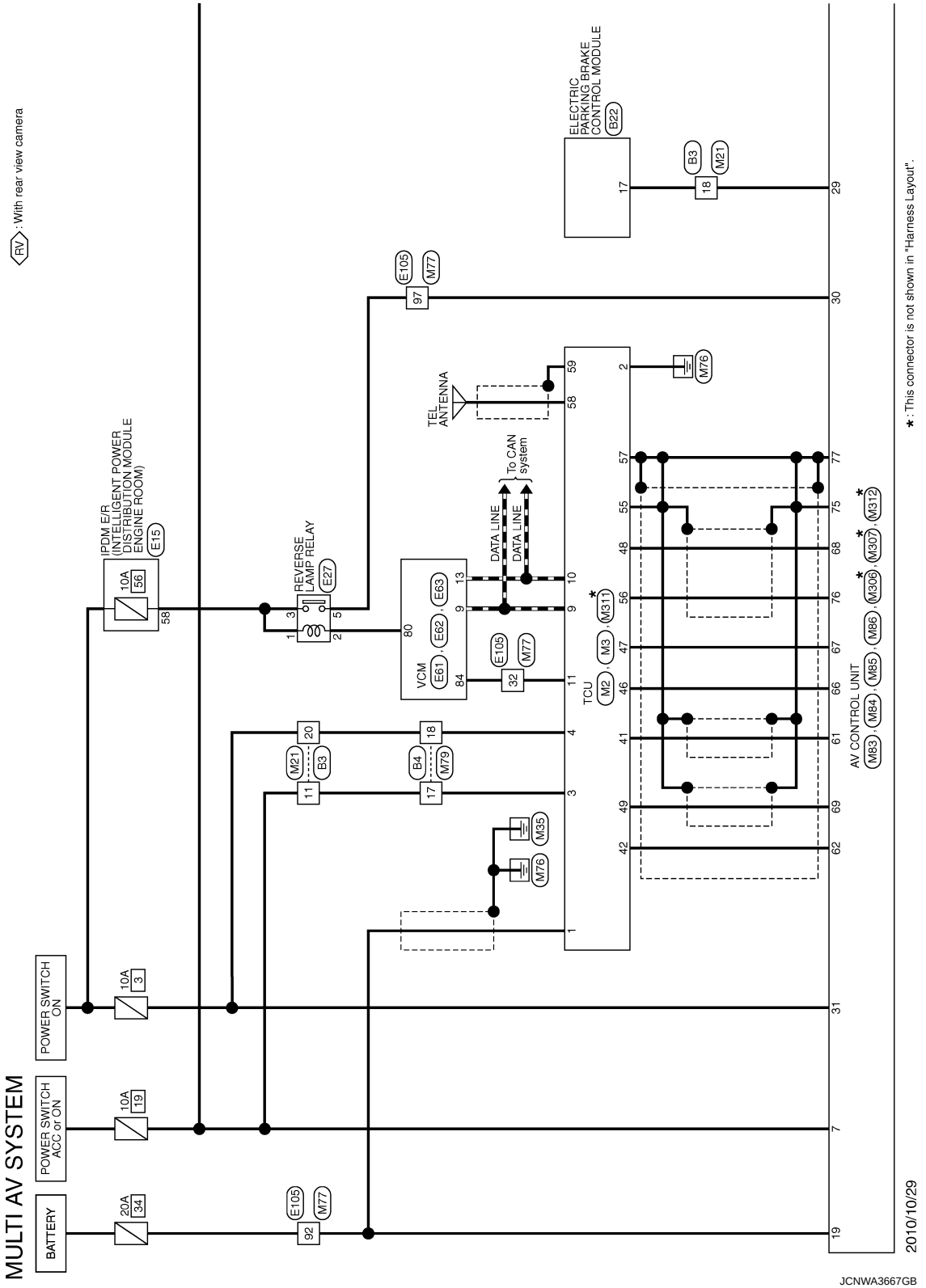
DTC	Display item	Refer to
U1000	CAN COMM CIRC [U1000]	AV-191, "Diagnosis Procedure"
U1010	CONTROL UNIT (CAN) [U1010]	AV-192, "DTC Logic"
U1A00	ACC NO CONN [U1A00]	AV-193, "Diagnosis Procedure"
U1A01	INTERNAL ERROR (TCU) [U1A01]	AV-194, "DTC Logic"
U1A02	TEL COMMUNICATION MODULE [U1A02]	AV-195, "DTC Logic"
U1A03	SIM CARD [U1A03]	AV-196, "DTC Logic"
U1A04	VIN UNFINISHED [U1A04]	AV-197, "DTC Logic"
U1A05	USB COMM [U1A05]	AV-198, "Diagnosis Procedure"
U1A07	TEL ANTENNA SHORT [U1A07]	AV-199, "Diagnosis Procedure"
U1A08	TEL ANTENNA NO CONN [U1A08]	AV-200, "Diagnosis Procedure"

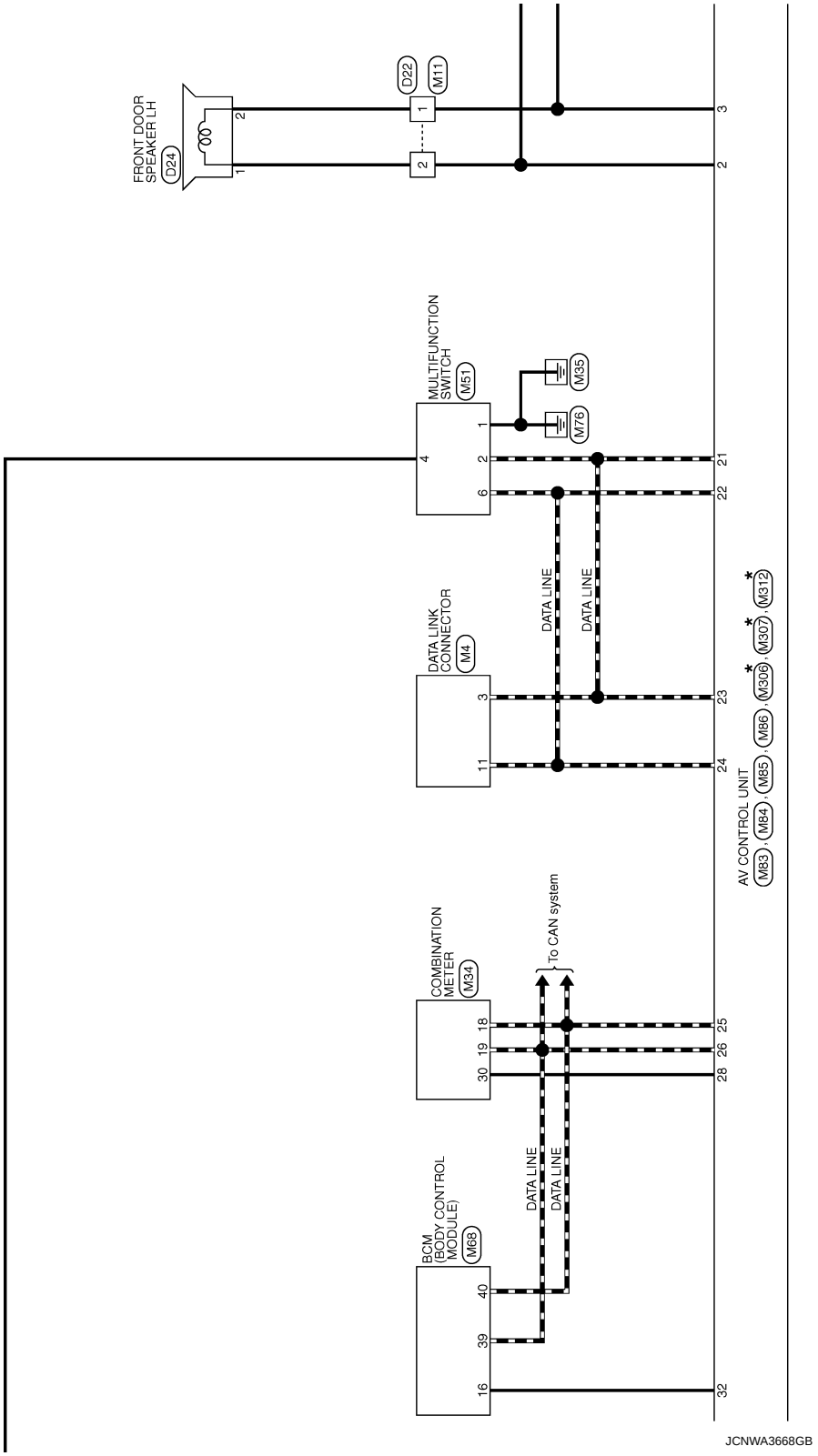
WIRING DIAGRAM

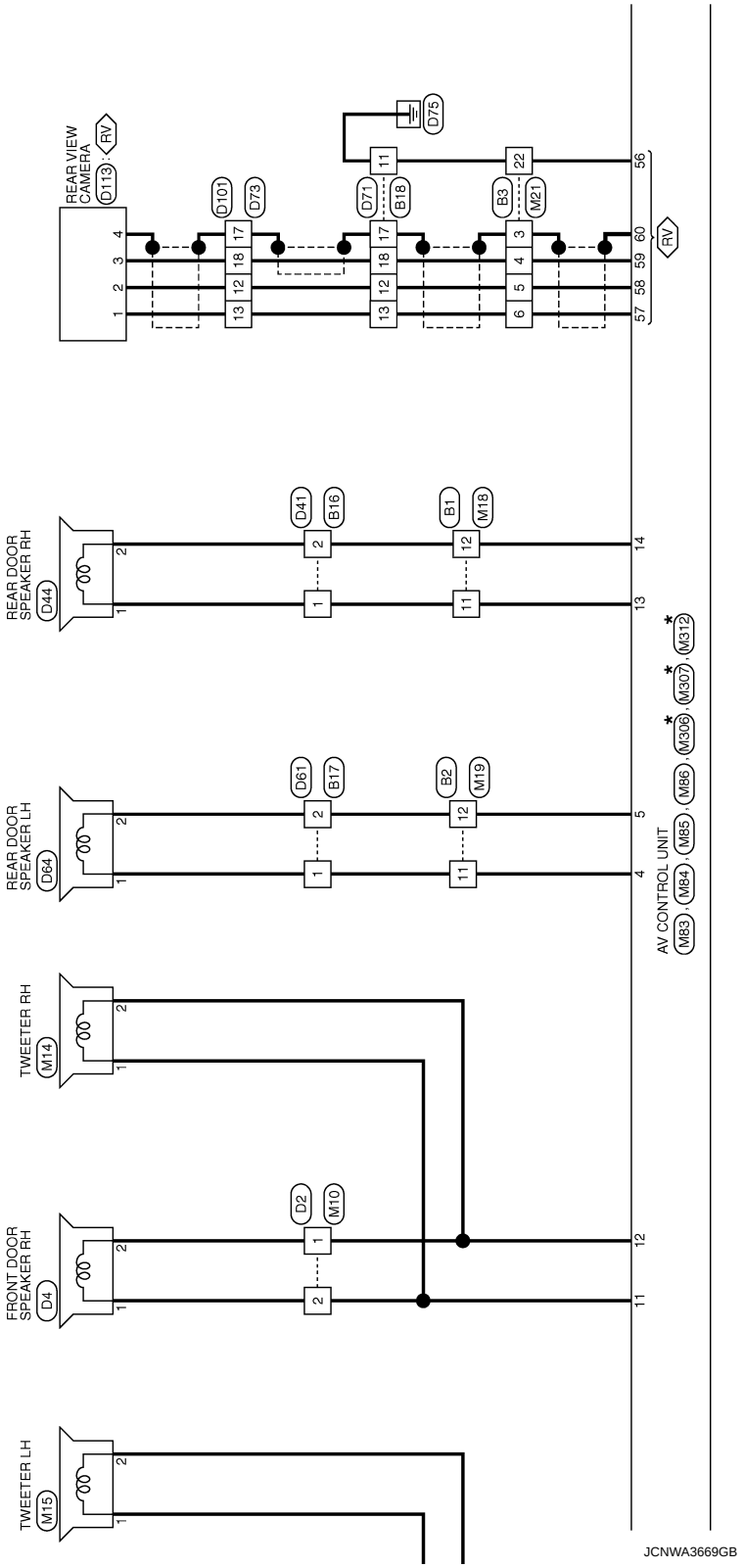
MULTI AV SYSTEM

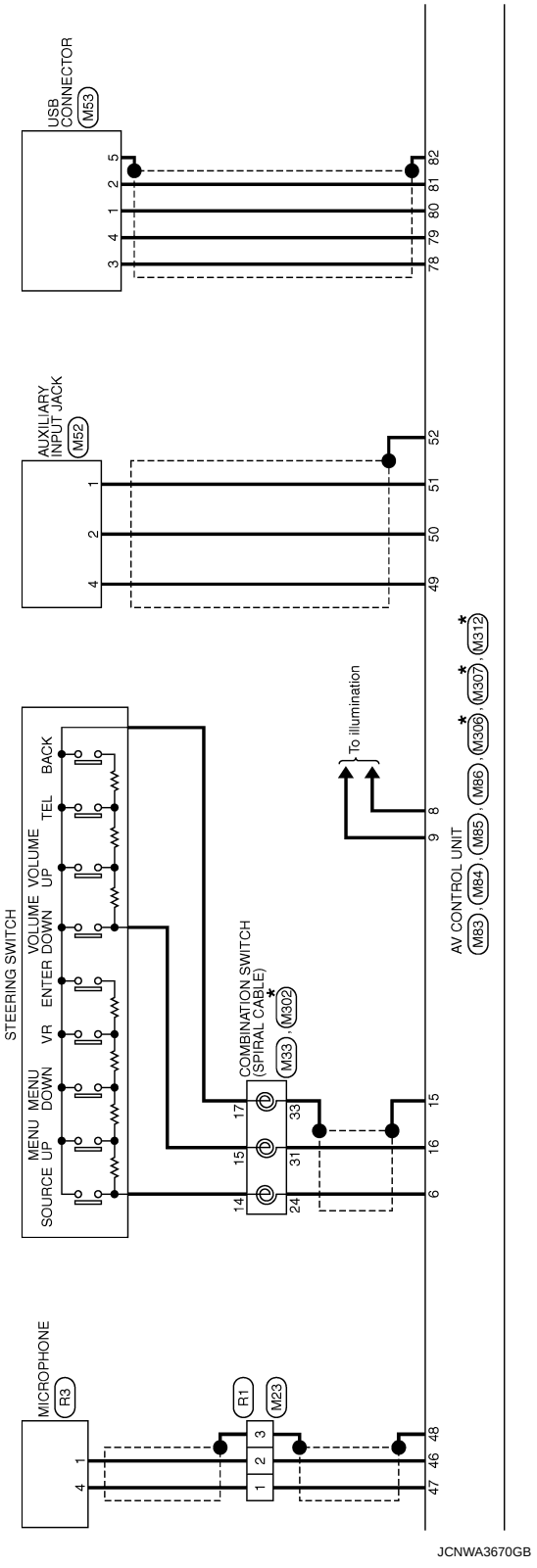
Wiring Diagram

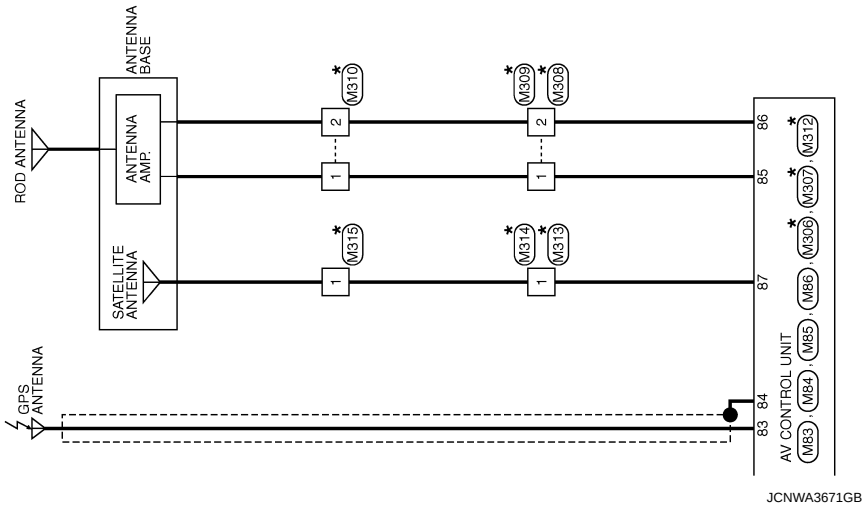
INFOID:0000000006838134

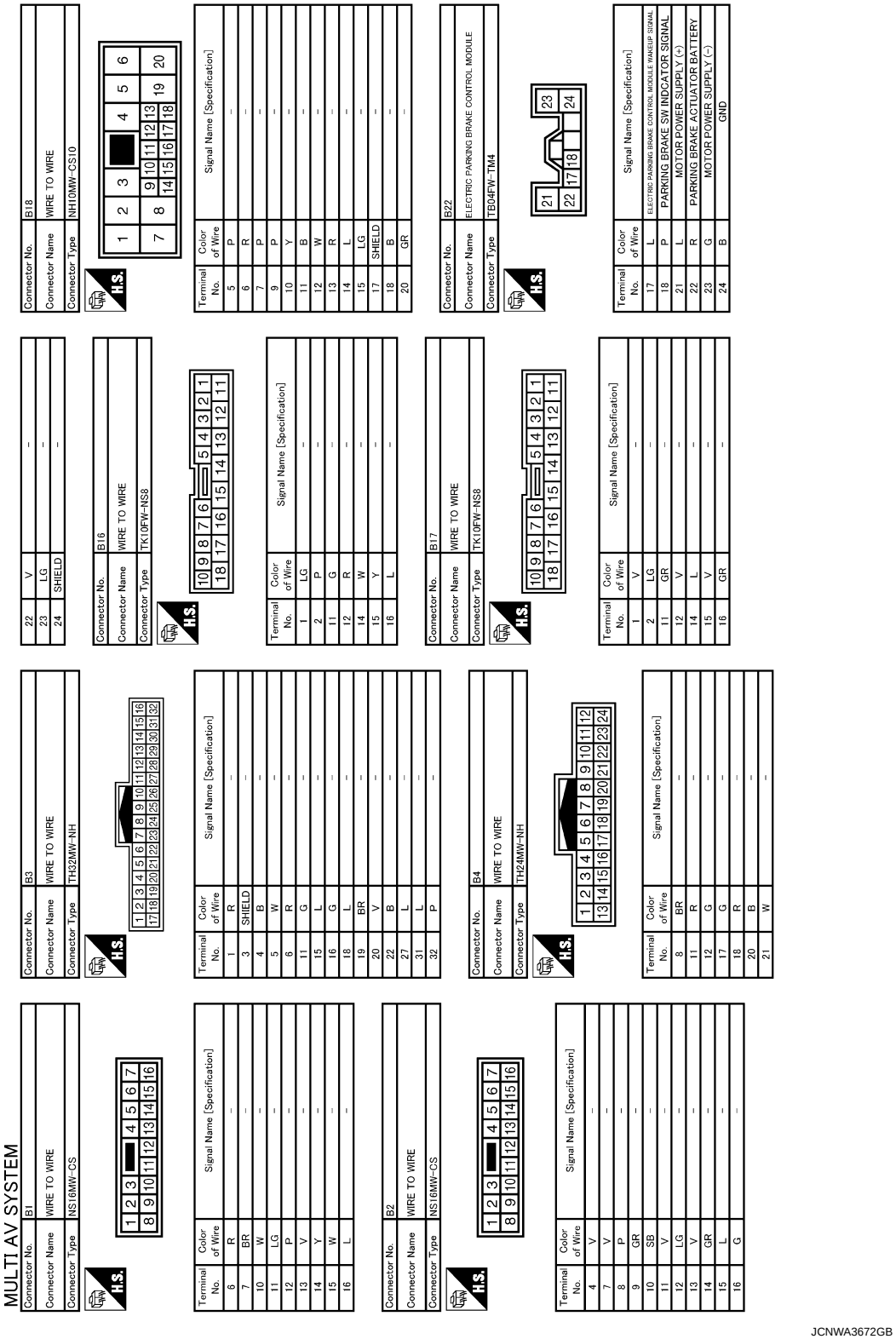



FRONT DOOR SPEAKER LH
D24
D22
M11
MULTIFUNCTION SWITCH
M51
M35
M76
DATA LINK CONNECTOR
M4
DATA LINE
DATA LINE
AV CONTROL UNIT
M83, M84, M85, M86, *M306, *M307, *M312
COMBINATION METER
M34
To CAN system
BCM (BODY CONTROL MODULE)
M68
DATA LINE
DATA LINE
JCNWA3668GB


REAR VIEW CAMERA
D113
RV
D101
D73
D71
B18
D75
B3
M21
RV
REAR DOOR SPEAKER RH
D44
D41
B16
B1
M18
REAR DOOR SPEAKER LH
D64
D61
B17
B2
M19
TWEETER RH
M14
FRONT DOOR SPEAKER RH
D4
D2
M10
TWEETER LH
M15
AV CONTROL UNIT
M83
M84
M85
M86
M306
M307
M312
JCNWA3669GB


USB CONNECTOR
M53
AUXILIARY INPUT JACK
M52
STEERING SWITCH
SOURCE
MENU UP
MENU DOWN
VR
ENTER
VOLUME DOWN
VOLUME UP
TEL
BACK
COMBINATION SWITCH (SPIRAL CABLE)
M33
M302
To illumination
AV CONTROL UNIT
M83
M84
M85
M86
M306
M307
M312
MICROPHONE
R3
R1
M23
JCNWA3670GB


ANTENNA BASE
ROD ANTENNA
ANTENNA AMP.
SATELLITE ANTENNA
GPS ANTENNA
M310
M309
M308
M315
M314
M313
M312
M307
M306
M86
M85
M84
M83
AV CONTROL UNIT
86
85
87
84
83
2
1
JCNWA3671GB



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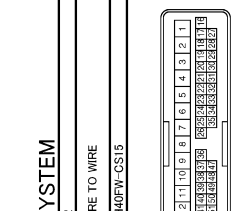
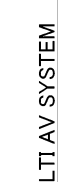
MULTI AV SYSTEM

Connector No.	D2
Connector Name	WIRE TO WIRE
Connector Type	TH40FW-CS15



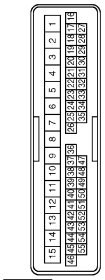
Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	–
2	R	–
3	Y	–
4	V	–
10	BR	–
11	Y	–
12	B	–
13	W	–
14	SB	–
15	R	–
24	Y	–
25	BR	–
26	SHIELD	–
36	B	–
37	P	–
38	Y	–
39	LG	–
44	V	–
45	W	–
46	BG	–

Connector No.	D4
Connector Name	FRONT DOOR SPEAKER RH
Connector Type	NS02FW-CS



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

Connector No.	D22
Connector Name	WIRE TO WIRE
Connector Type	TH40FW-CS15

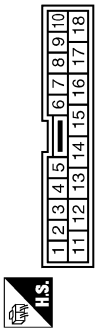


Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
2	V	–
3	SB	–
4	V	–
7	P	–
8	BR	–
9	LG	–
10	Y	–
11	W	–
12	SB	–
13	B	–
14	V	–
15	R	–
24	R	–
25	G	–
26	SHIELD	–
37	LG	–
38	V	–
39	P	–
40	Y	–
41	GR	–
42	V	–
43	L	–
44	L	–
45	LG	–
46	BR	–
47	G	–
48	L	–
49	R	–
50	BR	–

Connector No.	D24
Connector Name	FRONT DOOR SPEAKER LH
Connector Type	NS02FW-CS

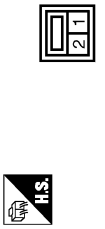
Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	L	–

Connector No.	D41
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



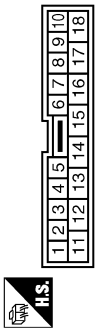
Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
2	P	–
11	G	–
12	V	–
14	LG	–
15	Y	–
16	L	–

Connector No.	D44
Connector Name	REAR DOOR SPEAKER RH
Connector Type	NS02FW-CS



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

Connector No.	D61
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	LG	–
11	G	–
12	V	–
14	L	–
15	BR	–
16	Y	–

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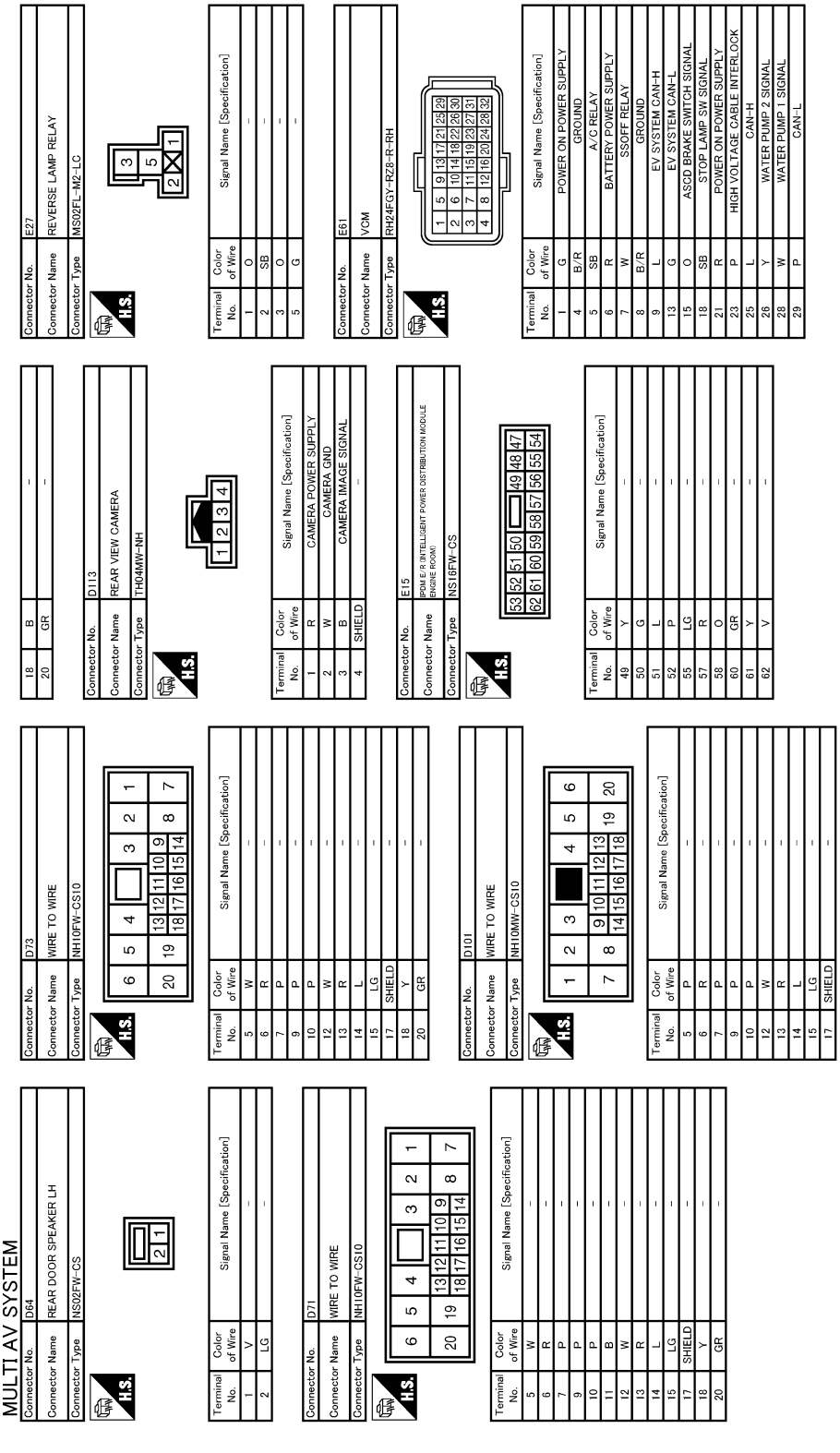

JCNWA3674GB

MULTI AV SYSTEM

Connector No.	E62
Connector Name	VCM
Connector Type	RH40FBR-RZ8-L-RH

Terminal No.	Color of Wire	Signal Name [Specification]
33	L	SENSOR POWER SUPPLY (REFRIGERANT PRESSURE SENSOR)
34	B	REFRIGERANT PRESSURE SENSOR SIGNAL
35	BR	SENSOR GROUND (REFRIGERANT PRESSURE SENSOR)
37	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
38	R	ACCELERATOR PEDAL POSITION SENSOR 1 SIGNAL
39	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 1)
40	SHIELD	–
41	R	SENSOR POWER SUPPLY (BATTERY CURRENT SENSOR)
42	Y	BATTERY CURRENT SENSOR SIGNAL
43	L	SENSOR GROUND (BATTERY CURRENT SENSOR)
45	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
46	R	ACCELERATOR PEDAL POSITION SENSOR 2 SIGNAL
47	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
48	SHIELD	–
50	L	BATTERY TEMPERATURE SENSOR SIGNAL
51	O	COOLANT TEMPERATURE SENSOR SIGNAL
52	W	SENSOR GROUND (COOLANT TEMPERATURE SENSOR)
57	LG	POWER VOLTAGE VARIABLE CONTROL SIGNAL
59	V	RADIATOR FAN CONTROL SIGNAL
62	G	WATER PUMP 1 ACTIVATION SIGNAL
64	R	WATER PUMP 2 ACTIVATION SIGNAL
67	Y	DC/DC CONVERTER TEMPERATURE SIGNAL
70	W	DC/DC CONVERTER ACTIVATION SIGNAL
73	GR	F/S RELAY
75	W	F/S CHG RELAY
77	LG	F/S RELAY POWER SUPPLY
78	G	M/C RELAY
80	SB	REVERSE LAMP RELAY

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 STTERING SWICH GROUND
110	L/Y	SYSTEM MAIN RELAY 2
111	B/R	GROUND
112	B/R	GROUND

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	–
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.	M2
Connector Name	TCU
Connector Type	TH40FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	BATTERY POWER SUPPLY
2	B	GROUND
3	G	ACC POWER SUPPLY
4	V	POWER SWITCH ON SIGNAL
9	L	EV SYSTEM CAN-H
10	G	EV SYSTEM CAN-L
11	LG	EV SYSTEM ACTIVATION REQUEST SIGNAL

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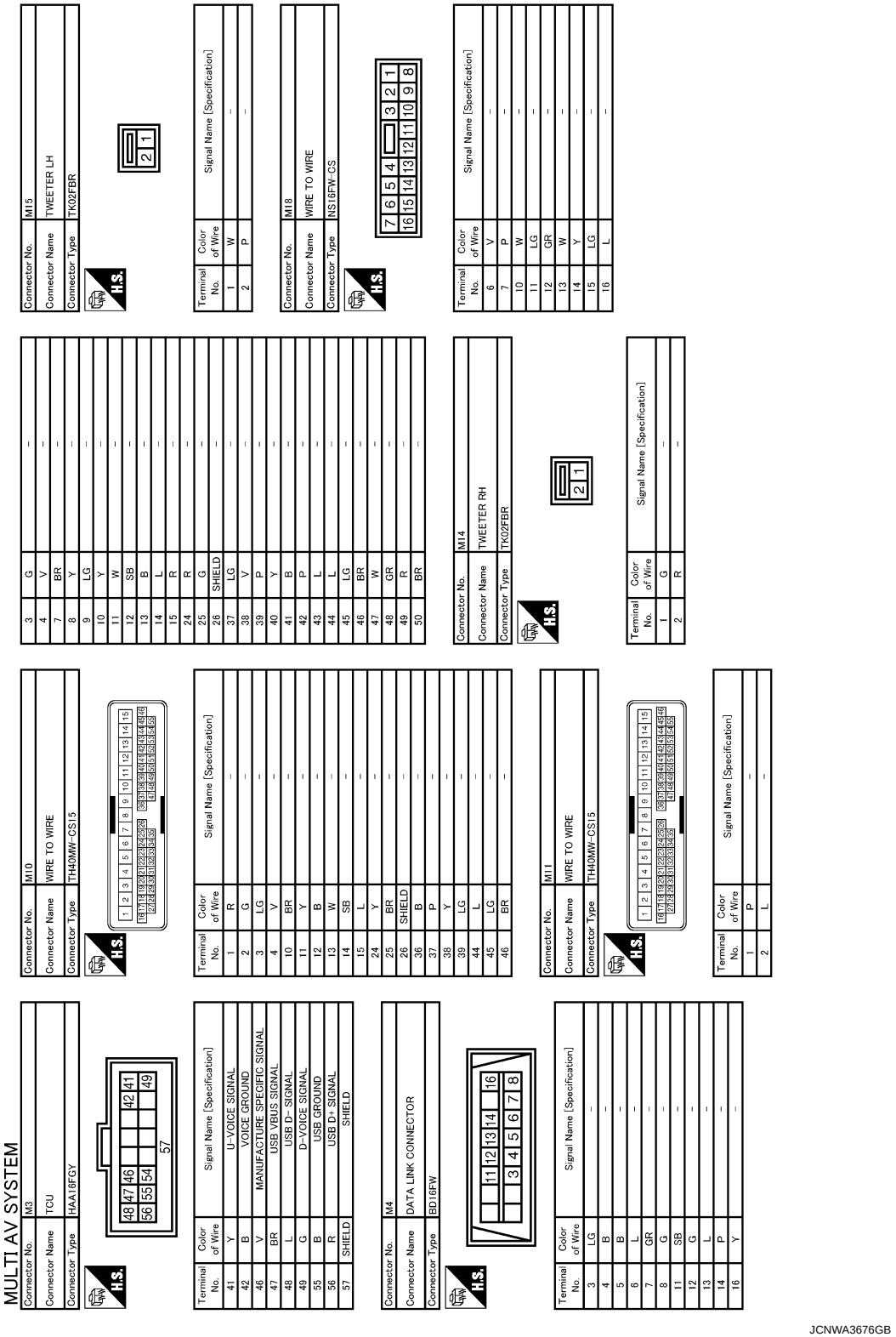

JCNWA3676GB

MULTI AV SYSTEM

Connector No.	M19
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
4	BR	–
7	V	–
8	P	–
9	L	–
10	V	–
11	V	–
12	R	–
13	BR	–
14	Y	–
15	L	–
16	G	–

Connector No.	M21
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
3	SHIELD	–
4	B	–
5	W	–
6	R	–
11	G	–
15	L	–
16	G	–
18	BR	–
19	G	–
20	V	–

22	B	–
27	L	–
31	L	–
32	P	–

Connector No.	M23
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH

H.S.

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

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	L	–
3	SHIELD	–
5	B	–
6	BR	–
7	P	–
8	Y	–
9	R	–
10	B	–
11	O	–

Connector No.	M33
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08FGY-1V

H.S.

24	25	26	27
31	32	33	34

Terminal No.	Color of Wire	Signal Name [Specification]
24	BR	–
25	LG	–
26	B	–
31	Y	–
32	SB	–
33	SHIELD	–

34	G	–

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

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 [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
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	COMMUNICATION SIGNAL (UPPER → METER)
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.	M51
Connector Name	MULTIFUNCTION SWITCH
Connector Type	TH08FW-NH

H.S.

4	2	1
8	6	5

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	–
2	LG	–
4	R	–
5	B	–
6	SB	–
8	W	–

Connector No.	M52
Connector Name	AUXILIARY INPUT JACK
Connector Type	TH04FW-NH

H.S.

1	2	4

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

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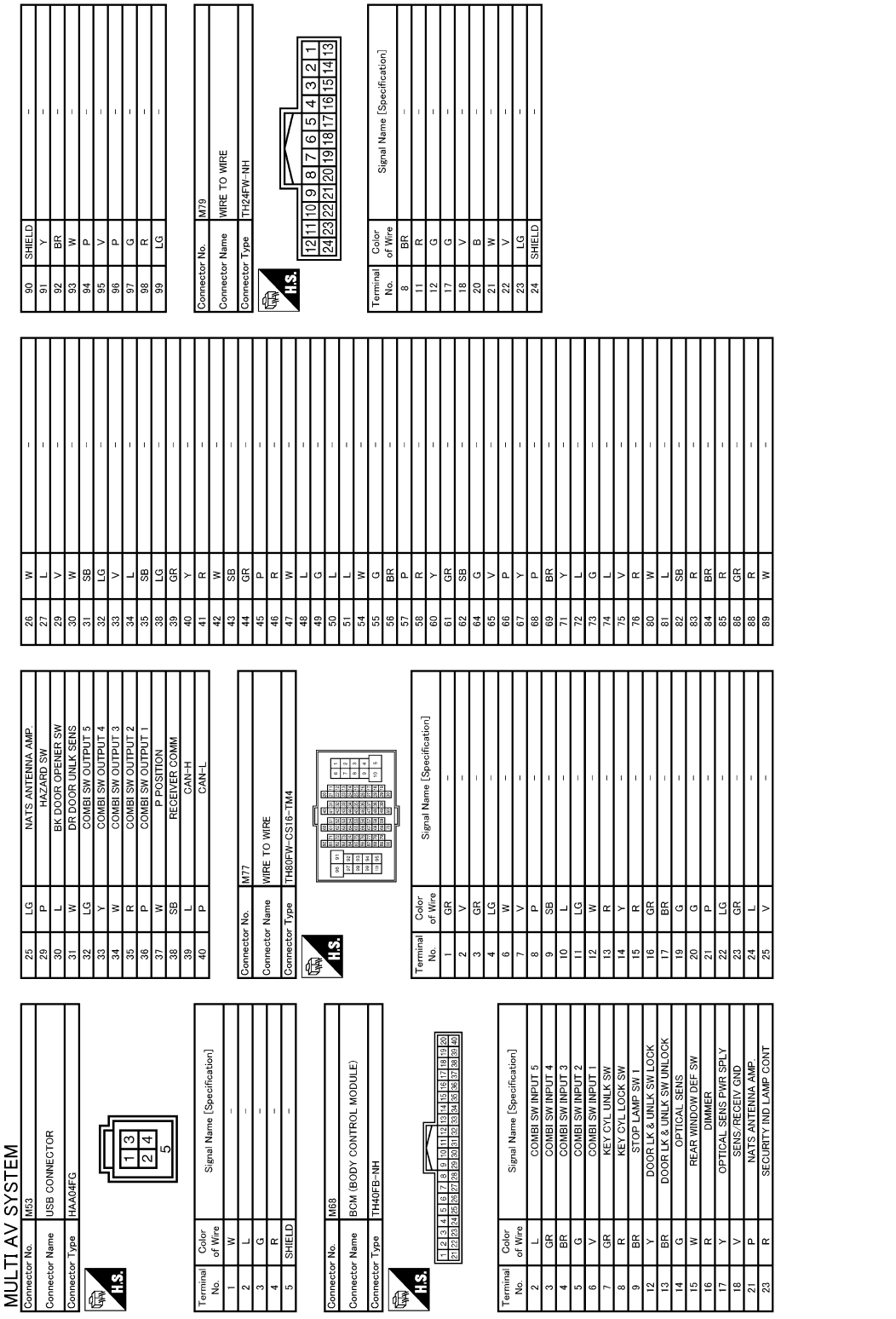

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MULTI AV SYSTEM

Connector No.	M83
Connector Name	AV CONTROL UNIT
Connector Type	TH18FW-CS2

Terminal No.	Color of Wire	Signal Name [Specification]
2	L	SOUND SIGNAL FRONT LH (+)
3	P	SOUND SIGNAL FRONT LH (-)
4	V	SOUND SIGNAL REAR LH (+)
5	R	SOUND SIGNAL REAR LH (-)
6	BR	STEERING SWITCH SIGNAL A
7	L	ACC POWER SUPPLY
8	B	GROUND
9	W	ILLUMINATION SIGNAL
11	G	SOUND SIGNAL FRONT RH (+)
12	R	SOUND SIGNAL FRONT RH (-)
13	LG	SOUND SIGNAL REAR RH (+)
14	GR	SOUND SIGNAL REAR RH (-)
15	SHIELD	STEERING SWITCH SIGNAL GROUND
16	Y	STEERING SWITCH SIGNAL B
19	BR	BATTERY POWER SUPPLY

Connector No.	M84
Connector Name	AV CONTROL UNIT
Connector Type	TH40FW-NH

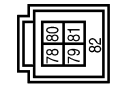
Terminal No.	Color of Wire	Signal Name [Specification]
21	LG	AV COMM (L)
22	SB	AV COMM (H)
23	LG	AV COMM (L)
24	SB	AV COMM (H)
25	P	CAN-L
26	L	CAN-H
28	GR	VEHICLE SPEED SIGNAL (8-PULSE)

29	BR	PARKING BRAKE SIGNAL
30	G	REVERSE SIGNAL
31	V	POWER SWITCH ON SIGNAL
32	R	DIMMER SIGNAL
46	L	MICROPHONE SIGNAL
47	Y	MICROPHONE VCC
48	SHIELD	MICROPHONE SHIELD
49	R	AUX SOUND SIGNAL LH (+)
50	W	AUX SOUND SIGNAL RH (+)
51	B	AUX SOUND SIGNAL (-)
52	SHIELD	SHIELD
56	B	CAMERA CONNECTION RECOGNITION SIGNAL
57	R	CAMERA POWER SUPPLY
58	W	CAMERA GROUND
59	R	CAMERA IMAGE SIGNAL
60	SHIELD	SHIELD

Connector No.	M85
Connector Name	AV CONTROL UNIT
Connector Type	HAA16FGY

Terminal No.	Color of Wire	Signal Name [Specification]
61	SB	U-VOICE SIGNAL
62	P	VOICE GROUND
66	P	MANUFACTURE SPECIFIC SIGNAL
67	L	USB VBUS SIGNAL
68	Y	USB D- SIGNAL
69	O	D-VOICE SIGNAL
75	–	USB GROUND
76	LG	USB D+ SIGNAL
77	–	SHIELD

Connector No.	M86
Connector Name	AV CONTROL UNIT
Connector Type	HAA04FL



Terminal No.	Color of Wire	Signal Name [Specification]
78	G	USB GROUND
79	R	USB D- SIGNAL
80	W	V BUS SIGNAL
81	L	USB D+ SIGNAL
82	SHIELD	SHIELD

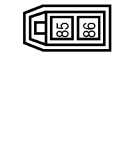
Connector No.	M302
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08FGY

Terminal No.	Color of Wire	Signal Name [Specification]
13	R	–
14	W	–
15	L	–
16	B	–
17	BR	–
18	G	–
19	Y	–
20	Y	–

Connector No.	M306
Connector Name	AV CONTROL UNIT
Connector Type	GT5-1S-HU

Terminal No.	Color of Wire	Signal Name [Specification]
83	–	GPS ANTENNA SIGNAL
84	–	SHIELD

Connector No.	M307
Connector Name	AV CONTROL UNIT
Connector Type	GT13SH-1/1S-HU



Terminal No.	Color of Wire	Signal Name [Specification]
85	–	ANTENNA AMP. ON SIGNAL
86	–	Radio antenna signal

Connector No.	M308
Connector Name	WIRE TO WIRE
Connector Type	GT13SS-1/1S-HU

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

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MULTI AV SYSTEM

Connector No.	M309
Connector Name	WIRE TO WIRE
Connector Type	GT13SSN-1/1PP-HU

H.S.

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

Connector No.	M310
Connector Name	ANTENNA BASE
Connector Type	GT13SSN-1/1PP-HU

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	–	ANTENNA AMP. ON SIGNAL
2	–	AM-FM MAIN

Connector No.	M311
Connector Name	TCU
Connector Type	GT16C-1S-HU

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
58	–	TEL ANTENNA SIGNAL
59	–	SHIELD

Connector No.	M312
Connector Name	AV CONTROL UNIT
Connector Type	FAKRA-JACK

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
87	–	SATELLITE ANTENNA

Connector No.	M313
Connector Name	WIRE TO WIRE
Connector Type	GT16C-1S-HU(A)

H.S.

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

Connector No.	M314
Connector Name	WIRE TO WIRE
Connector Type	GT16C-1PP-HU(A)

H.S.

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

Connector No.	M315
Connector Name	ANTENNA BASE
Connector Type	GT16C-1PP-HU(B)

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	–	SATELLITE ANTENNA

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	P	–
2	L	–
3	SHIELD	–
5	B	–
6	R	–
7	Y	–
8	B/Y	–
9	V	–
10	G	–
11	B/R	–

Connector No.	R3
Connector Name	MICROPHONE
Connector Type	TK04FW

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
4	P	–

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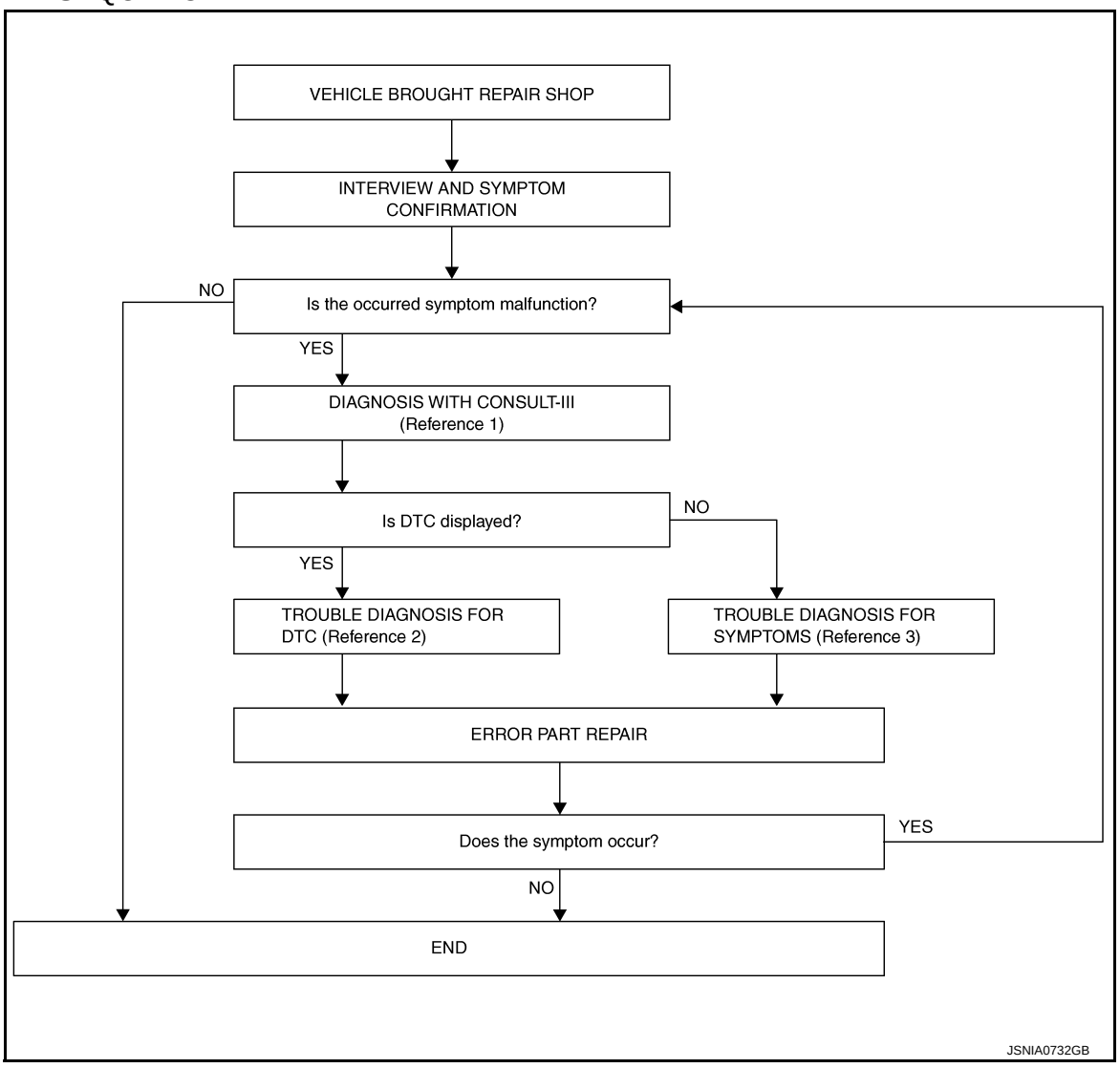
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000006838135

OVERALL SEQUENCE



- Reference 1··· Refer to AV-53, "CONSULT Function".
- Reference 2··· Refer to AV-63, "DTC Index".
- Reference 3··· Refer to AV-106, "Symptom Table".

DETAILED FLOW

1. INTERVIEW AND SYMPTOM CONFIRMATION

Check the malfunction symptoms by performing the following items.
- Interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred).
- Check the symptom.

Is the occurred symptom malfunction?

YES >> GO TO 2.
NO >> INSPECTION END

2. DIAGNOSIS WITH CONSULT

1. Connect CONSULT and perform a self-diagnosis for “MULTI AV”. Refer to AV-53, "CONSULT Function".
   NOTE:
   Skip to step 4 of the diagnosis procedure if “MULTI AV” is not displayed.
2. Check if any DTC is displayed in the “Self-Diagnosis Results”.

Is DTC displayed?

YES >> GO TO 3.
NO >> GO TO 4.

3. TROUBLE DIAGNOSIS FOR DTC

1. Check the DTC indicated in the “Self-Diagnosis Results”.
2. Perform the relevant diagnosis referring to the DTC Index. Refer to AV-63, "DTC Index".

>> GO TO 5.

4. TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to AV-106, "Symptom Table".

>> GO TO 5.

5. ERROR PART REPAIR

1. Repair or replace the identified malfunctioning parts.
2. Perform a self-diagnosis for “MULTI AV” with CONSULT.
   NOTE:
   Erase the stored self-diagnosis results after repairing or replacing the relevant components if any DTC has been indicated in the “Self-Diagnosis Results”.
3. Check that the symptom does not occur.

Does the symptom occur?

YES >> GO TO 1.
NO >> INSPECTION END

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL

ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL : Description

INFOID:0000000006838136

When removed the 12V battery terminal, the following work is required.

WORK AFTER THE AV CONTROL UNIT REPLACEMENT
- Re-registration of user ID and password to the AV control unit.
- Time adjustment check with VCM check.

WORK AFTER REMOVED THE 12V BATTERY TERMINAL
Time adjustment check with VCM check.

ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL : Work Procedure

INFOID:0000000006838137

When not replace the AV control unit, starting from work procedure 2.

1. REPLACE AV CONTROL UNIT

Replace the AV control unit. AV-119, "Removal and Installation".

>> GO TO 2.

2. OBTAIN THE CURRENT TIME.

1. Turn the power switch to the ON or Ready position in a location where the GPS antenna signal can be received.
2. Start the AV control unit and receive the current time with the GPS antenna.

>> GO TO 3.

3. CHECK THE TIME WITH VCM.

1. Press “ ”switch and select “Charging Timer”on the menu screen.
2. Confirm that the time is displayed at the upper right (GPS acquisition time) and lower left (VCM memory time) of the “Charging Timer” screen.
3. If the time does not match after 1 or 2 minutes from the screen display, the update screen is displayed.

Is the update screen displayed?

NO >> WORK END
YES >> GO TO 4.

4. TIME ADJUSTMENT CHECK WITH VCM

1. Press “correct time” displayed on the screen to correct the time.
2. After correction, confirm that the time displayed at the upper right (GPS acquisition time) and lower left (VCM memory time) of the “Charging Timer” screen are the same.

>> WORK END

SOFTWARE UPDATE (AV CONTROL UNIT)

SOFTWARE UPDATE (AV CONTROL UNIT) : Description

INFOID:0000000006968052

The software of the AV control unit can be updated by using SD card.

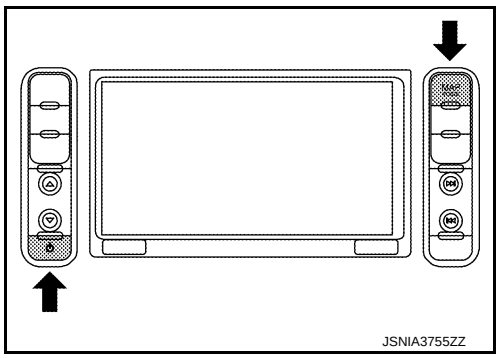
SOFTWARE UPDATE (AV CONTROL UNIT) : Work Procedure

INFOID:0000000006968053

1. START OF CONFIRMATION/ADJUSTMENT MODE

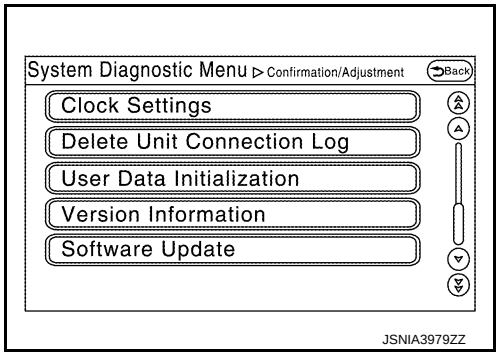
1. Set the power switch on ACC.

2. With AUDIO OFF, press “MAP” switch three times, “⏻”switch twice, and press “MAP” switch once to start the On Board Diagnosis Function.



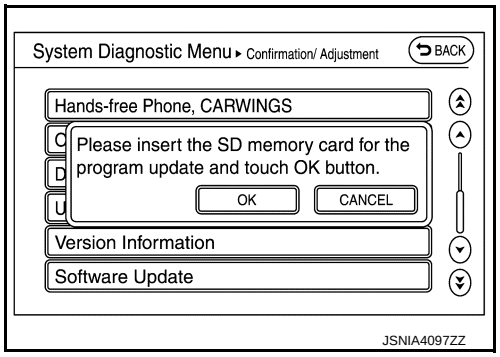
3. Select “Software Update” in Confirmation/Adjustment mode.

>> GO TO 2.

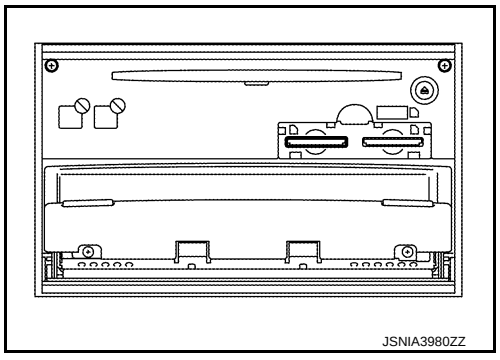


2. UPDATE THE SOFTWARE OF THE AV CONTROL UNIT

1. “Please insert SD Card for the program update and Push OK button” pops up.



2. Press the OPEN/TILT switch of the AV control unit to open the display.
3. Remove the cover of the SD slot and insert the SD card for software update into the SD card sub-slot (on the left).
   NOTE:
   Leave the map SD card inserted in the main slot (on the right).
4. Press the OPEN/TILT switch of the AV control unit to close the display.
5. Select “OK” in the pop-up confirmation to start software update.
   NOTE:
   The instructions below must be followed during software update.
   - Never turn the power switch OFF.
   - Never remove the SD card.
   - Never use other functions. They are not available.

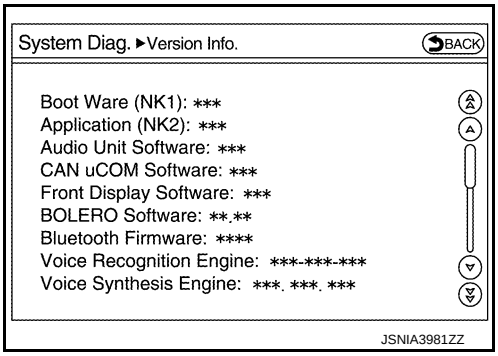


6. When the software update is complete, “The update of the program completed successfully. Please switch the power off and on again to reboot.” is shown.
7. Press the OPEN/TILT switch of the AV control unit to open the display.
8. Remove the SD card for software update from the SD card sub-slot (on the left) and install the cover of the SD slot.
9. Turn the power switch OFF.

>> GO TO 3.

3. CHECK THE UPDATED SOFTWARE VERSION OF THE AV CONTROL UNIT

1. Set the power switch on ACC after a lapse of 15 seconds or more after the power switch is turned OFF.
2. With AUDIO OFF, press “MAP” switch three times, “⏻”switch twice, and press “MAP” switch once to start the On Board Diagnosis Function.
3. Select “Version Information” in Confirmation/Adjustment mode.
4. Check version information to see that the Boot ware and the application version are updated.



>> End of program.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006970928

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on board multiplex communication line with high data communication speed and excellent error detection ability. A modern vehicle is equipped with many ECMs, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, 2 control units are connected with 2 communication lines (CAN H-line and 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.
Refer to LAN-33, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart" for details of the communication signal.

DTC Logic

INFOID:0000000006970929

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Malfunction detection condition	Probable malfunction location
U1000	CAN COMM CIRC [U1000]	When the AV control unit cannot communicate for 2 seconds or more.	CAN communication system

Diagnosis Procedure

INFOID:0000000006970930

1.PERFORM SELF-DIAGNOSIS

1. Turn the ignition switch ON and hold it for 2 seconds or more.
2. Check the self-diagnosis result of “multi-AV”.

Is CAN communication system displayed?

YES >> Refer to LAN-15, "Trouble Diagnosis Procedure".
NO >> Refer to GI-51, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:0000000006970931

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Malfunction detection condition	Action to take
U1010	CONTROL UNIT (CAN) [U1010]	Malfunction is detected during initial diagnosis of the AV control unit CAN controller.	Replace the AV control unit if malfunction constantly occurs. Refer to AV-119, "Removal and Installation".

U121F AV CONTROL UNIT

DTC Logic

INFOID:0000000006970932

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U121F	CONTROL UNIT [U121F]	AV control unit malfunction is detected	Replace the AV control unit if the malfunction constantly occurs. Refer to AV-119, "Removal and Installation".

U1232 STEERING ANGLE SENSOR

DTC Logic

INFOID:0000000006970933

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1232	Steering angle sensor calibration [U1232]	Neutral position adjustment of the steering angle sensor is not complete.	Perform neutral position adjustment of the steering angle sensor. Refer to BRC-59, "Work Procedure".

Diagnosis Procedure

INFOID:0000000006970934

1.ADJUST NEUTRAL POSITION OF STEERING ANGLE SENSOR

When U1232 is detected, adjust the neutral position of the steering angle sensor.

>> Perform neutral position adjustment of the steering angle sensor. Refer to BRC-59, "Work Procedure".

U1244 GPS ANTENNA

DTC Logic

INFOID:0000000006970935

DTC	Display contents of CONSULT	DTC detection condition	Possible malfunction factor/Action to take
U1244	GPS ANTENNA CONN [U1244]	GPS antenna connection malfunction is detected	• Check the connection status of the GPS antenna. • Replace the GPS antenna. Refer to AV-124, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006970936

1. CHECK THE GPS ANTENNA CONNECTOR.

Check the connection status of the GPS antenna connector.

Is the check result normal?

YES >> GO TO 2.
NO >> Repair items found in non-standard condition.

2. CHECK THE GPS ANTENNA FEEDER.

Check the GPS antenna feeder visually.

Is the check result normal?

YES >> GO TO 3.
NO >> Replace the GPS antenna. Refer to AV-124, "Removal and Installation".

3. CHECK AV CONTROL UNIT VOLTAGE

1. Disconnect the GPS antenna connector.
2. Turn power switch ON.
3. Check voltage between AV control unit connector and ground.

AV control unit	Ground	Voltage
Terminal		
83		Approximately 5.0 V

Is the check result normal?

YES >> Replace the GPS antenna. Refer to AV-124, "Removal and Installation".
NO >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".

U1258 SATELLITE RADIO ANTENNA

DTC Logic

INFOID:0000000006838186

DTC	Display contents of CONSULT	DTC Detection Condition	Possible causes
U1258	XM ANTENNA CONN [U1258]	Satellite radio antenna connection malfunction is detected.	Satellite radio antenna disconnection.

Diagnosis Procedure

INFOID:0000000006838187

1.SATELLITE RADIO ANTENNA CHECK

Visually check satellite radio antenna and antenna feeder.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair malfunctioning parts.

2.CHECK AV CONTROL UNIT VOLTAGE

1. Disconnect satellite radio antenna connector.
2. Turn ignition switch ON.
3. Check voltage between AV control unit and ground.

(+)		
AV control unit	(–)	Voltage (Approx.)
Terminal		
87	Ground	5.0 V

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace AV control unit. Refer to AV-119, "Removal and Installation".

U1263 USB

DTC Logic

INFOID:0000000006970937

DTC DETECTION LOGIC

NOTE:
Before performing the diagnosis, be sure to check that the external input device has no malfunction.

DTC	Display contents of CONSULT	Malfunction detection condition	Action to take
U1263	USB overcurrent [U1263]	Overcurrent of the USB connector is detected.	Check the USB harness between the AV control unit and USB connector.

Diagnosis Procedure

INFOID:0000000006970938

1.CHECK USB HARNESS

Check the USB harness visually and check if there is any pinching.

Is the check result normal?

YES >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".
NO >> Replace the USB harness. Refer to AV-137, "Removal and Installation".

U1266 AV CONTROL UNIT

DTC Logic

INFOID:0000000006970939

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1266	TCU CONN [U1266]	Malfunction is detected between the AV control unit and TCU.	Check the connection between the AV control unit and TCU.

U1300 AV COMM CIRCUIT

Description

INFOID:0000000006970940

U1300 is displayed when the AV signal error is detected for the multi AV system. It is always displayed together with the error of the control unit connected to the AV control unit via AV communication. Determine the possible malfunction cause from the table below.

SELF-DIAGNOSIS RESULTS DISPLAY ITEM

DTC	Display contents of CONSULT	Description	Probable malfunction location
U1300 U1240	• AV COMM CIRCUIT [U1300] • SWITCH CONN [U1240]	When either one of the following items are detected: • multifunction switch power supply and ground circuits are malfunctioning. • AV communication circuits between the AV control unit and multifunction switch are malfunctioning.	• Multifunction switch power supply and ground circuits. • AV communication circuits between AV control unit and multifunction switch.

U1310 AV CONTROL UNIT

DTC Logic

INFOID:0000000006970941

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1310	CONTROL UNIT (AV) [U1310]	AV communication circuit initial diagnosis malfunction is detected	Replace the AV control unit if the malfunction constantly occurs. Refer to AV-119, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
AV CONTROL UNIT

AV CONTROL UNIT : Diagnosis Procedure

INFOID:0000000006970942

1.CHECK FUSE

Check if the fuse is burned out.

Power supply	Fuse No.
BAT	34
Power switch ACC	19
Power switch ON	3

Is the check result normal?

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

2.CHECK BATTERY VOLTAGE

Check the voltage between AV control unit harness connector and ground.

Signal	AV control unit	Probe		Test condition	Standard	Reference value
		Terminal				
	Connector	(+)	(-)	Power switch		
BAT	M83	19	Ground	OFF	9 – 16 V	Battery voltage
ACC		7		ACC	4.5 – 16 V	
ON	M84	31		ON	5.42 V or more	12 V

Is the check result normal?

YES >> INSPECTION END
NO >> Repair the harness between the AV control unit and fuse.

MICROPHONE SIGNAL CIRCUIT

Description

INFOID:0000000006970943

Power is supplied from the AV control unit to the microphone. The microphone transmits the sound voice to the AV control unit.

Diagnosis Procedure

INFOID:0000000006970944

1.CHECK HARNESS CONTINUITY BETWEEN AV CONTROL UNIT AND MICROPHONE

1. Turn the ignition switch OFF.
2. Disconnect the AV control unit and microphone connectors.
3. Check for continuity between the AV control unit harness connector and microphone harness connector.

AV control unit		Microphone		Continuity
Connector	Terminal	Connector	Terminal	
M84	46	R3	1	Exists
	47		4	
	48		2	

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

AV control unit		Ground	Continuity
Connector	Terminal		
M84	46		Does not exist
	47		

Is the check result normal?

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

2.CHECK MICROPHONE POWER SUPPLY VOLTAGE

1. Connect the AV control unit connector.
2. Turn power switch ON.
3. Check voltage between AV control unit harness connectors.

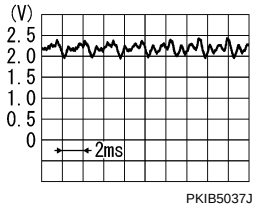
Probe				Standard	Reference value
(+)		(–)			
AV control unit					
Connector	Terminal	Connector	Terminal		
M84	47	M84	48	4.7 – 5.3 V	Approximately 5 V

Is the check result normal?

YES >> GO TO 3.
NO >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".

3.CHECK MICROPHONE SIGNAL

1. Turn the ignition switch OFF.
2. Connect the microphone connector.
3. Turn power switch ON.
4. Check signals between the AV control unit harness connector terminals.

Probe				Test condition	Standard	Reference value
(+)		(–)				
AV control unit						
Connector	Terminal	Connector	Terminal			
M84	46	M84	48	Microphone sound input	The value between the maximum input voltage and the minimum input voltage is 4.72 V or less.	 PKIB5037J

Is the check result normal?

YES >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".
NO >> Replace the microphone. Refer to AV-129, "Removal and Installation".

REAR VIEW CAMERA IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000006970945

When the reverse signal is input, the AV control unit supplies power to the rear view camera and receives the camera image from the rear view camera.

Diagnosis Procedure

INFOID:0000000006970946

1.CONTINUITY CHECK OF REAR VIEW CAMERA POWER

1. Turn power switch OFF.
2. Disconnect the AV control unit and rear view camera connectors.
3. Check for continuity between the AV control unit harness connector and rear view camera harness connector.

AV control unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M84	57	D113	1	Exists

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

AV control unit		Ground	Continuity
Connector	Terminal		
M84	57		Does not exist

Is the check result normal?

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

2.CONTINUITY CHECK OF REAR VIEW CAMERA POWER

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

Probe				Test condition	Standard	Reference value
(+)		(–)				
AV control unit						
Connector	Terminal	Connector	Terminal			
M84	57	M84	58	In rear view camera image	5.9 – 6.5 V	Approximately 6 V

Is the check result normal?

YES >> GO TO 3.
NO >> Repair the AV control unit. Refer to AV-119, "Removal and Installation".

3.CONTINUITY CHECK OF REAR VIEW CAMERA IMAGE

1. Turn power switch OFF.
2. Disconnect the AV control unit connector.
3. Check for continuity between the AV control unit harness connector and rear view camera harness connector.

AV control unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M84	59	D113	3	Exists

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

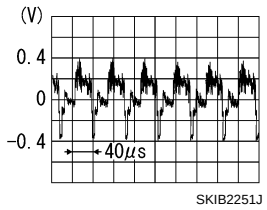
AV control unit		Ground	Continuity
Connector	Terminal		
M84	59		Does not exist

Is the check result normal?

YES >> GO TO 4.
NO >> Repair the harnesses or connectors.

4. CHECK REAR VIEW CAMERA SIGNAL IMAGE

1. Connect AV control unit and rear view camera connectors.
2. Turn power switch ON.
3. Check for signals between the AV control unit harness connector and ground.

Probe				Test condition	Standard	Reference value
(+)		(–)				
AV control unit						
Connector	Terminal	Connector	Terminal			
M84	59	M84	58	Showing rear view camera image	Input the waveform synchronized with the rear view camera image.	

SKIB2251J

Is the check result normal?

YES >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".
NO >> Replace the rear view camera. Refer to AV-135, "Removal and Installation".

STEERING SWITCH SIGNAL A CIRCUIT

Description

INFOID:0000000006970947

Transmits the steering switch signal to the AV control unit.

Diagnosis Procedure

INFOID:0000000006970948

1.CHECK CONTINUITY OF STEERING SWITCH SIGNAL A CIRCUIT

1. Turn power switch OFF.
2. Disconnect AV control unit and spiral cable connectors.
3. Check for continuity between AV control unit harness connector and spiral cable connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M83	6	M33	24	Exists

4. Check for continuity between AV control unit harness connector and ground.

AV control unit		Ground	Continuity
Connector	Terminal		
M83	6		Does not exist

Is the check result normal?

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

2.SPIRAL CABLE INSPECTION

Check the spiral cable.

Is the check result normal?

YES >> GO TO 3.
NO >> Replace the spiral cable.

3.CHECK AV CONTROL UNIT VOLTAGE

1. Connect AV control unit and spiral cable connectors.
2. Turn power switch ON.
3. Check voltage between AV control unit harness connectors.

Probe				Standard	Reference value
(+)		(–)			
AV control unit					
Connector	Terminal	Connector	Terminal		
M83	6	M83	15	0 – 5.5 V	Approximately 5 V

Is the check result normal?

YES >> GO TO 4.
NO >> Replace the AV control unit. Refer to AV-119, "Removal and Installation".

4.CHECK STEERING SWITCH

1. Turn power switch OFF.
2. Check the steering switch. Refer to AV-101, "Component Inspection".

Is the check result normal?

YES >> INSPECTION END
NO >> Replace the steering switch. AV-133, "Removal and Installation".

Component Inspection

INFOID:0000000006970949

Measure the resistance between the steering switch connecter terminals 14 to 17 and 15 to 17.

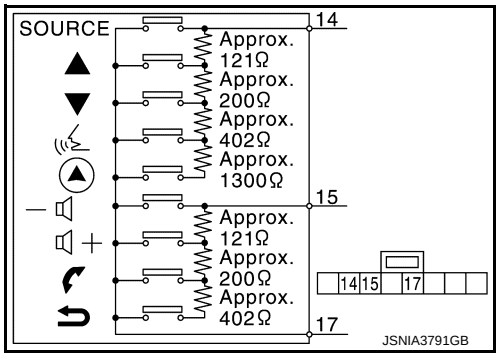
Standard, :

Between terminals 14 and 17

switch ON	: 2003 – 2043 Ω
switch ON	: 716 – 730 Ω
▼ switch ON	: 318 – 324 Ω
▲ switch ON	: 120 – 122 Ω
SOURCE switch ON	: 0 Ω

Between terminals 15 and 17

switch ON	: 716 – 730 Ω
switch ON	: 318 – 324 Ω
+ switch ON	: 120 – 122 Ω
− switch ON	: 0 Ω



STEERING SWITCH SIGNAL B CIRCUIT

Description

INFOID:0000000006970950

Transmits the steering switch signal to the AV control unit.

Diagnosis Procedure

INFOID:0000000006970951

1.CHECK CONTINUITY OF STEERING SWITCH SIGNAL B CIRCUIT

1. Turn power switch OFF.
2. Disconnect AV control unit and spiral cable connectors.
3. Check for continuity between AV control unit harness connector and spiral cable connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M83	16	M33	31	Exists

4. Check for continuity between AV control unit harness connector and ground.

AV control unit		Ground	Continuity
Connector	Terminal		
M83	16		Does not exist

Is the check result normal?

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

2.SPIRAL CABLE INSPECTION

Check the spiral cable.

Is the check result normal?

YES >> GO TO 3.
NO >> Replace the spiral cable.

3.CHECK AV CONTROL UNIT VOLTAGE

1. Connect AV control unit and spiral cable connectors.
2. Turn power switch ON.
3. Check voltage between AV control unit harness connectors.

Probe				Standard	Reference value
(+)		(–)			
AV control unit					
Connector	Terminal	Connector	Terminal		
M83	16	M83	15	0 – 5.5 V	Approximately 5 V

Is the check result normal?

YES >> GO TO 4.
NO >> Replace the AV control unit. AV-119, "Removal and Installation".

4.CHECK STEERING SWITCH

1. Turn power switch OFF.
2. Check the steering switch. AV-103, "Component Inspection".

Is the check result normal?

YES >> INSPECTION END
NO >> Replace the steering switch. AV-133, "Removal and Installation".

Component Inspection

INFOID:0000000006970952

Measure the resistance between the steering switch connecter terminals 14 to 17 and 15 to 17.

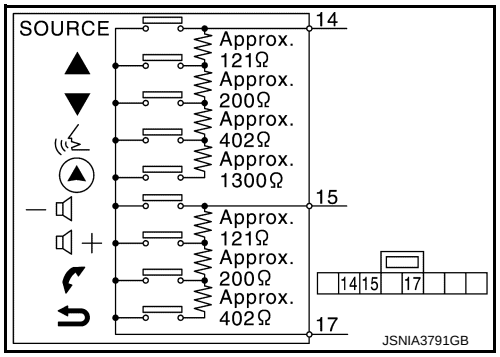
Standard, :

Between terminals 14 and 17

switch ON	: 2003 – 2043 Ω
switch ON	: 716 – 730 Ω
▼ switch ON	: 318 – 324 Ω
▲ switch ON	: 120 – 122 Ω
SOURCE switch ON	: 0 Ω

Between terminals 15 and 17

switch ON	: 716 – 730 Ω
switch ON	: 318 – 324 Ω
+ switch ON	: 120 – 122 Ω
− switch ON	: 0 Ω



STEERING SWITCH SIGNAL GND CIRCUIT

Description

INFOID:0000000006970953

Transmits the steering switch signal to the AV control unit.

Diagnosis Procedure

INFOID:0000000006970954

1.CHECK CONTINUITY OF STEERING SWITCH SIGNAL GROUND CIRCUIT

1. Turn power switch OFF.
2. Disconnect AV control unit and spiral cable connectors.
3. Check for continuity between AV control unit harness connector and spiral cable connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M83	15	M33	33	Exists

Is the check result normal?

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

2.SPIRAL CABLE INSPECTION

Check the spiral cable.

Is the check result normal?

YES >> GO TO 3.
NO >> Replace the spiral cable.

3.CHECK GROUND CIRCUIT

1. Connect AV control unit connector.
2. Turn power switch ON.
3. Check for continuity between AV control unit harness connector and ground.

AV control unit		Ground	Continuity
Connector	Terminal		
M83	15		Exists

Is the check result normal?

YES >> GO TO 4.
NO >> Replace the AV control unit. AV-119, "Removal and Installation".

4.CHECK STEERING SWITCH

1. Turn power switch OFF.
2. Check the steering switch. AV-104, "Component Inspection".

Is the check result normal?

YES >> INSPECTION END
NO >> Replace the steering switch. AV-133, "Removal and Installation".

Component Inspection

INFOID:0000000006970955

Measure the resistance between the steering switch connecter terminals 14 to 17 and 15 to 17.

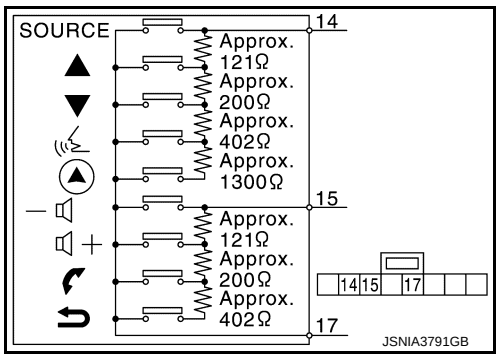
Standard, :

Between terminals 14 and 17

switch ON	: 2003 – 2043 Ω
switch ON	: 716 – 730 Ω
▼ switch ON	: 318 – 324 Ω
▲ switch ON	: 120 – 122 Ω
SOURCE switch ON	: 0 Ω

Between terminals 15 and 17

switch ON	: 716 – 730 Ω
switch ON	: 318 – 324 Ω
+ switch ON	: 120 – 122 Ω
− switch ON	: 0 Ω



SYMPTOM DIAGNOSIS

MULTI AV SYSTEM

Symptom Table

INFOID:0000000006838215

NAVIGATION

Trouble diagnosis chart by symptom

Symptoms	Check items	Possible malfunction location/Action to take
AV control unit does not start.	Display is not indicated.	AV control unit power supply and ground circuit Refer to AV-95, "AV CONTROL UNIT : Diagnosis Procedure".
	Blue screen is displayed.	• Check fail-safe status. Refer to AV-32, "MULTI AV SYSTEM : Fail-safe". • Perform CONSULT self-diagnosis and perform diagnosis of DTC malfunction detected. Refer to AV-63, "DTC Index".
Energy information display and vehicle setting operation are abnormal.	There is a malfunction in the CONSULT self-diagnosis result.	Perform detected DTC self-diagnosis Refer to AV-63, "DTC Index".
	There is no malfunction in the self-diagnosis results	IGN signal circuit
The vehicle icon is not indicated at the correct position	There is a malfunction in the CONSULT self-diagnosis result.	Perform detected DTC self-diagnosis Refer to AV-63, "DTC Index".
	There is no malfunction in the self-diagnosis result	• Vehicle speed signal • GPS antenna • AV control unit
Guide sound is not heard.	Select “Volume Adjustment”, in the setting screen and then check that the Guidance Sound is ON.	Replace the AV control unit. Refer to AV-119, "Removal and Installation".
Display is not dimmed.	When the combination switch is operated, the light signal operates correctly on “Vehicle Signals”screen for Confirmation/Adjustment.	
	When the combination switch is operated, the light signal is fixed to OFF on “Vehicle Signals” screen for Confirmation/Adjustment.	Check the illumination signal circuit.

HANDS-FREE, CARWINGS

- Check that the cellular phone is a corresponding type when the hands-free related vehicle with a malfunction is in service before performing a diagnosis.
- There is a case that a malfunction occurs due to the version change of the phone type, etc. even though it is a corresponding type. Therefore, confirm it by changing the cellular phone to another corresponding type of phone, and check that it operates normally. It is necessary to distinguish whether the cause is the vehicle or the cellular phone.

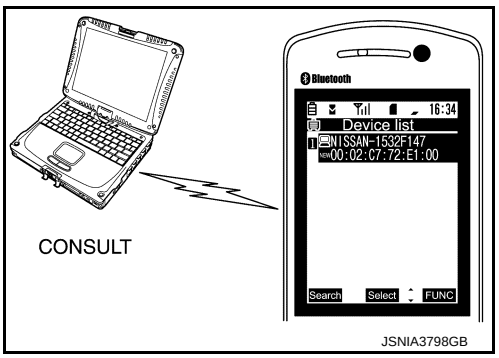
Bluetooth®Communication

If connection cannot be made via Bluetooth® communication, it is necessary to check which unit has a malfunction, cellular phone or AV control unit. Follow the procedure below to check if the cellular phone is making Bluetooth® communication.

1. Prepare a cellular phone that is not compatible with Bluetooth® communication.
2. Prepare CONSULT, turn the power ON and complete startup of Windows®.

3. Near CONSULT, check if a device connected shows CONSULT when "Bluetooth registration" of the cellular phone is performed.
   *® (If there is another Bluetooth® device nearby, the device name is also displayed.)
   *:The device name displayed is "NISSAN*******". -

- If no device is displayed, a malfunction of the cellular phone is possible. Repair a malfunction of the cellular phone before vehicle diagnosis.
- When CONSULT is displayed on the device connected, the cellular phone is normal. Perform the diagnosis in the table below.



Trouble diagnosis chart by symptom

Symptoms	Check items	Possible malfunction location/Action to take
Does not recognize cellular phone connection (No connection is displayed on the display at the guide.)	Repeat the registration of the cellular phone.	Replace the AV control unit. Refer to AV-119, "Removal and Installation".
Hands-free phone cannot be established	• Hands-free phone operation can be made, but the communication cannot be established • Hands-free phone operation can be performed, however, the voices between two people cannot be heard during the conversation	
The other party's voice cannot be heard by hands-free phone	Voice is output in “Microphone speaker check”of Confirmation/Adjustment.	
Originating sound is not heard by the other party with hands-free phone communication	Voice control function does not operate	Microphone signal circuit Refer to AV-96, "Diagnosis Procedure".
The system cannot be operated.	• The voice recognition can be controlled. • ”+”, “−”, “↩” “📞” do not work.	Steering switch malfunction. Replace steering switch. Refer to AV-133, "Removal and Installation".
	• The voice recognition can be controlled. • Steering switch's “📞”, ”+”, “−”, “↩” switches do not work.	Steering switch signal B circuit malfunction. Refer to AV-102, "Diagnosis Procedure".
	All steering switches do not work.	Steering switch ground circuit malfunction. Refer to AV-104, "Diagnosis Procedure".
CARWINGS is not available.	There is a malfunction in the CONSULT self-diagnosis result.	Perform detected DTC self-diagnosis Refer toAV-63, "DTC Index".

CAMERA

Trouble diagnosis chart by symptom

Symptoms	Check items	Possible malfunction location/Action to take
Rear view monitor image is not displayed (black screen).	When the gear is shifted to reverse, the screen is switched but the camera image is not displayed.	Rear view camera image signal circuit Refer to AV-98, "Diagnosis Procedure".
Screen is not switched to the rear view monitor.	With the vehicle signal diagnosis in confirmation/adjustment mode, the reverse signal is ON.	Replace the AV control unit. Refer to AV-119, "Removal and Installation".
	With the vehicle signal diagnosis in confirmation/adjustment mode, the reverse signal is not ON.	Reverse signal circuit

VOICE CONTROL

Trouble diagnosis chart by symptom

Symptoms	Check items	Probable malfunction location
The voice cannot be controlled even if the voice control screen is displayed	Voice is output in “microphone speaker check ” of Confirmation/Adjustment.	Replace the AV control unit. Refer to AV-119, "Removal and Installation".
	Voice is not output in “microphone speaker check ” of Confirmation/Adjustment.	Microphone signal circuit Refer to AV-96, "Diagnosis Procedure".
The voice cannot be controlled (Voice control screen is not displayed)	Steering switch “SOURCE”, “▲”, “▼”, ⊙ are operative, but the switch “ ” is inoperative.	Replace the steering switch
	Steering switch “”, “▲”, “▼” ,“ ” “⊙” are inoperative.	Steering switch signal A circuit Refer to AV-100, "Diagnosis Procedure".
	All steering switches are inoperative.	Steering switch signal ground circuit Refer to AV-104, "Diagnosis Procedure".

RELATED TO AUDIO

Trouble diagnosis chart by symptom

Symptoms	Check items	Possible malfunction location/Action to take
Radio reception status is poor.	If the vehicle is moved to a place where reception is good (good visibility and no interference that may cause external noise), radio sound quality is poor.	• Antenna feeder • Antenna amplifier ON signal circuit
Audio sound is small or does not come out.	Sound is small or does not come out from the specified one or two places.	Sound signal circuit between AV control unit and malfunction system speaker
	All speaker outputs have malfunctions.	Replace the AV control unit. Refer to AV-119, "Removal and Installation".
Sound output from AUX audio is malfunction.	Other sound output is normal.	AUX sound signal circuit
Satellite radio is not received.	There is malfunction in the CONSULT self-diagnosis result. Refer to AV-53, "CONSULT Function".	Perform detected DTC diagnosis. Refer to AV-63, "DTC Index".
	There is no malfunction in the CONSULT self-diagnosis result. Refer to AV-53, "CONSULT Function".	Perform the following inspection procedure. 1. Check satellite radio antenna mounting nut for looseness. **NOTE:** Tightening torque: 6.5 N-m (0.66 kg-m, 58 in-lb) 2. Visually check for satellite radio antenna feeder.

®iPod® AND USB MEMORY RELATED

NOTE:
Check that there is no malfunction of the USB memory main body before performing a diagnosis.

Trouble diagnosis chart by symptom

Symptoms	Check items	Possible malfunction location/Action to take
®iPod® and USB memory are not recognized.	There is a malfunction in the CONSULT self-diagnosis result.	Perform detected DTC self-diagnosis Refer toAV-63, "DTC Index".
	There is no malfunction in the self-diagnosis result	• USB harness • USB connector

STEERING SWITCH

Trouble diagnosis chart by symptom

Symptoms	Probable malfunction location
All steering switches are inoperative.	Steering switch signal ground circuit Refer to AV-104, "Diagnosis Procedure".
Only the specified switch (1) cannot be operated	Replace the steering switch

Symptoms	Probable malfunction location
Steering switch “SOURCE”, “▲”, “▼”, “”, “” are not operative.	Steering switch signal A circuit Refer to AV-100, "Diagnosis Procedure".
Steering switch “”, “”, “”, “” are not operative.	Steering switch signal B circuit Refer to AV-102, "Diagnosis Procedure".

NORMAL OPERATING CONDITION

Description

INFOID:0000000006838216

NOTE:
For Navigation system operation information, refer to Navigation system Owner's Manual.

BASIC OPERATIONS

Symptom	Possible cause	Possible solution
No image is displayed.	The brightness is at the lowest setting.	Adjust the brightness of the display.
	The system in the audio mode.	Press “CD·AUX” to change the mode.
	The display is turned off.	Press “☀/☽” to turn on the display.
	The interior of the vehicle becomes the a little less than 80°C (176°F) or high temperature, and the protection of the display acts, and a display is turned off.	Wait until the interior of the vehicle has cooled down.
The screen is darker.	The cabin temperature is too low.	Wait until the interior of the vehicle temperature becomes moderate.
	The adjustment ofdisplay brightness is set to the maximum of darkness.	Adjust the brightness setting of the displaydisplay.
The screen is brighter.	The adjustment of display brightness is set to the maximum of brightness.	
When looking at the screen from an angle, the screen lightens or darkens.	This is a typical phenomenon for liquid crystal displays.	
The screen is too dim. The movement is slow.	The temperature in the interior of the vehicle is less than 50°F (0°C).	Wait until the interior of the vehicle temperature becomes within 50°F(0°C) to 122°F (50°C).
The screen is too dim. The movement is slow.	The temperature in the interior of the vehicle is low.	Wait until the interior of the vehicle has warmed up.
No voice guidance is available. Or The volume is too high or too low.	The volume is not set correctly, or it is turned off.	Adjust the volume of voice guidance.
	Voice guidance is not provided for certain streets (roads displayed in gray).	This is not a malfunction.
No map is displayed on the screen.	A screen other than map screen is displayed.	Press “MAP”.
Some pixels in the display are darker or brighter than others.	This condition is an inherent characteristic of liquid crystal displays.	This is not a malfunction.
Some menu items cannot be selected.	Some menu items become unavailable while the vehicle is driven.	Park the vehicle in a safe location, and then operate the navigation system.
A small black spot or a small bright spot appears on the screen.	This is a typical phenomenon for liquid crystal displays.	This is not a malfunction.
A dot or stripe pattern appears on the screen.	Electromagnetic wave that is generated from neon billboards, high voltage electric power cables, ham radios or other radio devices equipped to other vehicles may adversely affect the screen.	
Image lag appears on the screen.	This is a typical phenomenon for liquid crystal displays.	

NOTE:
Locations stored in the Address Book and other memory functions may be lost if the vehicle's battery is disconnected or becomes discharged. If this occurs, service the vehicle's battery as necessary and re-enter the information in the Address Book.

RELATED TO VOICE RECOGNITION

Related to Basic Operation

Symptom	Possible cause	Possible solution
The system does not operate or fails to interpret the command correctly after speaking a voice command.	The system interprets the passenger's speech.	Ask the passenger to be as quiet as possible.
	The ambient noise level is excessive.	Close the windows to shut out the ambient noise.
	The noise generated by the driving vehicle is too loud.	Reduce the vehicle speed, and then speak a command.
	A voice command is spoken in a low voice.	Speak a command in a louder voice.
	The timing of speaking a command is too fast.	Speak a command after confirming the following: a voice guidance is announced, a tone sounds, and an icon on the screen changes from white to orange.
	8 seconds or more have passed after you pressed and released " " switch on the steering switch.	Make sure to speak a command within 8 seconds after you press and release " " switch on the steering switch.
	The speed of speaking a command is too slow.	Speak in a natural voice without pausing between words.
	The fan speed of the air conditioner is too fast.	Decrease the fan speed of the air conditioner.
The system announces, "Please say again".	Pronunciation is unclear.	Speak clearly.
	The timing of speaking a command is too slow.	Speak a command within 5 seconds after confirming the following: a voice guidance is announced, a tone sounds, and an icon on the screen changes from white to orange.
	An improper command is spoken.	Speak a command or a number that is displayed in orange on the screen.
		Speak a command that is shown in the command list.
The system does not correctly recognize a number spoken.	Many numbers are spoken at once.	Place a pause between the appropriate digits for correct recognition by the system. When speaking a telephone number, place a pause between area codes, dial codes, etc.
Voice recognition does not operate and a tone sounds twice after pressing the " " switch.	The " " switch is pressed immediately after the ready operation indicator is turned on.	press the " " switch again after a while.

RELATED TO AUDIO

- The majority of the audio malfunctions are the result of outside causes (bad CD, electromagnetic interference, etc.). Check the symptoms below to diagnose the malfunction.
- The vehicle itself can be a source of noise if noise prevention parts or electrical equipment is malfunctioning. Check if noise is caused and/or changed by engine speed, ignition switch turned to each position, and operation of each piece of electrical equipment, and then determine the cause.

NOTE:

- CD-R is not guaranteed to play because they can contain compressed audio (MP3, WMA, AAC, M4A) or could be incorrectly mastered by the customer on a computer.
- Check if the CDs carry the Compact Disc Logo. If not, the disc is not mastered to the "red book" Compact Disc Standard and may not play.

Related to Disk Drive

Symptom	Possible cause	Possible solution
Music cannot be played back.	A disc is inserted upside down.	Insert a CD with the label side facing up.
	Moisture condensation occurs inside the unit.	Wait until the moisture evaporates. (approximately 1hour)
	The cabin temperature is too high.	Wait until the cabin temperature becomes moderate.
	A disc is scratched or dirty. A disc is not always playable if it is scratched.	Wipe off any dirt from the disc.
	Depending on the storing condition, discs may become unreadable due to deterioration.	Change the disc with a deterioration-free disc. Do not use a deteriorated disc. The label surface of the disc may crack or chip, and the layer of the label surface may eventually peel off.
The screen is brighter.	If both music CD files (CD-DA data) and audio compression files (MP3 data, etc.) are mixed in one disc, the audio compression files cannot be played back.	Prepare a disc that includes audio compression files only.
	The files are not named using the characters that is compliant with the specifications.	Check if the disc or the file is generated in an irregular format, This may occur depending on the variation or the setting of MP3/WMA/AAC/M4A writing applications or other text editing applications.
It takes longer before the music starts playing.	Many data are recorded in a disc.	Some time may be required to check the files. It is recommended that unnecessary folders or any files other than audio compression files should not be recorded in a disc.
Sound quality is poor.	A disc is dirty.	Wipe off any dirt from the disc.
No sounds are played though CD play time is displayed.	The system plays back the first track of the mix mode disc. (Mix mode is a format in which data except music is recorded on the first track and music data is recorded on other than the first track in a session.)	Playback music data that are recorded on other than the first track.
Music cuts off or skips.	The combination of writing software and hardware might not match; or the writing speed, writing depth, writing width, etc. might not match the specifications.	Create a disc using a different setting of writing speed, etc.
The system skips the selected track and moves to the next track.	A non-MP3/WMA file is given an extension of “MP3”, “.WMA”, “.mp3” or “.wma”.	Prepare MP3/WMA files.
	The system plays back a file that is prohibited to do so by copyright protection.	Prepare playable files.
The tracks do not play back in the desired order.	The folder locations in the disc are changed by the writing software while the files are written in the disc.	Check the settings of the writing software, and create a new disc.

Noise resulting from variations in field strength, such as fading noise and multi-path noise, or external noise from trains and other sources, is not a malfunction.

NOTE:

- Fading noise: This noise occurs because of variations in the field strength in a narrow range due to mountains or buildings blocking the signal.
- Multi-path noise: This noise results from a time difference between the broadcast waves directly from the station arriving at the antenna and the waves reflected by mountains or buildings.

Related to iPod®

Symptom	Possible cause	Possible solution
The system does not recognize any iPod.	A connector cable is not correctly connected, or the iPod does not correctly operate.	Connect the connector cable again. If the system does not recognize the iPod after performing the procedure above, reset the iPod.
	The iPod that is to be connected is not compatible with the system.	Check the iPod models and versions available for the system.
	A USB extension cable is not correctly connected.	Do not use any USB extension cable.
	The cable is rapidly connected to or disconnected from the USB connector.	Slowly connect or disconnect the USB cable.

Symptom	Possible cause	Possible solution
An iPod cannot be operated.	An iPod is connected to the in-vehicle audio system while headsets, etc. are connected to the iPod.	Remove all equipment from the iPod after disconnecting the iPod from the system, and then connect it to the system again.
	An iPod does not correctly operates.	Disconnect the iPod from the in-vehicle audio system, and then connect it to the system again.
	The system plays back an album/music that includes a particular album art.	Disconnect the iPod from the in-vehicle audio system, and then reset the iPod. Disable the album art, and then connect the iPod to the system.
An iPod does not respond.	There are many tracks in a category.	Decrease the number of tracks in a category (less than 3,000 tracks).
	The shuffle function is turned on.	Turn off the shuffle function if many tracks are stored in an iPod.
Music cannot be played back.	A connector is not connected to an iPod.	Firmly connect the connector until it clicks.
Playback cuts.	The sound cuts due to vibration resulting from unstable location of an iPod.	Place an iPod on a stable location where an iPod does not roll over.
Distorted sound occurs.	The EQ (equalizer) function of an iPod is turned on.	Turn off the EQ (equalizer) function.
Battery charge of an iPod takes longer.	Battery charge of an iPod may take longer while an iPod is playing back.	If an iPod is necessary to be charged, it is recommended to stop the playback of an iPod.
Battery charge of an iPod is unavailable.	The cable that is connected to an iPod may deteriorate (cable disconnection, etc.).	Check the cable in current use.
Functions cannot be operated using an iPod that is connected to the in-vehicle audio system.	—	The operation of an iPod must be performed using the in-vehicle audio system after an iPod is connected to the system.
Sound skips.	Surrounding circumstances (noise, etc.) may cause sound skip.	This does not indicate a malfunction.
	A USB extension cable is not correctly connected.	Do not use any USB extension cable.

Related to USB Memory

Symptom	Possible cause	Possible solution
The system does not recognize any iPod.	A connector cable is not correctly connected, or the iPod does not correctly operate.	Connect the connector cable again. If the system does not recognize the iPod after performing the procedure above, reset the iPod.
	The iPod that is to be connected is not compatible with the system.	Check the iPod models and versions available for the system.
	A USB extension cable is not correctly connected.	Do not use any USB extension cable.
	The cable is rapidly connected to or disconnected from the USB connector.	Slowly connect or disconnect the USB cable.

Related to Bluetooth® Audio

Symptom	Possible cause	Possible solution
Registration cannot be performed.	The Bluetooth® audio device is not compatible with the in-vehicle audio system.	Check the Owner's Manual for the Bluetooth® audio device.
	The PIN code is incorrect.	Check the PIN code for the Bluetooth® audio device that is to be registered.
		Check that the PIN code for the Bluetooth® audio device is consistent with that for the in-vehicle audio system.
	Another Bluetooth® device is used in the vehicle.	Turn off another Bluetooth® device until the registration is completed.
Music cannot be played back.	The Bluetooth® audio device is not compatible with the in-vehicle audio system.	Check the Owner's Manual for the Bluetooth® audio device.
	The system is not set to the Bluetooth® audio mode.	Press the CD·AUX switch to select the Bluetooth® audio mode.
	A Bluetooth® adapter is turned off.	Turn on a Bluetooth® adapter when it is used for a Bluetooth® audio device.
Playback stops.	The Bluetooth® audio device is not compatible with the in-vehicle audio system.	Check the Owner's Manual for the Bluetooth® audio device.
	A cellular phone is connected.	This is not a malfunction.
	Sound may cut when a Bluetooth® audio device is operated.	Press the CD·AUX switch to select the Bluetooth® audio mode, and then operate a function on the vehicle's display screen.

RELATED TO VEHICLE ICON

Symptom	Possible cause	Possible solution
Names of roads differ between Plan View and Birdview™.	This is because the quantity of the displayed information is reduced so that the screen does not become too crowded. There is also a chance that names of the roads may be displayed multiple times, and the names appearing on the screen may be different because of a processing procedure.	This is not a malfunction.
The vehicle icon is not displayed in the correct position.	The vehicle was transported after the ignition switch was pressed off, for example, by a ferry or car transporter.	Drive the vehicle for a while on a road where GPS signals can be received.
	The position and direction of the vehicle icon may be incorrect depending on the driving environments and the levels of positioning accuracy of the navigation system.	This is not a malfunction. Drive the vehicle for a while to automatically correct the position and direction of the vehicle icon.
When the vehicle is traveling on a new road, the vehicle icon is located on another road nearby.	Because the new road is not stored in the map data, the system automatically places the vehicle icon on the nearest road available.	Updated road information will be included in the next version of the map data.
The screen does not switch to the night screen even after turning on the headlights.	The daytime screen was set the last time the headlights were turned on.	Set the screen to the night screen mode using "☀/☽" when you turn on the headlights.
The map does not scroll even when the vehicle is moving.	The current location map screen is not displayed.	Press "MAP".
The vehicle icon is not displayed.	The current location map screen is not displayed.	Press "MAP".

Symptom	Possible cause	Possible solution
The GPS indicator on the screen remains gray.	GPS signals cannot be received under certain conditions, such as in a parking garage, on a road with many tall buildings, etc.	Drive on an open, straight road for a while.
	GPS signals cannot be received because objects are placed on the instrument panel.	Remove the objects from the instrument panel.
	A sufficient number of GPS satellites is not available.	Wait for the satellites to move to locations available for the navigation system.
The location of the vehicle icon is misaligned from the actual position.	The map data has a mistake or is incomplete (the vehicle icon position is always misaligned in the same area).	Updated road information will be included in the next version of the map data.

RELATED TO ROUTE CALCULATION AND VISUAL GUIDANCE

Symptom	Possible cause	Possible solution
Waypoints are not included in the auto reroute calculation.	Waypoints that you have already passed are not included in the auto reroute calculation.	To go to that waypoint again, edit the route.
Route information is not displayed.	Route calculation has not yet been performed.	Set the destination and perform route calculation.
	You are not driving on the suggested route.	Drive on the suggested route.
	Route guidance is set to off.	Turn on route guidance.
	Route information is not provided for certain types of roads (roads displayed in gray).	This is not a malfunction.
The auto reroute calculation (or detour calculation) suggests the same route as the one previously suggested.	Route calculations took priority conditions into consideration, but the same route was calculated.	This is not a malfunction.
A waypoint cannot be added.	Five waypoints are already set on the route, including ones that you have already passed.	A maximum of 5 waypoints can be set on the route. If you want to go to 6 or more waypoints, perform route calculations multiple times as necessary.
	[Calculate] must be selected for route calculation after Waypoints are selected from the “Edit/Add to Route”screen.	Touch [Calculate] after selecting waypoints.
The suggested route is not displayed.	Roads near the destination cannot be calculated.	Reset the destination to a main or ordinary road, and recalculate the route.
	The starting point and destination are too close.	Set a more distant destination.
	The starting point and destination are too far away.	Divide your trip by selecting one or two intermediate destinations, and perform route calculations multiple times.
	There are time restricted roads (by the day of the week, by time) near the current vehicle location or destination.	Set [Use Time Restricted Roads] to off.
A part of the route is not displayed.	The suggested route includes narrow streets (roads displayed in gray).	This is not a malfunction.
The part of the route that you have already passed is deleted.	A route is managed by sections between waypoints. If you passed the first waypoint, the section between the starting point and the waypoint is deleted. (It may not be deleted depending on the area.)	This is not a malfunction.
An indirect route is suggested.	If there are restrictions (such as one-way streets) on roads close to the starting point or destination, the system may suggest an indirect route.	Adjust the location of the starting of the starting point or destination.
	The system may suggest an indirect route because route calculation does not take into consideration some areas such as narrow streets (gray roads.)	Reset the destination to a main or ordinary road, and recalculate the route.

Symptom	Possible cause	Possible solution
The landmark information does not correspond to the actual information.	This may be caused by insufficient or incorrect map data.	Updated information will be included in the next version of the data.
The suggested route does not exactly connect to the starting point, waypoints, or destination.	There is no data for route calculation closes to these locations.	Set the starting point, waypoints and destination on a main road, and perform route calculation.

RELATED TO HANDS-FREE PHONE

Symptom	Possible cause	Possible solution
A cellular phone cannot be registered.	A cellular phone is not compatible with the in-vehicle hands free phone system.	Prepare the cellular phone compatible with the system. Visit the website (www.nissa-nusa.com/bluetooth) for model compatibility.
	The registration procedure of a cellular phone is incorrect.	Check the registration procedure, and then register a cellular phone again.
A cellular phone cannot be connected or is disconnected after the registration is completed.	The Bluetooth® setting of the in-vehicle hands free phone system is turned off.	Turn on the Bluetooth® setting of the system.
	The Bluetooth® setting of a cellular phone is turned off.	The Bluetooth® setting of a cellular phone is turned off.
	The remaining battery level of a cellular phone is low.	Charge the battery of a cellular phone.
	The wireless Bluetooth® connection may be disrupted depending on the location of a cellular phone.	Do not place a cellular phone in an area surrounded by metal or far away from the in-vehicle hand free phone system. Do not place a cellular phone closer to the seats or your body.
	The registration of a cellular phone is not completed.	Perform the registration procedure of a cellular phone.
A call to a particular phone number fails.	If the system tries to make a call several times to the same phone number (for example: the party does not respond to the call, the party is out of the service area, or the call is abandoned before the party responds to), the system may reject a request to make a call to the phone number.	Turn off a cellular phone and turn it on again to reset the connection.
The system does not recognize the connection of a cellular phone. The system does not receive or make a call.	A cellular phone is not compatible with the in-vehicle hands free phone system.	Prepare the cellular phone compatible with the system. Visit the website (www.nissa-nusa.com/bluetooth) for model compatibility.
	A cellular phone is not connected.	Check the registration procedure, and then register a cellular phone again.
	The phone operation is limited by the functions (such as dial lock, etc.) of a registered cellular phone.	Release the limitation of a cellular phone, and then perform the registration again.
The other party cannot hear your voice. The other party can hear your voice, but it cracks or cuts.	A cellular phone is not connected.	Check the registration procedure, and then register a cellular phone again.
	The fan speed of the air conditioner is too fast.	Decrease the fan speed of the air conditioner.
	The ambient noise level is excessive. (For example: heavy rains, construction sites, inside a tunnel, oncoming vehicles, etc.)	Close the windows to shut out the ambient noise.
	The noise generated by the driving vehicle is too loud.	Reduce the vehicle speed, and then speak a command.
	The incoming or outgoing voice level is too loud.	Adjust the incoming or outgoing voice level properly.

Symptom	Possible cause	Possible solution
The voice is cut or noise is heard during a call.	The wireless Bluetooth® connection may be disrupted depending on the location of a cellular phone.	Do not place a cellular phone in an area surrounded by metal or far away from the in-vehicle hand free phone system. Do not place a cellular phone closer to the seats or your body.
When a cellular phone is operated to make a call, the hands free function becomes unavailable.	Some models of a cellular phone do not switch to the hands free mode when they are operated to make a call.	This is not a malfunction. Make a call again using the hands free function.
The other party's voice cannot be heard. There is no ring tone.	The volume level is set to the minimum.	Adjust the volume level.
	A cellular phone is not connected.	Check the registration procedure, and then register a cellular phone again.
Each volume level (ring tone, incoming voice or outgoing voice) is different.	Each volume level is not adjusted properly.	Adjust each volume level properly.
The antenna display is different between the navigation screen and a cellular phone screen. Making or receiving a call is unavailable in spite of the antenna display that shows available to do so.	The antenna display varies depending on cellular phones.	This does not indicate a malfunction. The antenna display and remaining battery level shown on the navigation screen may be different from those shown on a cellular phone screen. Use them as a reference.
The voice cannot be heard clearly when using a cellular phone behind tall buildings.	Some structures such as tall buildings, etc. may cause irregular reflection of radio waves or completely shut out radio waves that are used for a cellular phone.	This is not a malfunction.
Noise is heard when using a cellular phone under/near the areas of elevated railroads, high voltage electric power cables, traffic signals, neon billboards, etc.	Electromagnetic wave that is generated from radio devices may adversely affect a cellular phone.	This is not a malfunction.
Noise is heard in the sound from the audio system while using a cellular phone.	Radio waves that is generated from a cellular phone may adversely affect the sound from the audio system.	This is not a malfunction.

RELATED TO CARWINGS™

Symptom	Possible cause	Possible solution
The system cannot connect to the NISSAN CARWINGS Data Center.	A subscription for the CARWINGS™ service has not been established.	Sign up for a subscription to the CARWINGS™® service. For details about subscriptions, contact a NISSAN dealer or visit the Nissan CARWINGS Data Center website.
	The user ID and password are not entered.	Enter the user ID and password.
	The communication line is busy.	Try again after a short period of time.
	The vehicle is in a location where it is difficult to receive radio waves.	When the vehicle moves to an area where radio waves can be transmitted sufficiently, communication will be restored. When the icon on the display shows that the vehicle is inside the communication area, the system can be used.
	Radio wave reception for TCU is insufficient.	When the vehicle moves to an area where radio waves can be transmitted sufficiently, communication will be restored. When the icon on the display shows that the vehicle is inside the communication area, the system can be used.

Symptom	Possible cause	Possible solution
Some of the items that are displayed on the menu screen cannot be selected.	The vehicle is being driven and some menu items are disabled.	The vehicle is being driven. Stop the vehicle in a safe location and apply the parking brake before operating the functions.
Some parts of the screen are notdisplayed	The vehicle is being driven and some menu items are disabled.	Operate the system after stopping the vehicle in a safe location and applying the parking brake.
The system does not announce information.	The volume level is set to the minimum.	Adjust the volume level by operating the VOL switches located on the control panel or on the steering wheel switch while the system is announcing information.

RELATED TO VOICE GUIDANCE

Symptom	Possible cause	Possible solution
Voice guidance is not available	Voice guidance is only available at certain intersections marked with In some case, voice guidance is not available even when the vehicle should make a turn.	This is not a malfunction.
	The vehicle has deviated from the suggested route.	Go back to the suggested route or request route calculation again
	Voice guide is set to off.	Turn on voice guidance.
	Route guidance is set to off.	Turn on voice guidance.
The guidance contact does not correspond to the actual condition.	The contact of voice guidance may vary, depending on the types of intersections at which turn are made.	Follow all traffic rules and regulations.

RELATED TO BACK VIEW CAMERA

Symptom	Possible cause	Possible solution
Image on the display is not clear.	The front glass of the camera lens is dirty.	Gently wipe off the dirt with damp soft cloth.
	Moisture drops such as rain or snow form on the camera lens.	
	Light such as sunlight or headlight beam from another vehicle directly enters the camera.	This is not a malfunction. It will return normal when the light disappears.
	Moisture condensation occurs in the camera lens due to rapid temperature change.	This is not a malfunction. It will return normal after driving for a while.
	Objects on the display may not be clear in a dark place or at night.	Adjust the brightness or the contrast settings of the screen.
Image on the display flickers.	The vehicle is under fluorescent light.	This is not a malfunction.
The colors of the object on the display look different from those of the actual object.	It is a typical phenomenon for cameras.	
Image on the display is less visible.	Strong light or reflected light enters the camera.	
Vertical lines appear on the image.	Strong reflected light from the bumper enters the camera.	
Image does not appear on the display.	The selector lever is not shifted to the “R” position.	Shift the selector lever to the “R” position.
Image from a wrong angle appears on the display.	The back door opens.	Close the back door.

REMOVAL AND INSTALLATION

AV CONTROL UNIT

Removal and Installation

INFOID:0000000006838217

REMOVAL

CAUTION:

Remove 12V battery terminal and AV control unit after a lapse of 30 seconds or more after turning the power switch OFF.

NOTE:

After the power switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if 12V battery voltage is cut off within 30 seconds.

1. Remove the cluster lid C. IP-13, "Removal and Installation".
2. After removing the AV control unit mounting screws to disconnect the connectors, remove the AV control unit with the bracket attached.
3. Remove the bracket mounting screw and remove the bracket from AV control unit.

INSTALLATION

Note the following, and install in the reverse order of removal.

CAUTION:

- **If the AV control unit is replaced, input of the user ID and password, and time adjustment with VCM are required.**
- **If the AV control unit is not replaced, time adjustment with VCM is required.**

Input Method of User ID and Password·

1. Turn power switch ON.
2. Select “Sign in” from the CARWINGS screen.
3. Enter the user ID and password.

NOTE:

Since the user ID and password are determined by the user in advance, they are input by the user.

Time Adjustment and Check Method with VCM

Refer to AV-82, "ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL : Work Procedure".

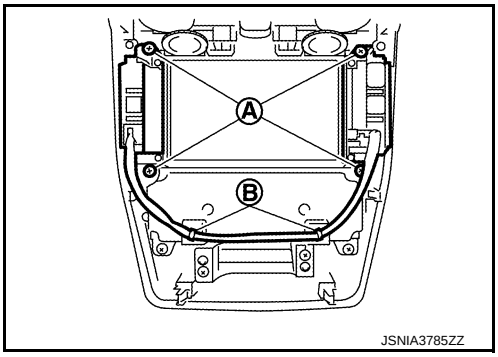
MULTIFUNCTION SWITCH

Removal and Installation

INFOID:0000000006838218

REMOVAL

1. Remove the cluster lid C. Refer to IP-13, "Removal and Installation".
2. Remove the screws (A) and clip (B) to remove the multifunction switch from the cluster lid C.



INSTALLATION

Install in the reverse order of removal.

FRONT DOOR SPEAKER

Removal and Installation

INFOID:0000000006838219

REMOVAL

1. Remove the front door finisher. Refer to INT-13, "Removal and Installation".
2. Remove the screws and disconnect the connector to remove the front door speaker.

INSTALLATION

Install in the reverse order of removal.

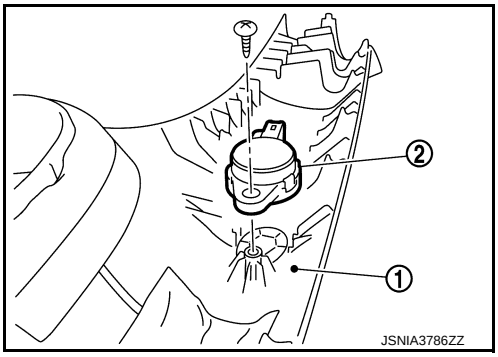
TWEETER

Removal and Installation

INFOID:0000000006838220

REMOVAL

1. Remove the front pillar garnish. INT-20, "FRONT PILLAR GARNISH : Removal and Installation".
2. Remove the screws to remove the tweeter from the front pillar garnish.



INSTALLATION

Install in the reverse order of removal.

REAR DOOR SPEAKER

Removal and Installation

INFOID:0000000006838221

REMOVAL

1. Remove the rear door finisher. Refer to INT-16, "Removal and Installation".
2. Remove the screws and disconnect the connector to remove the rear door speaker.

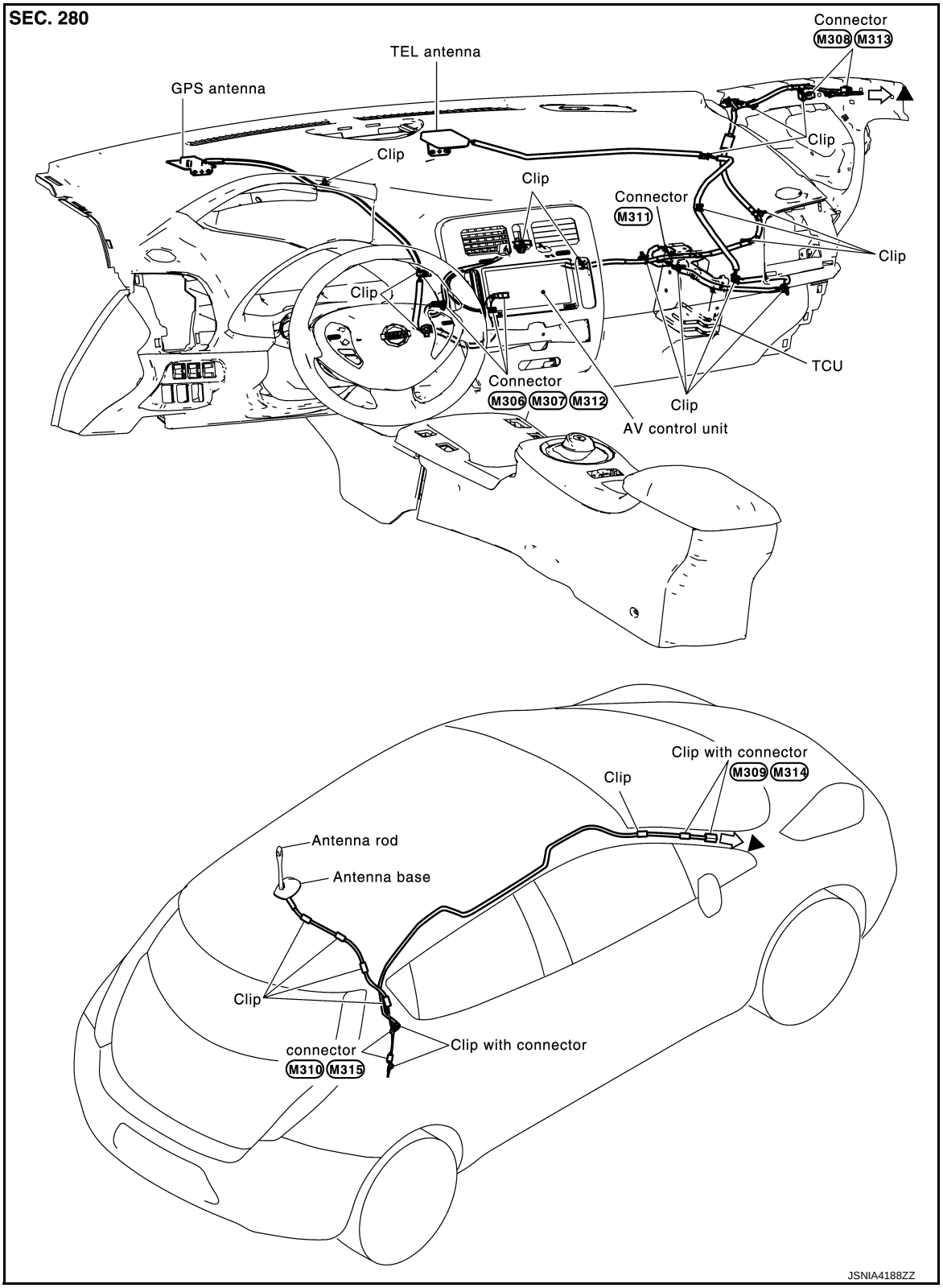
INSTALLATION

Install in the reverse order of removal.

GPS ANTENNA

Feeder Layout

INFOID:0000000006838222

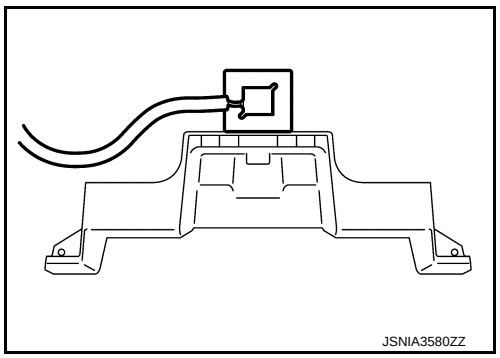


Removal and Installation

INFOID:0000000006838223

REMOVAL

1. Remove the instrument panel assembly. Refer to IP-13, "Removal and Installation".
2. Remove the screws and clips to remove the GPS antenna.



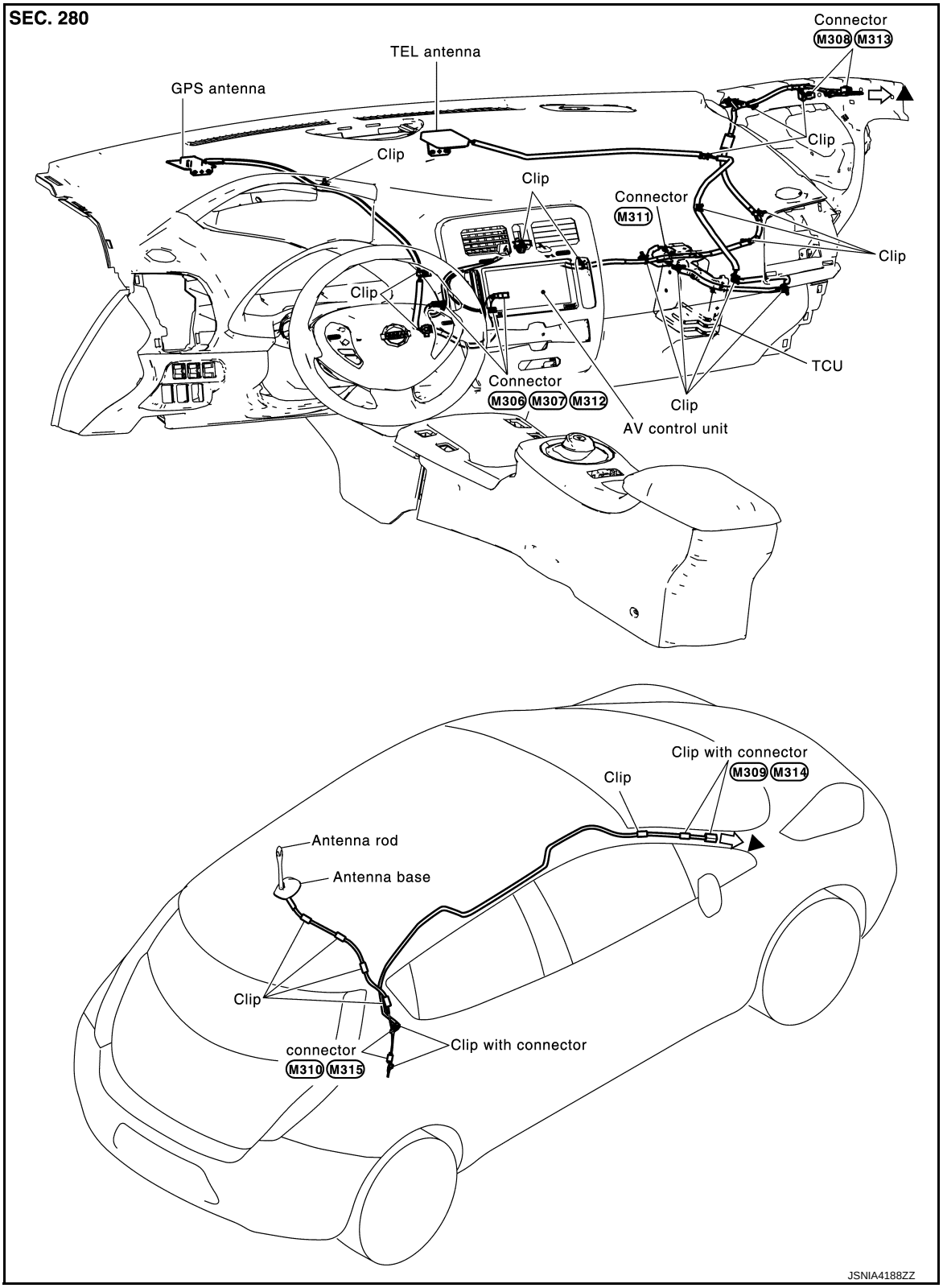
INSTALLATION

Install in the reverse order of removal.

TEL ANTENNA

Feeder Layout

INFOID:0000000006838224



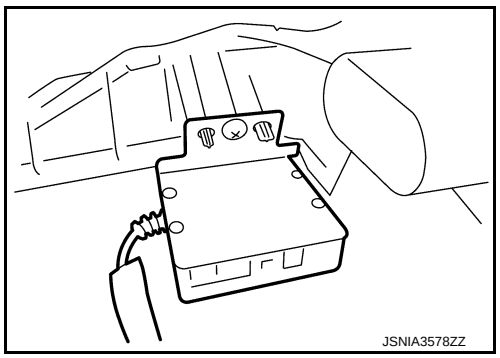
Removal and Installation

INFOID:0000000006838225

REMOVAL

1. Remove the defroster duct. Refer to IP-13, "Removal and Installation".

2. Remove screws and remove it from the defroster duct.



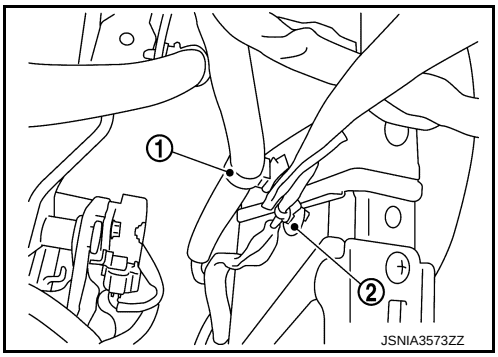
TCU

Removal and Installation

INFOID:0000000006838226

REMOVAL

1. Check the SIM ID. Refer to AV-159, "CONSULT Function".
2. Remove the glove box lid assembly. Refer toIP-13, "Removal and Installation".
3. Remove the harness fixing clip (1) and antenna feeder fixing clip (2) from the upper bracket.
4. After removing the TCU mounting screws to disconnect the connectors, remove TCU with the bracket attached.
5. Remove the bracket mounting screw and remove the bracket from TCU.



NOTE:
If it is difficult to remove the harness fixing clip and the antenna feeder fixing clip, remove the vehicle mounting screw first and pull TCU forward together with the bracket. Be careful not to apply a load to the harness.

INSTALLATION

1. Install in the reverse order of removal.
2. When replaced TCU, perform activation. Refer to AV-188, "ADDITIONAL SERVICE WHEN REPLACING TCU : Work Procedure".

NOTE:
When replacing the TCU, it is necessary to contact the communications service provider to activate the new TCU. Please refer to the appropriate Nissan LEAF Technical Service Bulletin for the correct TCU activation procedure and communications provider contact information.

MICROPHONE

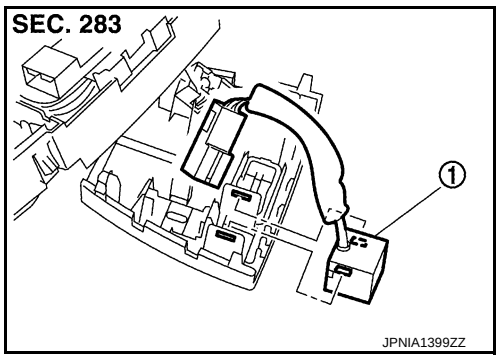
Removal and Installation

INFOID:0000000006838227

REMOVAL

1. Remove the map lamp assembly. Refer to INL-50, "Removal and Installation".
2. Press the pawl to remove the microphone (1) from the map lamp assembly.

CAUTION:
Carefully handle the pawl fixing the microphone because the pawl is fragile.



INSTALLATION

Install in the reverse order of removal.

NOTE:
Check the microphone for looseness after the installation.

STEERING ANGLE SENSOR

Removal and Installation

INFOID:0000000006838228

REMOVAL

1. Remove the spiral cable. SR-14, "Removal and Installation".
2. Remove screws, and then remove the steering angle sensor from the spiral cable.

INSTALLATION

Install in the reverse order of removal.

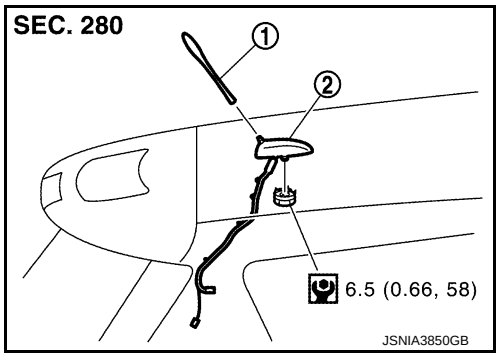
CAUTION:

When the steering angle sensor is removed/assembled or replaced, adjust the neutral position of the steering angle sensor. Refer to BRC-59, "Work Procedure".

ANTENNA BASE

Exploded View

INFOID:0000000006838229



1. Antenna rod
2. Antenna base

: N.m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006838230

REMOVAL

1. Pull down headlining (rear side) and obtain space for work between vehicle and headlining.. Refer to INT-29, "Removal and Installation".
2. Disconnect the antenna feeder connector.
3. Remove nuts and remove the antenna base from the vehicle.

INSTALLATION

Install in the reverse order of removal.

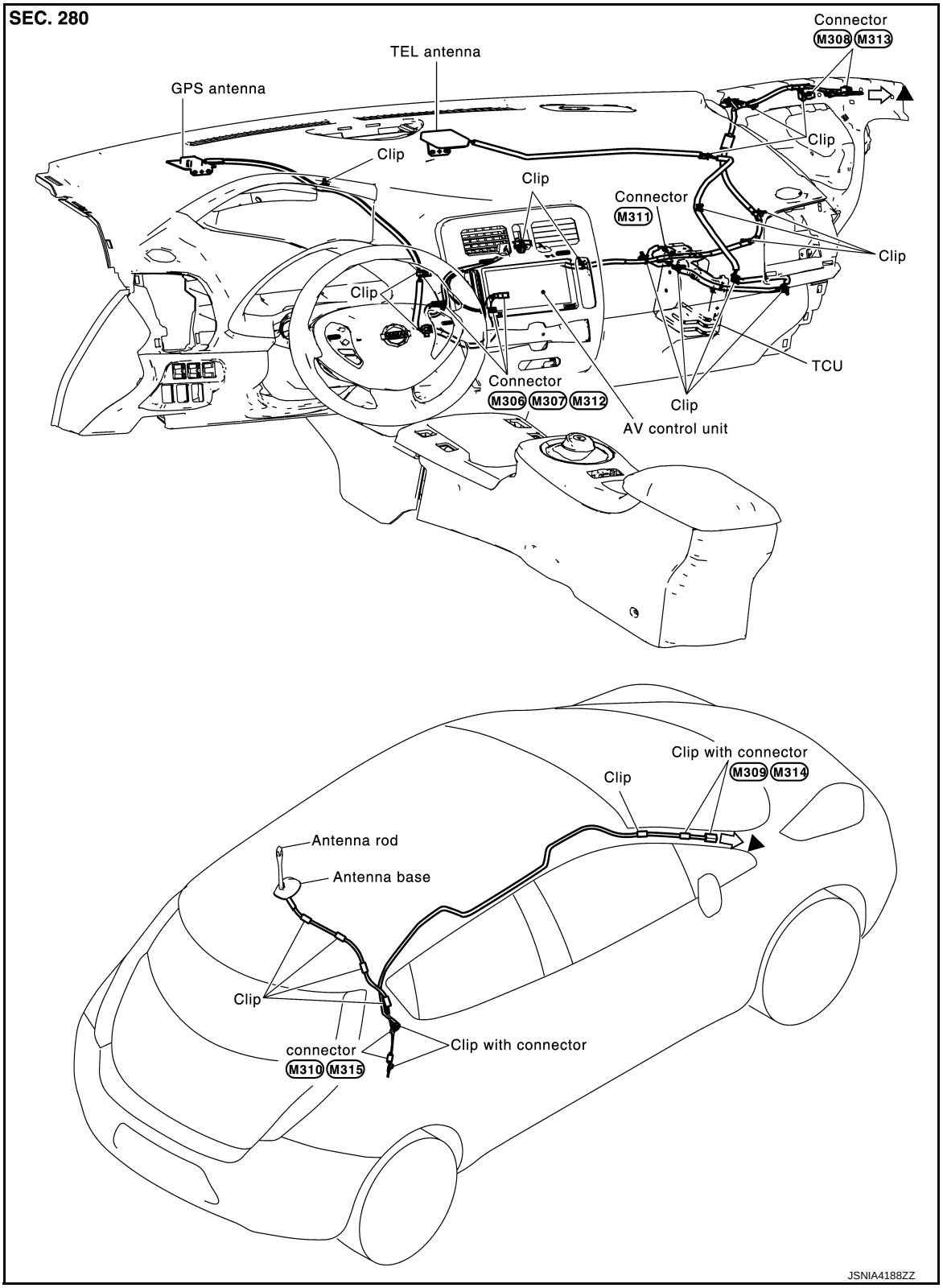
CAUTION:

- **Never bend headlining when pull down headlining (rear side).**
- **When antenna base mounting nut tightening torque is loose, be careful about tightening torque. Antenna sensitivity becomes poor, and when it is excessive, roof panel may become deformed.**

ANTENNA FEEDER

Feeder Layout

INFOID:0000000006838231



STEERING SWITCH

Exploded View

INFOID:0000000006838232

Refer to SR-11, "Exploded View".

Removal and Installation

INFOID:0000000006838233

REMOVAL

Refer to SR-11, "Removal and Installation".

INSTALLATION

Install in the reverse order of removal.

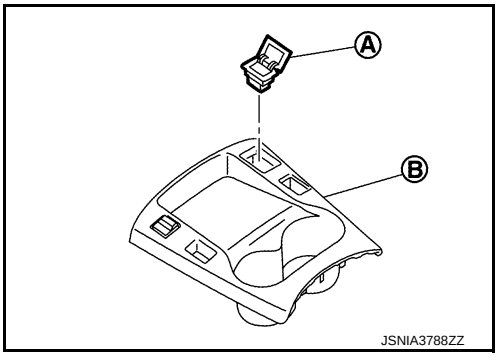
AUXILIARY INPUT JACK

Removal and Installation

INFOID:0000000006838234

REMOVAL

1. Remove the instrument lower center cover. Refer to IP-23, "Removal and Installation".
2. Press the tab and remove the AUX jack (A) in the direction of the arrow from the rear of the instrument lower center cover (B).



INSTALLATION

Install in the reverse order of removal.

REAR VIEW CAMERA

Removal and Installation

INFOID:0000000006838235

REMOVAL

1. Remove the back door finisher. Refer to INT-37, "Exploded View".
2. Remove the screws, and then remove the rear view camera from the back door finisher.

INSTALLATION

Install in the reverse order of removal.

NOTE:

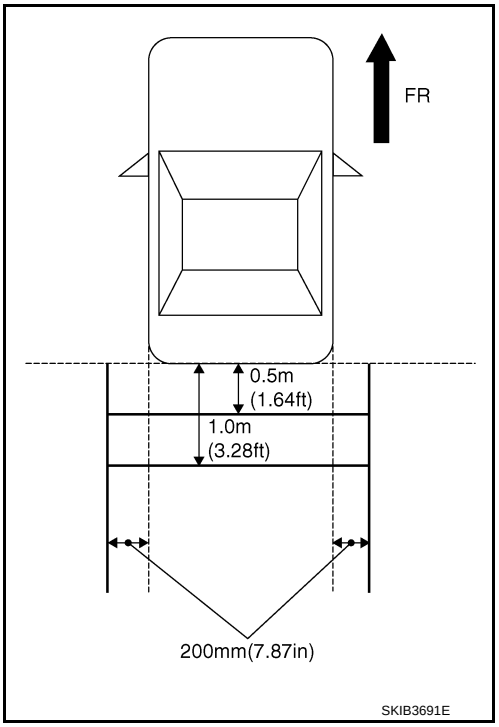
If the side distance guiding lines are dislocated after installation of the rear view camera, refer to AV-135, "Adjustment" and correct the side distance guiding lines.

Adjustment

INFOID:0000000006838236

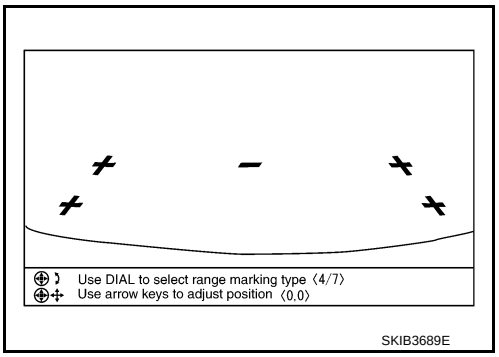
If the side distance guiding lines are dislocated after installation of the rear view camera, adjust the position of the side distance guiding lines.

1. Draw the correction lines at the rear of the vehicle passing through the following points: 20 cm from both sides of the vehicle, and 0.5 m and 1.0 m from the rear end of the bumper.
2. Set “Adjust offset of rear view camera” mode in Confirmation/ Adjustment mode.



3. Operate the touch panel and select the guiding line pattern so that its angle is aligned with the correction line of the rear of the vehicle.

   Selection range (–10°) – (+10°) in increments of 0.2° step



4. Press the upper/lower/left/right switch to perform the fine adjustment of the guiding lines so that the position of the guiding lines is aligned with the correction lines of the rear of the vehicle. The position of adjusted guiding line is recorded to the AV control unit by pressing the “Enter” switch.

   CAUTION:

   Never perform other operations while the guiding line position is memorized.

Upper/lower adjustment range	(–10°) – (+10°) in increments of 0.2° step
Left/right adjustment range	(–10°) – (+10°) in increments of 0.2° step

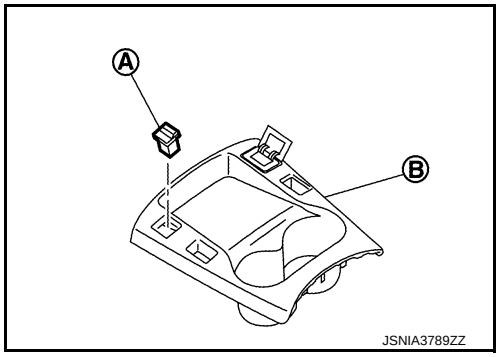
USB CONNECTOR

Removal and Installation

INFOID:0000000006838240

REMOVAL

1. Remove the instrument lower center cover. IP-23, "Removal and Installation".
2. Press the tab and remove the USB connector (A) in the direction of the arrow from the rear of the instrument lower center cover (B).



INSTALLATION

Install in the reverse order of removal.

NOTE:

Align the notch of the instrument panel center lower cover and assemble it.

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:0000000007079311

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 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 or each request switch operation.**
- **If a technician uses other medical electric devices than the implantable cardiac pacemaker or the 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.**

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

INFOID:0000000006838244

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 ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precaution for Trouble Diagnosis

INFOID:0000000006847568

AV COMMUNICATION SYSTEM

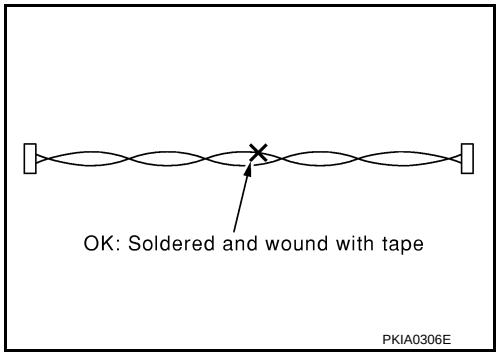
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

Precaution for Harness Repair

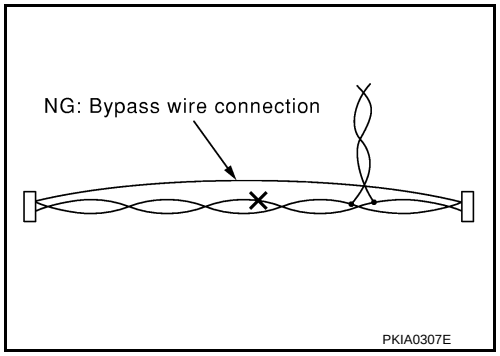
INFOID:0000000006847569

AV COMMUNICATION SYSTEM

- Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in).]



- Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



Precaution for Removing 12V Battery

INFOID:0000000006968150

When removing the 12V battery, turn ON/OFF the power switch and check that the charging status indicator does not blink. The 12V battery must be removed within one hour after checking the indicator lamp.

NOTE:

- The automatic 12V battery charge control may start even when the power switch is in OFF state.
- The automatic 12V battery charge control does not start within approximately one hour when the power switch is turned ON/OFF.

Cautions in Removing 12V Battery Terminal and AV Control Unit (Models with AV Control Unit)

INFOID:0000000006968148

CAUTION:

Remove 12V battery terminal and AV control unit after a lapse of 30 seconds or more after turning the power switch OFF.

NOTE:

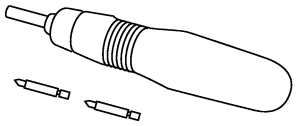
After the power switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if 12V battery voltage is cut off within 30 seconds.

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000006849174

Tool		Description
Power tool	 PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

DESCRIPTION

Telematics system

INFOID:0000000006838247

For comfortable and secure use of EV, the Telematics system that provides real time information/service is adopted.

- The telematics system has TCU (Telematics Communication Unit) with built-in wireless communication terminal. It performs wireless communication with the information center (Nissan CARWINGS Data Center) to provide services unique to EV and CARWINGS service.
- Even if the driver is not in the vehicle, various kinds of information such as vehicle remote control, charge status check, vehicle information, etc. can be obtained through the Nissan CARWINGS Data Center by operating a cellular phone or PC.

TELEMATICS SYSTEM

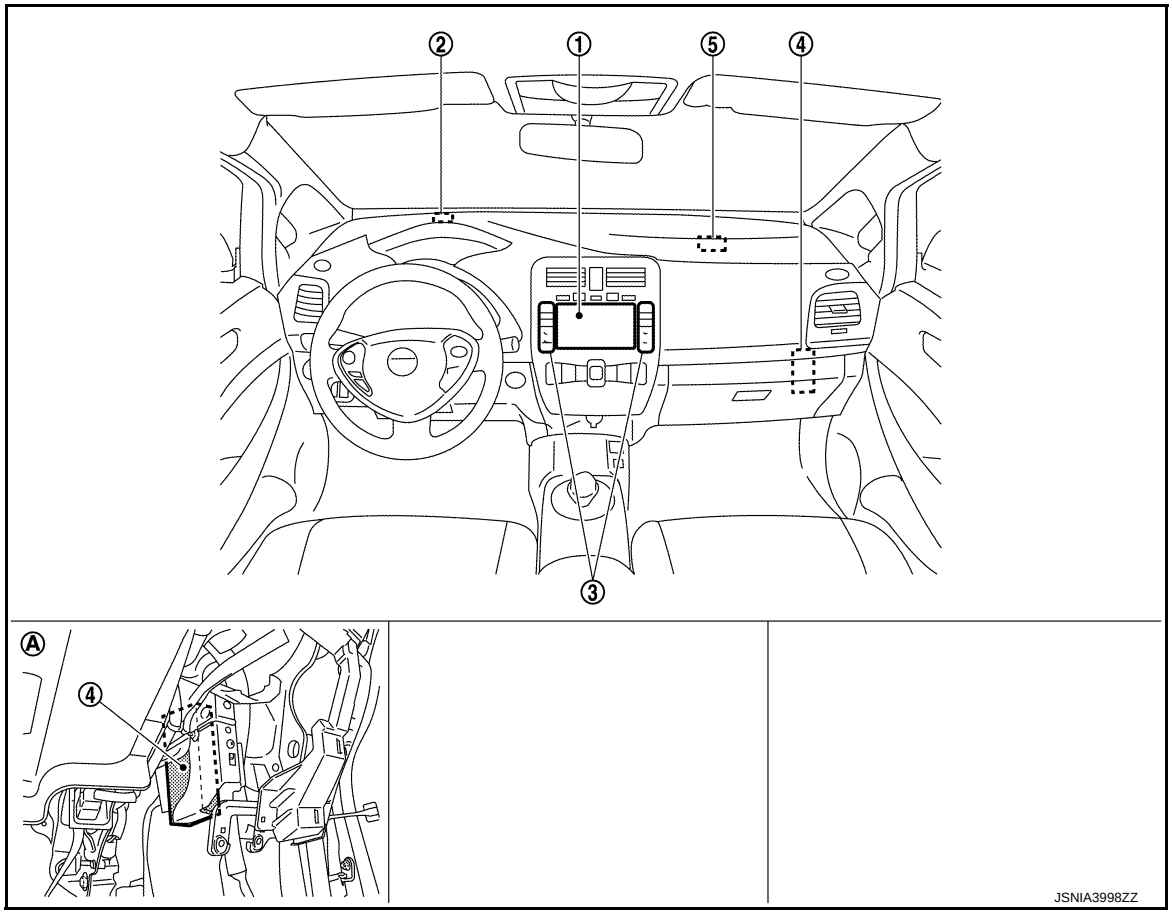
CARWINGS Service

- The battery status and charge status can be checked via a user's cellular phone or PC.
- Start of charge and air conditioning ON on the vehicle can be remotely controlled by operating a user's terminal.
- Automatic update of charge stations or the nearest charge station information is shown in real time on the navigation system.
- Driving status (ECO drive information) can be checked by operating a user's terminal. Driving plans can also be sent.
- Information channel can be used.
- Vehicle information can be sent to the Nissan CARWINGS Data Center.

COMPONENT PARTS

Component Parts Location

INFOID:0000000006838248



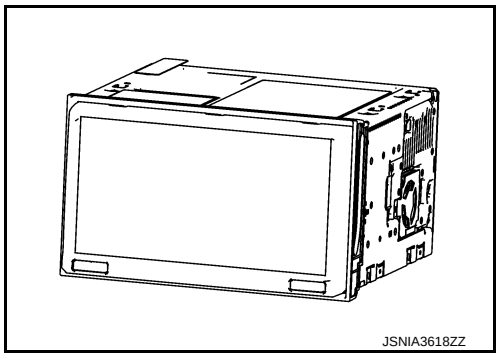
A. Instrument panel lower finisher (RH) is removed.

No.	Component	Function
1.	AV control unit	Refer to AV-143, "AV Control Unit".
2.	GPS antenna	• For parts explanation, refer to AV-143, "GPS Antenna". • For antenna feeder layout, refer to AV-145, "Antenna Feeder"
3.	Multifunction switch	Refer to AV-143, "Multifunction Switch"
4.	TCU	Refer to AV-143, "TCU".
5.	TEL antenna	• For parts explanation, refer to AV-144, "TEL Antenan". • For antenna feeder layout, refer to AV-145, "Antenna Feeder".

AV Control Unit

INFOID:0000000006838249

- The high-resolution 7-inch wide VGA display integrated AV control unit is installed at the center of the instrument panel.
- It is connected to TCU with the USB harness, and signals necessary for Telematics function and CARWINGS function are sent and received.
- When the Telematics system is used, memorize the user ID and password registered by the user.
- Switch operation signals used for the Telematics system are sent to TCU with USB communication via the AV control unit.

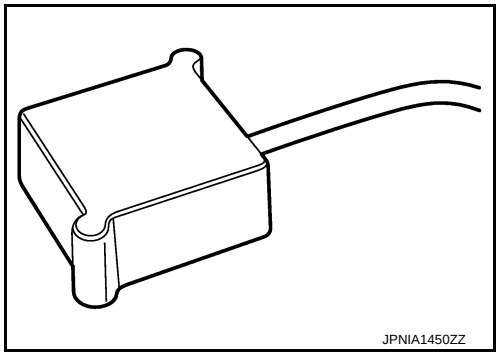

JSNIA3618ZZ

GPS Antenna

INFOID:0000000006838250

- The GPS antenna is installed in the instrument panel.
- The power is supplied from the AV control unit. Radio waves received from the GPS satellite are amplified and sent to the AV control unit as a GPS signal.
- It is used to obtain time information and vehicle position information necessary for probe information.

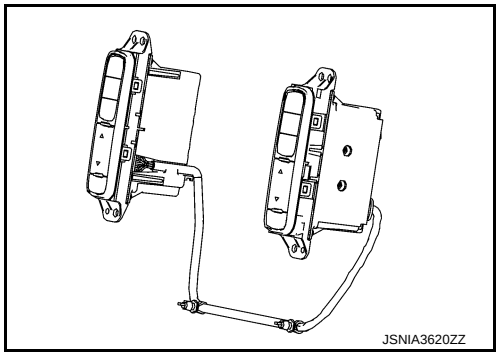
NOTE:
An object placed on the instrument panel may cause the reception sensitivity to be decreased.


JPNIA1450ZZ

Multifunction Switch

INFOID:0000000006838252

- CARWINGS or Telematics can be controlled.
- Switch operation signals are input to the AV control unit with AV communication and sent to TCU.

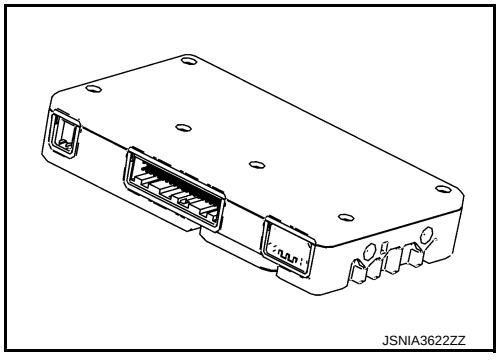

JSNIA3620ZZ

TCU

INFOID:0000000006838253

- TCU is installed on the lower right side of the instrument panel.
- *A radio communication terminal and SIM card are built into the unit and data is sent and received in SMS[*1] and packet communication[*2] with the NISSAN CARWINGS data center via the TEL antenna.

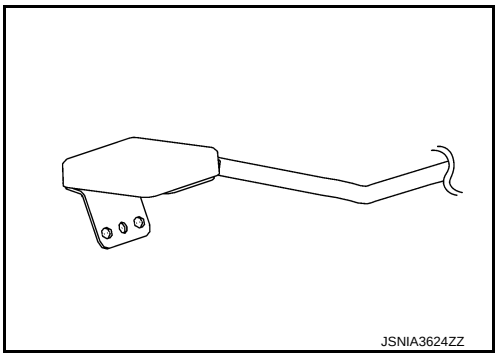
  NOTE:
  *1: SMS stands for Short Message Service. It is also referred to as Text Messaging, Short Mail, etc. It is the service that performs text based message communication.
  *2: Packet communication is the communication method that sends/receives data in a small pack. Divided data is referred to as a packet and the communication line can be efficiently used.
- It is connected to the AV control unit with the USB harness for sound signal input/output and USB communication.
- VIN information necessary for the Telematics service is memorized.


JSNIA3622ZZ

TEL Antenan

INFOID:0000000006838254

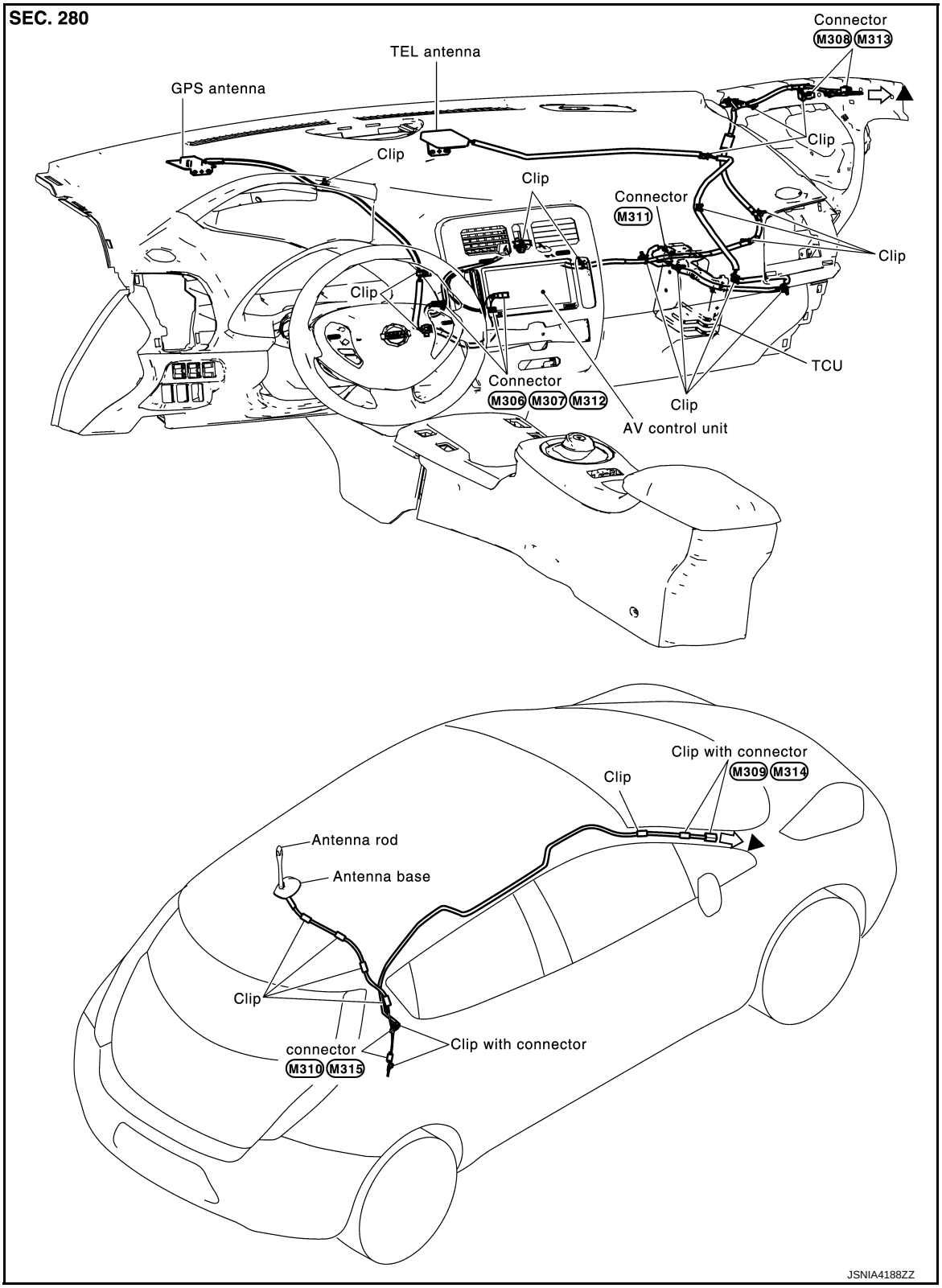
- It is installed in the instrument panel.
- Power is supplied with TCU activated.



Antenna Feeder

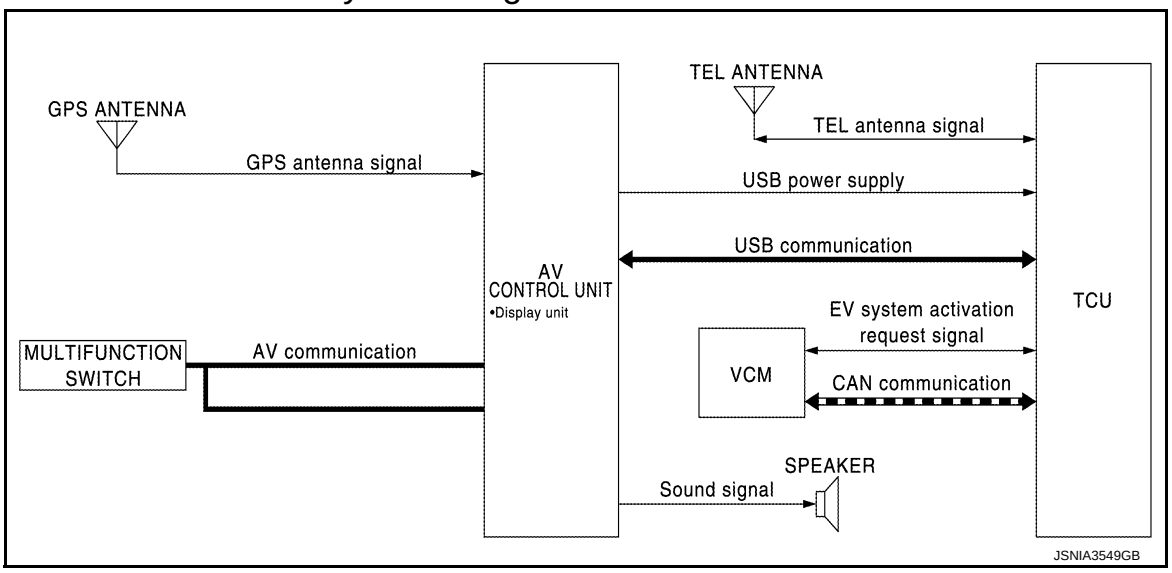
INFOID:0000000006838256

FEEDER LAYOUT



SYSTEM
TELEMATICS SYSTEM
TELEMATICS SYSTEM : System Diagram

INFOID:0000000006838257



CAN communication

AV control unit Input Signal

Transmit unit	Signal name
Steering angle sensor	Steering angle sensor signal
Combination meter	Odometer signal
	Vehicle speed signal (Meter)
	A/C OFF average electricity consumption for driving range signal
	A/C ON average electricity consumption for driving range signal
	Driving range difference signal
ABS actuator and electric unit (control unit)	Vehicle speed signal
	ABS warning lamp signal
	Brake warning lamp signal
	ESP OFF switch signal
	ESP warning lamp signal

Transmit unit	Signal name
VCM	A/C consumption power status display signal
	A/C consumption signal
	Current motor power signal
	ECO tree signal
	Li-ion battery charging data signal
	Others consumption signal
	Pre-A/C priority signal
	Pre-A/C timer signal
	Remaining time to charge completion (200 V) signal
	Remaining time to charge completion (100 V) signal
	Traction motor consumption signal
	VCM activation/deactivation command signal
	VCM status signal

TCU Input Signal

Transmit unit	Signal name
VCM	A/C expected consumption signal
	Charge status signal
	Pre-A/C status signal
	Remaining time to charge completion (200 V) signal
	Remaining time to charge completion (100 V) signal
	VCM activation/deactivation command signal
	VCM status signal
	Li-ion battery available charge signal
	Li-ion battery capacity signal
	Li-battery gradual capacity loss signal
On board charger	AC input type signal

TELEMATICS SYSTEM : System Description

INFOID:0000000006838258

NOTE:
To use the Telematics system, application is separately required.

- The Telematics system provides information and service that can support secure and comfortable use of vehicles by a full-time link between the vehicle and user through the Nissan CARWINGS Data Center.
- Available service functions of the Telematics system is CARWINGS service function.
- TCU has a built-in wireless communication terminal and sends/receives data with the Nissan CARWINGS Data Center via TEL antenna using packet communication *1 and SMS *2.
  NOTE:
  - *1: Packet communication is the communication method that sends/receives data in a small pack. Divided data is referred to as a packet and the communication line can be efficiently used.
  - *2: SMS stands for Short Message Service. It is also referred to as Text Messaging, Short Mail, etc. It is the service that performs text based message communication.
- The AV control unit and TCU are connected with the USB communication for sending/receiving operation signals and data signals.
- To use the Telematics system, it is necessary to activate TCU. The necessary conditions are as follows items.

- Join the Telematics service.
- Register the user ID and password in advance. (They are required for activation.)
- For activation operation, refer to AV-187, "ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM (WORK STEP VIEW) : Process Chart".

COMMUNICATION SIGNAL

- TCU is connected to the AV control unit through USB communication (USB 1.0), and it sends/receives reception data of TCU and operation signals of the AV control unit.
- TCU is connected to VCM, HVBAT (Li-ion Battery) and OBC (On Board Charger) through EV CAN, and it sends/receives vehicle information.

CARWINGS SERVICE FUNCTION

The following services are provided for each situation.

Situation		Service item
On board		Automatic update of charge facility information
		Search for nearest charge station
		Information channel
		Probe information
Before/after on board	Remote operation function	Remote air conditioning (immediate ON/timer reservation)
		Remote charge
		Charge check
	Notifying function	Notification of unplugged status
		Notification of charge status
	User's operation (mobile etc.)	Drive plan (Send-to-car)
		ECO drive

Automatic Update of Charge Facility/Search for Nearest Charge Station

Automatic update of charge facility

- Nearby charge stations around the user's vehicle (area of within a radius of 25 km <15-1/2 miles> from the vehicle) are automatically updated when the low battery warning lamp turns ON.
- Neighborhood charge stations around user's house (area within approximately 160 km <approx. 100 miles>) are automatically updated periodically.

Search for nearest charge station

- If the battery capacity is low during driving, a charge warning is given in 3 steps. If the user follows the warning, data is sent/received to/from the Nissan CARWINGS Data Center. Charge facilities around the vehicle are searched, and guidance is started on the navigation system. The search location is memorized on the AV control unit as charge station information.
- When the user selects update of the charge facilities in the area, data is sent and received to/from the Nissan CARWINGS Data Center. Charge facilities around the area are searched, and the locations searched are memorized to the AV control unit as charge station information.

NOTE:
Up to about 1,000 charge stations can be memorized.

Information channel/probe information

- Start the navigation menu or power switch with external signals and perform data communication with the Nissan CARWINGS Data Center through TCU.
- Information channel obtains various kinds of information such as internet content prepared by the Nissan CARWINGS Data Center and provides voice guidance and display guidance.
- For voice sound used in the information channel, TCU receives the text data from the Nissan CARWINGS Data Center through the TEL antenna in packet communication and sends it to the AV control unit. The AV control unit converts the text data to voice signal and outputs to the front speaker.
- If CARWINGS reading voice is output while the audio is ON and/or the voice guidance is being output, these audio sounds are muted and only the CARWINGS reading voice is output.
- Various vehicle information data (battery condition, driving distance, warning display, etc.) is sent to the Nissan CARWINGS Data Center to store the data. The timing for transmission is the information channel and ECO drive connection.

Remote Air Conditioning (Immediate ON/Timer Reservation) Operation

Before/after driving the vehicle, remote air conditioning operation can be performed through the Nissan CARWINGS Data Center by operating a user's cellular phone or PC. When using the remote control operation, the

vehicle must be stopped in a location where radio waves between the Nissan CARWINGS Data Center and vehicle can be received.

Immediate ON operation

- Vehicle air conditioning can be turned ON by remote control by operating a user's cellular phone or PC.

NOTE:

If the air conditioning is operated with the charging plug inserted, battery power is saved.

OPERATION PRINCIPLE

- The user operates the remote air conditioning with a cellular phone or PC and sends the data to the Nissan CARWINGS Data Center via the web site.
- The Nissan CARWINGS Data Center sends the TCU start signal to the vehicle via SMS.
- The vehicle processes the TCU start signal in TCU that is received by the TEL antenna, and starts TCU.
- After startup, TCU checks the EV-CAN communication status. If it is OK, TCU receives the remote air conditioning operation from the Nissan CARWINGS Data Center via packet communication.
- TCU sends the EV system start request signal to VCM via hard wire and sends the remote air conditioning request signal via EV-CAN.
- VCM is activated to start the air conditioning. VCM sends the VCM status signal and VCM activate/deactivate signal to TCU to notify that VCM is activated. For A/C-heater operation, refer toEVC-43, "AIR CONDITIONER CONTROL : System Description".
- When the air conditioning operation is started, TCU receives the pre-A/C signal from VCM and notifies the user's cellular phone or PC through the Nissan CARWINGS Data Center via packet communication that the air conditioning is activated.

Timer reservation operation

- The vehicle air conditioning is turned ON at the time set by the user with a cellular phone or PC.

NOTE:

- If the air conditioning is operated with the charging plug inserted, battery power is saved.
- The timer is controlled by the Nissan CARWINGS Data Center.

OPERATION PRINCIPLE

- The user operates the remote air conditioning timer reservation with a cellular phone or PC and sends the data to the Nissan CARWINGS Data Center via the web site.
- The Nissan CARWINGS Data Center sends the TCU start signal to the vehicle via SMS when the timer reservation time is reached.
- The vehicle processes the TCU start signal in TCU that is received by the TEL antenna, and starts TCU.
- After startup, TCU checks the EV-CAN communication status. If it is OK, TCU receives the remote air conditioning operation from the Nissan CARWINGS Data Center via packet communication.
- TCU sends the EV system start request signal to VCM through hard wire and sends the remote air conditioning request signal via EV-CAN.
- VCM is activated to start the air conditioning. VCM sends the VCM status signal and VCM activate/deactivate signal to TCU to notify that VCM is activated. For A/C-heater operation, refer to EVC-43, "AIR CONDITIONER CONTROL : System Description".
- When the air conditioning operation is started, TCU receives the pre-A/C signal from VCM and notifies the user's cellular phone or PC through the Nissan CARWINGS Data Center via packet communication that the air conditioning is activated.
- When the operation is completed, TCU sends the VCM sleep signal to VCM via EV-CAN communication to stop operation.

NOTE:

- If the air conditioning is not turned ON, the Nissan CARWINGS Data Center sends an e-mail to the user for notification.
- During operation of the remote air conditioning, the vehicle is operating the air conditioning circuit only.
- If the power switch is turned ON during operation of the remote air conditioning, the operation stops.

Remote Charge Operation

Before/after driving the vehicle, remote charge operation can be performed through the Nissan CARWINGS Data Center by operating a user's cellular phone or PC. When using the remote control operation, the charging plug must be inserted into the vehicle and the vehicle must be stopped in a location where radio waves between the Nissan CARWINGS Data Center and vehicle can be received.

OPERATION PRINCIPLE

1. The user operates remote charge start with a cellular phone or PC and sends the data to the Nissan CARWINGS Data Center via the web site.

2. The Nissan CARWINGS Data Center sends the TCU start signal to the vehicle via SMS.
3. The vehicle processes the TCU start signal in TCU that is received by the TEL antenna, and starts TCU.
4. After startup, TCU checks the EV-CAN communication status. If it is OK, TCU receives the remote charge operation from the Nissan CARWINGS Data Center via packet communication.
5. TCU sends the EV system start request signal to VCM via hard wire and sends the remote air conditioning request signal via EV-CAN.
6. When VCM is activated and charging is started, VCM sends the VCM status signal and VCM activate/deactivate signal to TCU to notify that VCM is activated. For charging operation, refer to EVC-36, "LI-ION BATTERY CHARGE CONTROL : System Description".
7. When charge is started, TCU receives the charge status signal and the remaining time to charge completion signal from VCM, and the charge status is sent to the user's cellular phone or PC through the Nissan CARWINGS Data Center via packet communication.
8. When charge is completed, TCU receives the charge status signal from VCM that charge is stopped, and notifies the user's cellular phone or PC through the Nissan CARWINGS Data Center via packet communication that the charge is completed.
9. When the timer operation is completed, TCU sends the VCM sleep signal to VCM to stop operation.

NOTE:
- If charge is not started, the Nissan CARWINGS Data Center sends an e-mail to the user for notification.
- If charge is abnormally ended for any reason, an e-mail indicating completion of charge in the same manner as a normal charge is notified. After charging, check the charge status.

Automatic Notification for Unplugged Status/Charge Status

TCU detects the charge status and notifies the Nissan CARWINGS Data Center of non-plug insertion and charge stop.

Notification of unplugged status
- When the power switch is OFF, check the charging plug fitting status after the time set on the screen. If the charging plug is not inserted, it is notified to the user's cellular phone and PC through the Nissan CARWINGS Data Center.
- The system operates in the area within 100 m of the user's registration.

OPERATION PRINCIPLE
- When the charging plug fitting check time is reached after the power switch is OFF, VCM is activated.
- Check the charging plug fitting with the charging plug connection signal and if the charging plug is not inserted, it is notified to the user's cellular phone and PC through the Nissan CARWINGS Data Center.

NOTE:

This process is effective only for normal charging plug and it is not compatible with quick charge.

Notification of charge status
- Completion of charge is notified to the user's cellular phone and PC through the Nissan CARWINGS Data Center.

OPERATION PRINCIPLE
- When charge is completed, TCU receives the charge status signal from VCM that charge has stopped, and notifies the user's cellular phone or PC through the Nissan CARWINGS Data Center via packet communication that the charge is completed.

NOTE:
- For abnormal completion (loose charging plug for any reason), the function to notify that charge operation has stopped sends an e-mail in the same manner as a normal end.
- Notification of charge status can be set between ON and OFF on the CARWINGS menu screen.

Charge Check
- The vehicle charge condition can be checked.

OPERATION PRINCIPLE
- The user operates a charge check with a cellular phone or PC and the data is sent to the Nissan CARWINGS Data Center through the web site.
- The Nissan CARWINGS Data Center sends the TCU start signal to the vehicle via SMS.
- The vehicle processes the TCU start signal in TCU that is received by the TEL antenna, and starts TCU.
- After startup, TCU checks the EV-CAN communication status. If it is OK, TCU receives the charge status check operation from the Nissan CARWINGS Data Center via packet communication.
- TCU sends the EV system start request signal to VCM via hard wire and sends the remote air conditioning request signal via EV-CAN.

- VCM starts. VCM sends the VCM status signal and VCM activate/deactivate signal to TCU to notify that VCM is activated.
- TCU receives the Li-ion battery capacity signal necessary for the remaining battery indication and full charge capacity indication from VCM and the Li-ion battery deterioration signal from Li-ion battery via EV-CAN communication.
- TCU sends the charge status to the user's cellular phone and PC through the Nissan CARWINGS Data Center via packet communication.
- When the timer operation is completed, TCU sends the VCM sleep signal to VCM to stop operation.

Drive plan

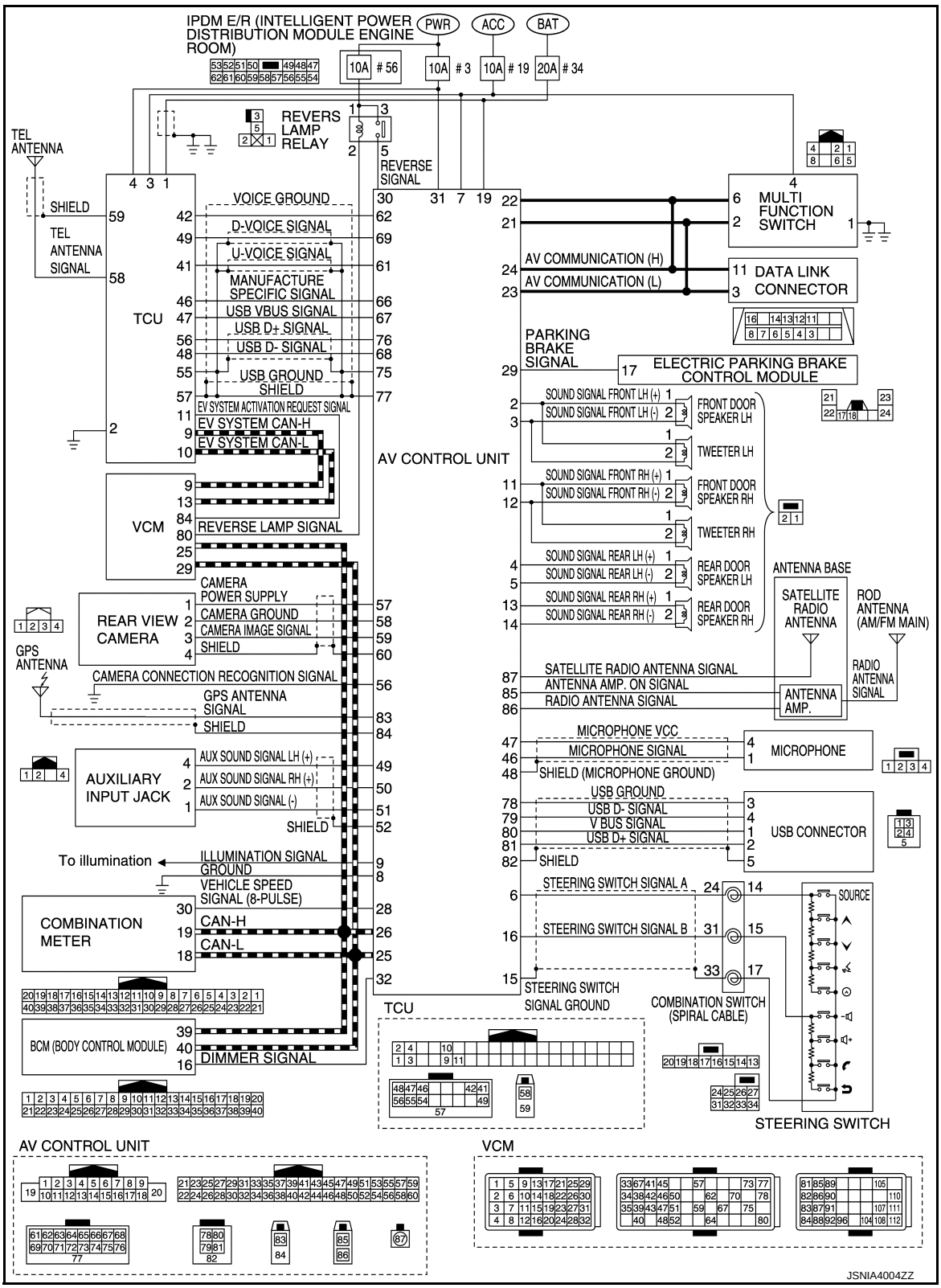
- A drive plan determined in advance can be sent to the vehicle from a PC to the vehicle through the Nissan CARWINGS Data Center.
- TCU receives the data through the TEL antenna and sends it to the AV control unit. The AV control unit converts the data into signals for display on the navigation route guide.

ECO drive

- Based on the data stored at the Nissan CARWINGS Data Center with probe information, ECO drive history, advice, ECO rank, etc. are displayed and checked.

TELEMATICS SYSTEM : Schematic

INFOID:0000000006838259



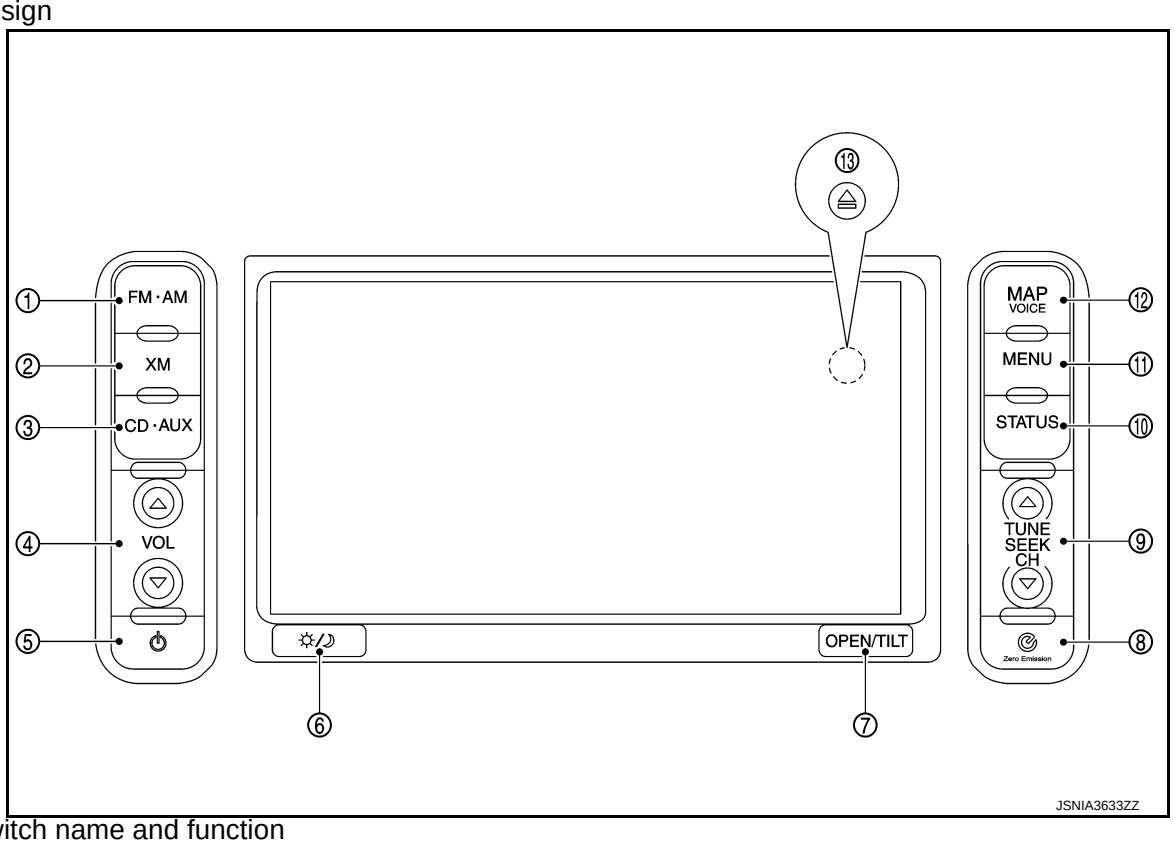
OPERATION

Switch Name and Function

INFOID:0000000006838260

Names and functions of AV control unit switches

1. Design



2. Switch name and function

No.	Switch name	Function
1	FM·AM	Press to switch between the FM radio band and the AM radio band.
2	XM	Press to switch to an XM satellite radio band.
3	CD·AUX	Press to switch between USB memory/iPod player*1/CD/Bluetooth® streaming audio*2 / AUX screens.
4	VOL (volume control)	Press to adjust the volume of the stereo.
5	⏻ (audio system ON·OFF)	Press to turn the audio system ON or OFF.
6	☀/☽ (Day/Night)	• Press to switch between the day screen (bright) and the night screen (dark). • Press and hold to turn off the display, then press again to turn on the display.
7	OPEN/TILT	• Press to open the monitor to access the CD slot and the SD card slot. • Press and hold to adjust the monitor angle. (6 angles)
8	(Zero emission)	Press to display the setting screen where several useful functions for electric vehicle driving are determined.
9	TUNE/SEEK/CH	• Press to select a track/station. • Press and hold to search for a track/station automatically or to fast-forward/back-forward when listening to music.
10	STATUS	Press to display the current status of the air conditioner, radio, audio, vehicle information (estimated distance, drivable distance and average energy economy) and navigation systems.
11	MENU	Press to display the setting menu (destination, route, information, settings, phoneand carwings) screen.

No.	Switch name	Function
12	MAP/VOICE	• Press to display the current location map screen. • Press and hold to repeat voice guidance.
13	⏏ (Disk eject)	Press to eject a disk.

- *1: Displayed when iPod® is connected.
- *2: Displayed when Bluetooth®audio is registered and “Bluetooth connection” setting is ON.

Menu Display by Pressing Each Switch

INFOID:0000000006838261

NOTE:
For Navigation system and Telematics system operation detailed information, refer to Navigation system Owner's Manual.

MENU

When the MENU switch is pressed, the menu screen is displayed.

Menu list		Description
Destination	Change Couontry	When setting a destination, the country can be selected. The country that was last selected is automatically selected by the system as the default.
	New Address	Searches for a destination by address.
	Home	Searches for a route from the current location to the previously stored home destination.
	Points of nterest	Searches for a destination from various categories of businesses or locations.
	Charging Station	Searches for the charging stations near the current vehicle location.
	Quick Stop	Searches for points of interest near the current vehicle location, such as restaurants and charging stations, etc.
	Address Book	Searches for a destination from the list of the stored locations.
	History	• Sets the previous starting point as destination. • Searches for the destination from the previous destinations.
	M-way En-trance/Exit	Searches for a destination from a motorway entrance/exit.
	Stored Routes	Selects a stored route.
	Latitude/Longi-tude	Searches for a destination by entering the latitude and the longitude.
	Junction	Searches for a destination from junctions.

Menu list		Description
Route	Cancel Route/ Resume Route	Cancels the current route guidance. A canceled route can also be reactivated. If the suggested route is canceled, “Cancel Route” changes to “Resume Route”.
	Edit Route	Edit or add a destination or waypoints to the route that is already set.
	Route Info	Confirm the route by the route information or simulation. The confirmed route can also be stored.
	Guidance Voice	Activates or deactivates route, voice guidance and/or traffic announcement and adjust the volume level of voice guidance.
	Recalculate	Manually search for the route again after changing the search condition and have the system calculate a route.
	Detour	A detour of a specified distance can be calculated.
	Traffic Detour	Manually search for an alternative detour route taking the traffic information into consideration.
	Route Calculation Criteria	Changes the route calculation conditions anywhere along the route.
Information	Traffic Information	Displays the Traffic Information.
	Energy Info.	Energy information is displayed on the screen.
	Maintenance	Displays the vehicle maintenance information.
	Charging Station Info	Displays charging station information for the current location.
	Where am I?	Displays information regarding the current vehicle location.
	Voice Recognition	Displays the voice command list.
	GPS Position	Displays GPS information regarding the current vehicle location.
	Navigation Version	Displays the current navigation system version.
Settings		The system can be customized the following items.
Phone	Phonebook	Select a telephone number from the phonebook, and then make a call. Before making a call, the telephone number must be registered in the phonebook.
	Call History	Select a telephone number from the incoming or outgoing history lists, and then make a call.
	Handset Memory	Download the phonebook from a cellular phone that is connected to the vehicle, select a telephone number from the phonebook, and then make a call. Phonebook data should be registered in the system after downloading the phonebook from the cellular phone that is connected to the vehicle. If the phonebook is not registered, a message that reminds you of phonebook data download will be displayed.
	Keypad	Input the phone number manually using the keypad displayed on the screen.
	Volume	Adjust various settings of phone volume.
	Pair Phone	• When a PIN code appears on the screen, operate the compatible Bluetooth® cellular phone to enter the PIN code. • When the connection process is completed, the screen will return to the Phone menu display.
	Paired Phone	The list of the registered cellular phones is displayed.
CARWINGS	Favorite Channels	A maximum of 16 favorite channels selected from the information channels can be stored in a folder.
	Information Channels	Touch the preferred folder. An information channel list is displayed.
	CARWINGS Records	The information channels that were referred to previously are displayed. A maximum of 3 channels are stored in the history.
	Update Stations	Charging station information is updated through connection to the Nissan CARWINGS Data Center.
	CARWINGS Settings	The CARWINGS system can be customized.

ZERO EMISSION MENU

When the ZERO EMISSION switch is pressed, the menu screen is displayed.

AVA1283

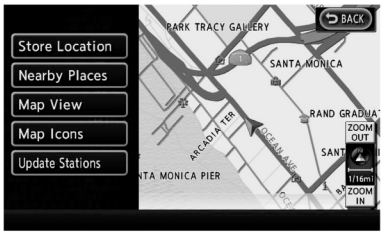
Menu list	Description
Driving Range	The estimated driving area within range, including the current position is displayed on the map screen.
Nearby Stations	Charging station information for the current position area is displayed.
Update Stations	Charging station information is updated through connection to the Nissan CARWINGS Data Center.
Energy Info.	Energy information is displayed on the screen.
Charging Timer	The timer charge function can be set.
A/C-Heater Timer (Climate Ctrl. Timer)	The A/C-Heater Timer (Climate Ctrl. Timer) function can be set.
CARWINGS	Information channels are displayed and settings for CARWINGSTM can be performed.
Settings	Setting of the warning message display or the charging status notification can be performed.

MAP MENU

Map menu at current location

If the following operation is performed at the current location, the available map menu is displayed.

- Touch the "Map Menu" switch on the map.



AVA1282

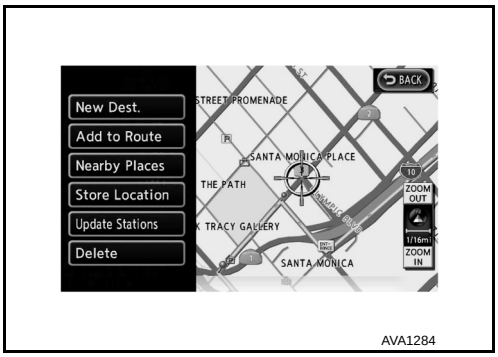
Menu item	Description
Store Location	Stores the current vehicle location in the Address Book. The stored location can be retrieved as necessary to set it as a destination (waypoint).
Quick Stop	Searches for points of interest near the current vehicle location, such as restaurants and charging stations, etc.

Menu item		Description
Map Settings	Map View	The screen display [Planview view, Birdview ®, split screen (2D/2D), split screen (2D/2D)] can be changed.
	Split Screen	
	Map Settings	Map Orientation (sets the map direction to North Up or Heading Up), Long Range (on/off), Birdview Angle (Changes the Birdview® angle), Left Settings (sets the map settings for the left screen of the split map) and Automatic Display of Highway Mode (on/off) can be set.
	Back to Map.	Return to the current position screen.
Landmark Icons		Displays map icons of certain points of interest (such as restaurants and charging stations, etc.) on the map around the current vehicle location
Update Station		Contact the Nissan CARWINGS Data Center to update charging station around the current vehicle location.

Map menu after scroll of map

If the following operation is performed after scrolling the map, the available map menu is displayed.

- Touch the "Map Menu" switch on the map.



Menu item	Description
New Dest.	Sets the destination to the map location where [New Dest.] was touched. If a destination is already set, the location will be set as the new destination.
Add to Route	Sets the map location where [Add to Route] was touched as the destination or a waypoint. This is available only when a suggested route is already set.
Quick Stop	Searches for points of interest such as restaurants and charging stations, etc. near the location by scrolling the map.
Store Location	Store the map location where [Store location] was touched in the Address Book. The stored location can be retrieved to set it as a destination or waypoint.
Update Stations	Contact the Nissan CARWINGS Data Center to update charging station around the point of the cursor.
Delete	Deletes a destination, waypoint or stored location. To delete, place the cross pointer over the corresponding icon.

HANDLING PRECAUTION

Telematics&CARWINGS

INFOID:0000000006838262

- In the following cases, no CARWINGS services are available.
- When the user has not subscribed to the service.
- When the vehicle moves out of the radio receiving zone
- When the radio wave reception environment is not suitable to data communication.
- When the vehicle is in a location that may block radio waves such as in an underground parking lot, behind a building, and in mountainous areas.
- Because the voice exchange with the CARWINGS information center uses the data communication mode, the service area may be narrower and the connection availability may be worse than the normal telephone system.
- Communication and calls to the CARWINGS information center require additional charges.
- If the vehicle is outside the communication area of TCU or the radio wave reception condition is poor, the connection to the CARWINGS information center may not be available or interrupted.
- If the communication is interrupted during a data download through any of the available services, the data must be downloaded again from the beginning.
- Because each of the available services uses data communication services, the connection to the CARWINGS information center may not be available even when the radio reception symbols indicate a good status. This is not a malfunction. In such a case, retry for connection after a short period of time.
- When transferring your vehicle, always resign from your membership. For details about the cancellation procedure, contact the CARWNGS customer center.

DIAGNOSIS SYSTEM (TCU)

CONSULT Function

INFOID:0000000006838263

APPLICABLE ITEM

CONSULT performs the following items by communication with TCU.

Diagnosis mode	Description
ECU identification information	Checks TCU part number and various ID numbers.
Self-diagnosis results	Performs the diagnosis of TCU and displays the current and past malfunctions collectively.
Data Monitor	The diagnosis of the vehicle signal that is input to TCU can be performed.
Work Support	Performs TCU activation setting, VIN data saving/writing and center connection setting.

ECU IDENTIFICATION INFORMATION

Displays TCU part number and various ID numbers.

Display items	DESCRIPTION
CONTROL UNIT NUMBER	Displays TCU part number.
UNIT ID	Displays AV control unit ID number.
TCU ID	Displays TCU ID number.
SIM ID	Displays SIM card ID number.
TCU PHONE NUMBER	Displays the “****”.

Self-diagnosis results

- In CONSULT self-diagnosis, the self-diagnosis results and error history are displayed collectively.
- The current malfunction indicates "0". The counter increases by 1 if the condition is normal at the next power switch ON cycle.

Self-diagnosis results display item

Self-diagnosis results may be displayed simultaneously according to the cause. If some error items are displayed simultaneously, the detection of the cause can be performed by the combination of display items.

Error item and error code	Description	Possible malfunction factor/Action to take
CAN COMM CIRC [U1000]	CAN communication malfunction is detected	Refer to AV-191, "Diagnosis Procedure".
CONTROL UNIT (CAN) [U1010]	CAN initial diagnosis malfunction is detected	Replace TCU if the malfunction constantly occurs. Refer to AV-211, "Removal and Installation".
ACC NO CONN [U1A00]	A malfunction is detected in the ACC circuit.	• Check the ACC circuit. Refer to AV-201, "TCU : Diagnosis Procedure". • If the ACC circuit is normal, replace TCU.
INTERNAL ERROR (TCU) [U1A01]	TCU malfunction is detected.	Replace TCU if the malfunction constantly occurs. Refer to AV-211, "Removal and Installation".
TEL COMMUNICATION MODULE [U1A02]		
SIM CARD [U1A03]	SIM card malfunction is detected.	• Check the SIM card. • Replace TCU if the malfunction constantly occurs. Refer to AV-211, "Removal and Installation".
VIN number write not completed [U1A04]	Write of VIN number is not completed.	Use CONSULT to write VIN number. Refer to AV-197, "Diagnosis Procedure".

Error item and error code	Description	Possible malfunction factor/Action to take
USB COMM [U1A05]	Malfunction of USB communication circuit is detected.	Check the USB communication circuit. Refer to AV-198, "Diagnosis Procedure".
TEL ANTENNA SHORT [U1A07]	Malfunction is detected on the TEL antenna circuit.	Check the antenna circuit. Refer to AV-199, "Diagnosis Procedure".
TEL ANTENNA NO CONN [U1A08]		Check the antenna circuit. Refer to AV-200, "Diagnosis Procedure".

Data Monitor

All Items
- Displays the status of the following vehicle signals inputted into TCU.
- For each signal, the actual signal can be compared with the condition recognized on the system.

Display item	Display	Condition	Note
ECHO CANCEL	type1	—	This item is displayed, but cannot be used
NOISE CANCEL	type1	—	This item is displayed, but cannot be used
TCU STANDBY TIME	14DAYS	Set at 14 days (default)	• Set value for continued operation time to control battery consumption • This item is displayed, but cannot be used
	2DAYS	Set at 2 days	
	30DAYS	Set at 30 days	
	NON	No setting	
NAD OUTPUT STATUS	On	When TCU activation is ON	NAD: Abbreviation of Network Access Device. ON/OFF setting of radio wave
	Off	When TCU activation is OFF	

WORK SUPPORT

Performs TCU activation setting, VIN data saving/writing and center connection setting.

Item name	DESCRIPTION
SAVE VIN DATA	The VIN data saved in TCU is stored in CONSULT.
CHANGE TCU ACTIVATE SETTING	TCU ON/OFF setting is available.
CENTER CONNECTION SETTING	Connection of the Nissan CARWINGS Data Center can be set.
WRITE VIN DATA	Write VIN data stored by “SAVE VIN DATA” in work support mode to TCU.
WRITE VIN DATA (MANUAL)	Write VIN data in TCU.

ECU DIAGNOSIS INFORMATION

AV CONTROL UNIT

Reference Value

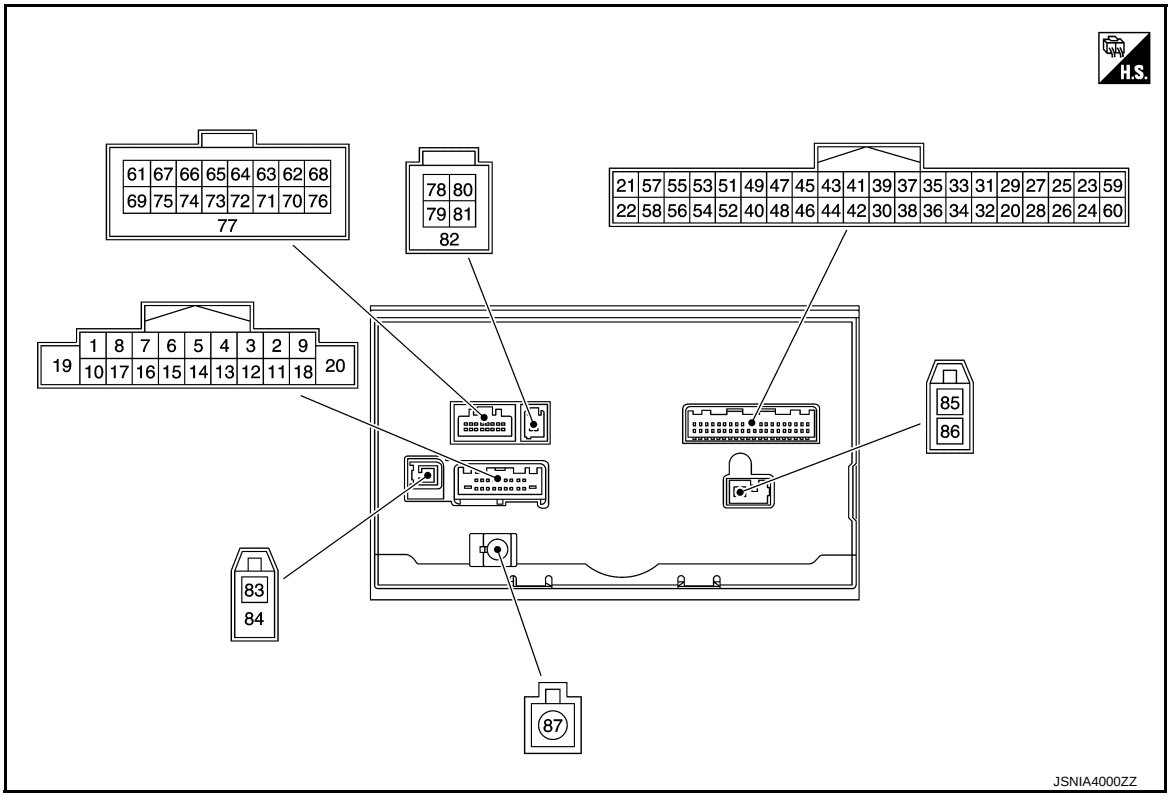
INFOID:0000000006968033

CONSULT DATA MONITOR REFERENCE VALUES

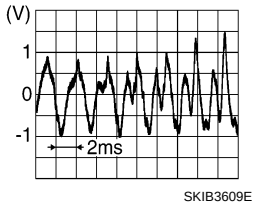
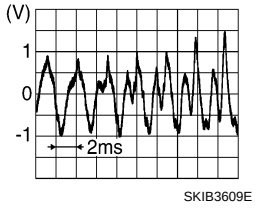
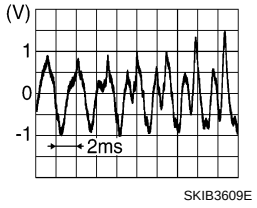
-CONSULT DATA MONITOR ITEMS

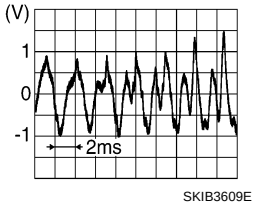
Monitor item	Test condition		Reference value/Status
VHCL SPD SIG	Ignition switch ON	Vehicle speed > 0 km/h (0 MPH)	On
		Vehicle speed = 0 km/h (0 MPH)	Off
PKB SIG	Ignition switch ON	Parking brake is applied.	On
		Parking brake is released.	Off
ILLUM SIG	Ignition switch ON	Block the light beam from the auto light optical sensor when the light switch is ON.	On
		Expose the auto light optical sensor to light when the light switch is OFF or ON.	Off
IGN SIG	Ignition switch ON	—	On
	Ignition switch ACC	—	Off
REV SIG	Ignition switch ON	Selector lever in R position	On
		Selector lever in any position other than R	Off

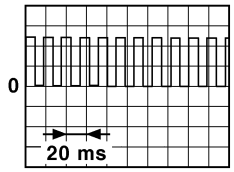
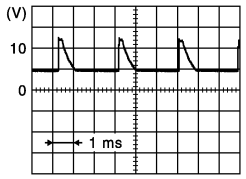
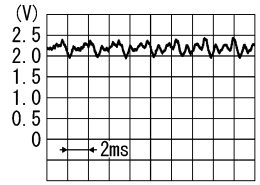
TERMINAL LAYOUT

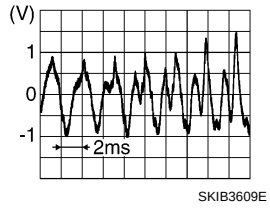
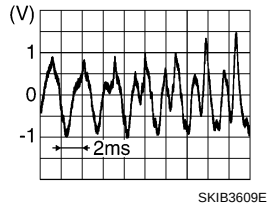
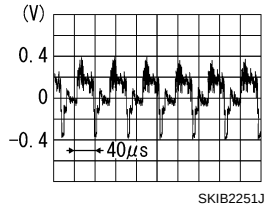


PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
2 (L)	3 (P)	Sound signal front LH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
4 (V)	5 (R)	Sound signal rear LH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
6 (BR)	15	Steering switch signal A	Input	Power switch ON	Keep pressing SOURCE switch.	0 – 5.5 V	0 V
					Keep pressing ▲ switch.		1.0 V
					Keep pressing ▼ switch.		2.0 V
					Keep pressing switch.		3.0 V
					Keep pressing switch.		4.0 V
					Except for above.		5.0 V
7 (L)	Ground	ACC power supply	Input	Power switch ACC	—	8.6 – 16 V	Battery voltage
8 (B)	—	Ground	—	—	—	—	—
9 (W)	Ground	Illumination signal	Input	Power switch ON	Lighting switch is ON.	Battery voltage (Max. 16V)	12 V
					Lighting switch is OFF.	Ground level	0 V
11 (G)	12 (R)	Sound signal front RH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
13 (LG)	14 (GR)	Sound signal rear RH	Output	Power switch ON	Sound output	Waveform synchronized with voice is output.	 SKIB3609E
16 (Y)	15	Steering switch signal B	Input	Power switch ON	Keep pressing – switch.	0– 5.5 V	0 V
					Keep pressing + switch.		1.0 V
					Keep pressing switch.		2.0 V
					Keep pressing switch.		3.0 V
					Except for above.		5.0 V
19 (BR)	Ground	Battery power supply	Input	Power switch OFF	—	9 – 16 V	Battery voltage
21 (LG)	—	AV communication signal (L)	Input/ Output	—	—	—	—
22 (SB)	—	AV communication signal (H)	Input/ Output	—	—	—	—
23 (LG)	—	AV communication signal (L)	Input/ Output	—	—	—	—
24 (SB)	—	AV communication signal (H)	Input/ Output	—	—	—	—
25 (P)	—	CAN–L	Input/ Output	—	—	—	—
26 (L)	—	CAN–H	Input/ Output	—	—	—	—

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
28 (GR)	Ground	Vehicle speed signal (8-pulse)	Input	Power switch ON	When vehicle speed is approx. 40 km/h (25 MPH)	Input waveform that repeats 1.5 V or less – 8.6 V or more.	**NOTE:** The maximum voltage varies depending on the specification (destination unit).  JSNIA0012GB
29 (BR)	Ground	Parking brake signal	Input	Power switch ON	Parking brake is ON.	1.5 V or less	0 V
					Parking brake is OFF.	3.5 V or more	 JSNIA1938ZZ
30 (G)	Ground	Reverse signal	Input	Power switch ON	R position	6.97 V or more	12 V
					Other than R position	3.42 V or less	0 V
31 (V)	Ground	Ignition signal	Input	Power switch ON		5.42 V or more	12 V
				Other than power switch ON		4.52 V or less	0 V
32 (R)	Ground	Dimmer signal	Input	Power switch ON	Either of the following conditions • Lighting switch OFF • Expose the auto light optical sensor to light when the light switch is ON.	3.41 V or less	0 V
					Block the light beam from the auto light optical sensor when the light switch is ON.	6.97 V or more	12 V
46 (L)	Ground	Microphone signal	Input	Power switch ON	Give a voice	The value between the maximum input voltage and the minimum input voltage is 4.72V or less.	 PKIB5037J
47 (Y)	Ground	Microphone VCC	Output	Power switch ON	—	5 V	5 V

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
48	—	Shield (microphone ground)	—	—	—	—	—
49 (R)	51 (B)	AUX sound signal LH	Input	Power switch ON	When AUX mode is selected.		 SKIB3609E
50 (W)	51 (B)	AUX sound signal RH	Input	Power switch ON	When AUX mode is selected.		 SKIB3609E
52	—	Shield	—	—	—	—	—
56 (B)	Ground	Camera connection recognition signal	Output	Power switch ON	Connected to camera connector	1.5V or less	0 V
					Not connected to camera connector	3V or more	12 V
57 (R)	Ground	Camera power supply	Output	Power switch ON	At rear view camera image is displayed.	6.2 V	6 V
58 (W)	Ground	Camera ground	—	Power switch ON	—		0 V
59 (R)	Ground	Camera image signal	Input	Power switch ON	At rear view camera image is displayed.	Input the waveform synchronized with the rear view camera image.	 SKIB2251J
60	—	Shield	—	—	—	—	—
61 (SB)	62 (P)	U–VOICE signal	Output	Power switch ON	—	—	—
66 (P)	Ground	Manufacturer Specific signal	—	—	Not used.	—	—
67 (L)	75	USB V BUS signal	Output	Power switch ON	—	5 V	—

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
68 (Y)	75	USB D – signal	Input/ Output	—	—	—	—
69 (O)	75	D–VOICE signal	Input	—	—	—	—
76 (LG)	75	USB D+ signal	Input/ Output	—	—	—	—
77	—	Shield	—	—	—	—	—
79 (R)	78 (G)	USB D– signal	Input/ Output	—	—	—	—
80 (W)	78 (G)	V BUS signal	Output	Power switch ON	—	5 V	5 V
81 (L)	78 (G)	USB D+ signal	Input/ Output	—	—	—	—
82	—	Shield	—	—	—	—	—
83	Ground	GPS antenna signal	Input	Power switch ACC	Not connected GPS antenna connector.	5 V	5 V
84	—	Shield	—	—	—	—	—
85	Ground	Antenna amp. ON signal	Output	Power switch ACC	—	9 – 16 V	12 V
86	—	AM-FM main	Input	—	—	—	—
87	Ground	Satellite radio antenna signal	Input	Power switch ON	Not connected satellite antenna connector.	5 V	5 V

Fail-safe

INFOID:0000000006968034

When a malfunction occurs within the system, the AV control unit outputs a message on the display, and it restricts the AV control unit functions.

FAIL-SAFE CONDITIONS

SD card not inserted, SD card malfunction, internal malfunction of navigation, etc.

Display Indication

- When the system is in the fail-safe status at the start of the AV control unit, an error message is shown on the display.

- When the system is in the fail-safe status after the start of the AV control unit, an error message is not shown on the display. The MULTI AV system may be rebooted in the fail-safe state. If the fail-safe state is maintained after the system is rebooted, an applicable message is shown.

Cause	Display monitor
Malfunction of flash ROM information	TARGET INFO NG
No SD card	NO SD CARD
Unsuccessful security unlock	SD UNLOCK NG
Malfunction of SD card mount	SD INIT NG
Malfunction of SD card access	SD ACCESS NG
No program data	NO NAVI-2 DATA
Malfunction of program data (SUM NG)	NAVI-2DATA READ NG
Inconsistent program version (Flash/SD)	NAVI VERSION NG
Difference of map destination	DIFFERENT MAP CODE
Not compliant with map database version	MAP DATA BASE UNMATCH
Malfunction of navigation	NAVI STARTUP NG

CONTROL

When the system is in the fail-safe status at or after start of the AV control unit, the following functions are restricted.

Function		In fail-safe mode
A/C	Display	No display (fail-safe status display)
Audio	Operation	Mute audio
	Display	No display (fail-safe status display)
Camera	Operation	It cannot be operated
	Display	Only composite (camera image) is displayed and superimpose (warning display and image quality display) is not displayed.
Hands-free phone	Operation	It cannot be operated
Navigation	Operation	It cannot be operated
Display	Operation	Open/close operation is available
	Display	Fail-safe factors are displayed
Self-diagnosis		It cannot be diagnosed
CONSULT diagnosis		It cannot be diagnosed
AV communication diagnosis		It cannot be diagnosed
Frequency transmission for VCM		Normal
SD read access		Access cannot be gained.
SD write access		Access cannot be gained.

CANCELLATION CONDITIONS

The fail-safe status is canceled under the following conditions, and then the system returns to the normal mode.

- When the SD card is not inserted, the SD card is inserted and the power of the AV control unit is turned ON again.

- When the SD card is not functional at the start of navigation due to a malfunction of the SD card, a normal SD card is inserted and the power of the AV control unit is turned ON again.

DTC Index

INFOID:0000000006968036

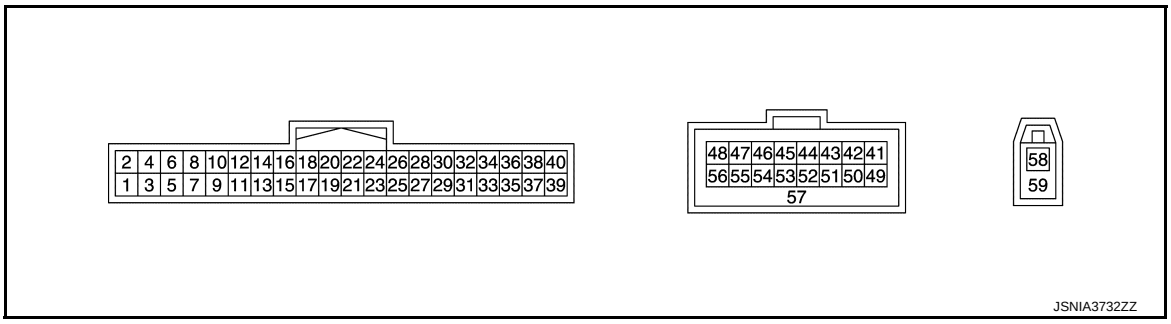
DTC	Display item	Refer to
U1000	CAN COMM CIRC [U1000]	AV-85, "Diagnosis Procedure"
U1010	CONTROL UNIT (CAN) [U1010]	AV-86, "DTC Logic"
U121F	CONTROL UNIT [U121F]	AV-87, "DTC Logic"
U1232	ST ANGLE SEN CALIB [U1232]	AV-88, "Diagnosis Procedure"
U1244	GPS ANTENNA CONN [U1244]	AV-89, "Diagnosis Procedure"
U1258	XM ANTENNA CONN [U1258]	AV-90, "Diagnosis Procedure"
U1263	USB OVERCURRENT [U1263]	AV-91, "Diagnosis Procedure"
U1266	TCU CONN[U1266]	AV-92, "DTC Logic"
U1310	CONTROL UNIT (AV) [U1310]	AV-94, "DTC Logic"
U1300 U1240	• AV COMM CIRCUIT [U1300] • SWITCH CONN [U1240]	AV-93, "Description"

TCU

Reference Value

INFOID:0000000006838270

TERMINAL LAYOUT



INPUT/OUTPUT SIGNAL STANDARD

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
1 (BR)	2 (B)	Battery power supply	Input	Power switch OFF	—	9 - 16 V	Battery Voltage
3 (G)	2 (B)	ACC power supply	Input	Power switch ACC	—	9 - 16 V	12 V
4 (V)	2 (B)	Power switch ON signal	Input	Power switch ON	—	9 - 16 V	12 V
9 (L)	—	EV-CAN (H)	Input/ Output	—	—	—	—
10 (G)	—	EV-CAN (L)	Input/ Output	—	—	—	—
11 (LG)	2 (B)	EV system activation request signal	Output	Power switch OFF	When remote operation is started	9 - 16 V	12 V
41 (Y)	42 (B)	U-VOICE signal	Input	—	—	—	—
46 (V)	2 (B)	Manufacturer Specific signal	—	—	—	—	—
47 (BR)	55 (B)	USB V BUS signal	Input	Power switch ON	—	—	5 V

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
48 (L)	55 (B)	USB D- signal	Input/ Output	—	—	—	—
49 (G)	42 (B)	D-VOICE signal	Output	—	—	—	—
56 (R)	55 (B)	USB D+ signal	Input/ Output	Power switch ON	—	—	—
57	—	Shield	—	—	—	—	—
58	—	TEL antenna signal	Input	—	—	—	—
59	—	Shield	—	—	—	—	—

DTC Index

INFOID:0000000006838271

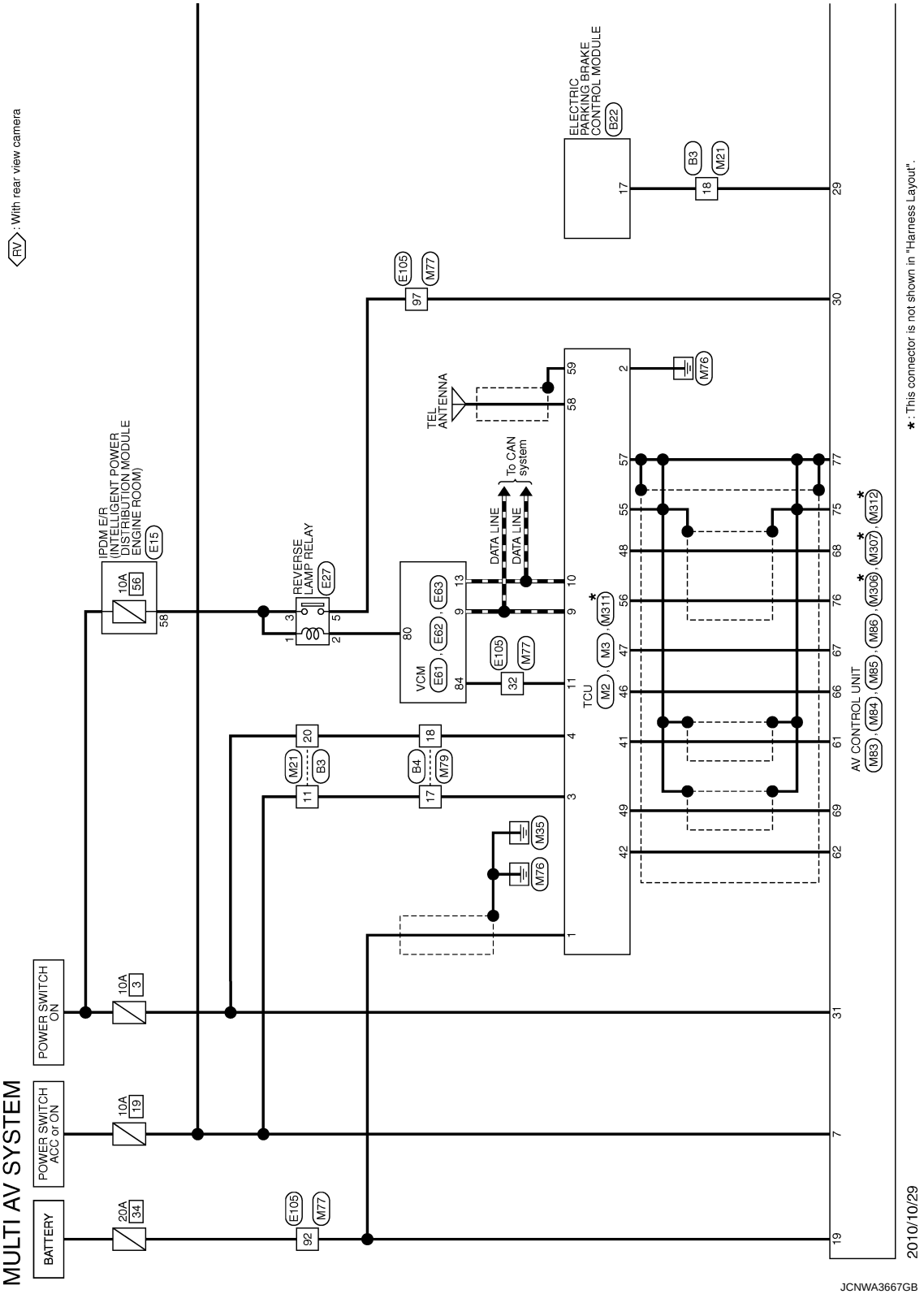
DTC	Display item	Refer to
U1000	CAN COMM CIRC [U1000]	AV-191, "Diagnosis Procedure"
U1010	CONTROL UNIT (CAN) [U1010]	AV-192, "DTC Logic"
U1A00	ACC NO CONN [U1A00]	AV-193, "Diagnosis Procedure"
U1A01	INTERNAL ERROR (TCU) [U1A01]	AV-194, "DTC Logic"
U1A02	TEL COMMUNICATION MODULE [U1A02]	AV-195, "DTC Logic"
U1A03	SIM CARD [U1A03]	AV-196, "DTC Logic"
U1A04	VIN UNFINISHED [U1A04]	AV-197, "DTC Logic"
U1A05	USB COMM [U1A05]	AV-198, "Diagnosis Procedure"
U1A07	TEL ANTENNA SHORT [U1A07]	AV-199, "Diagnosis Procedure"
U1A08	TEL ANTENNA NO CONN [U1A08]	AV-200, "Diagnosis Procedure"

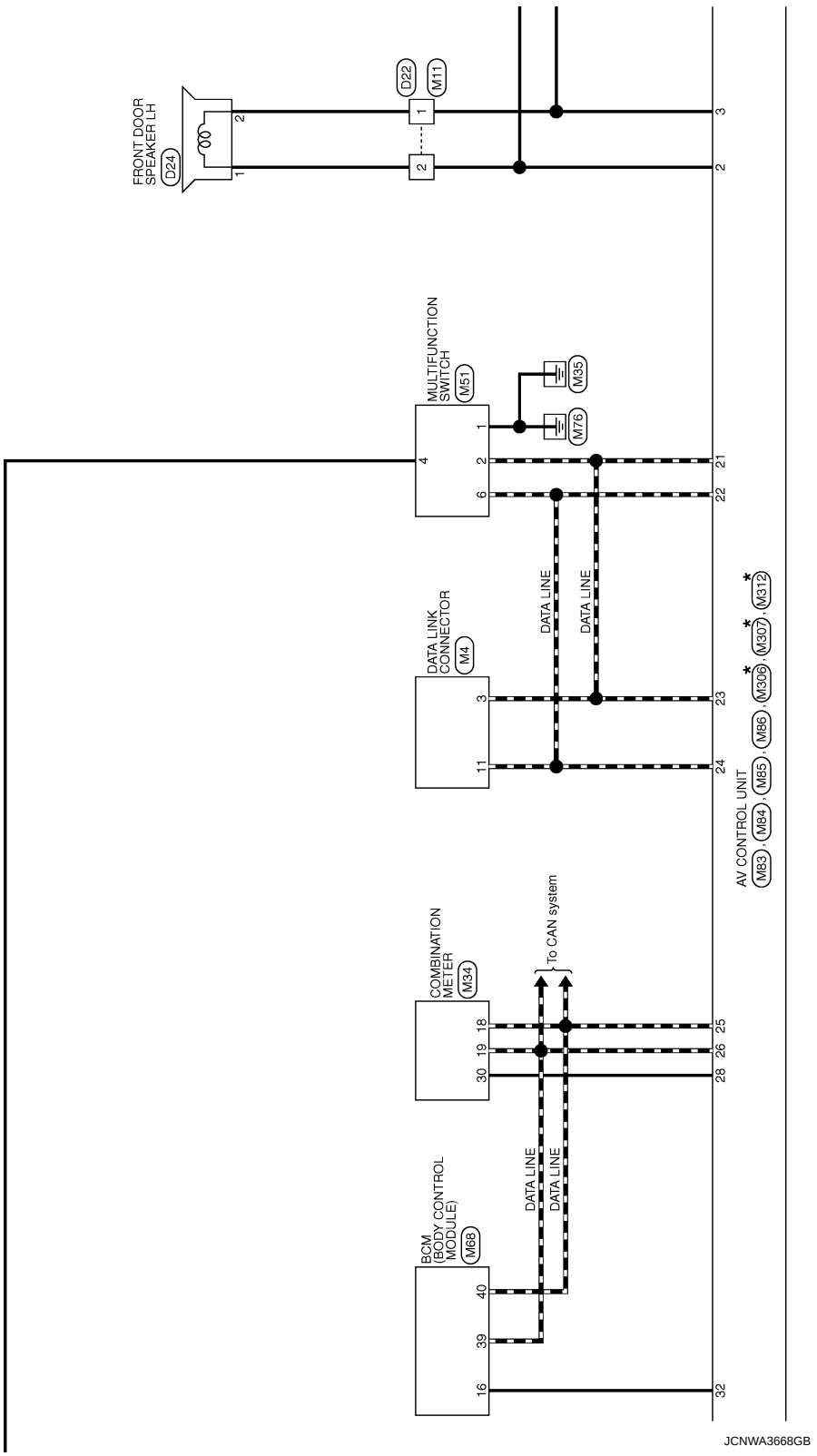
WIRING DIAGRAM

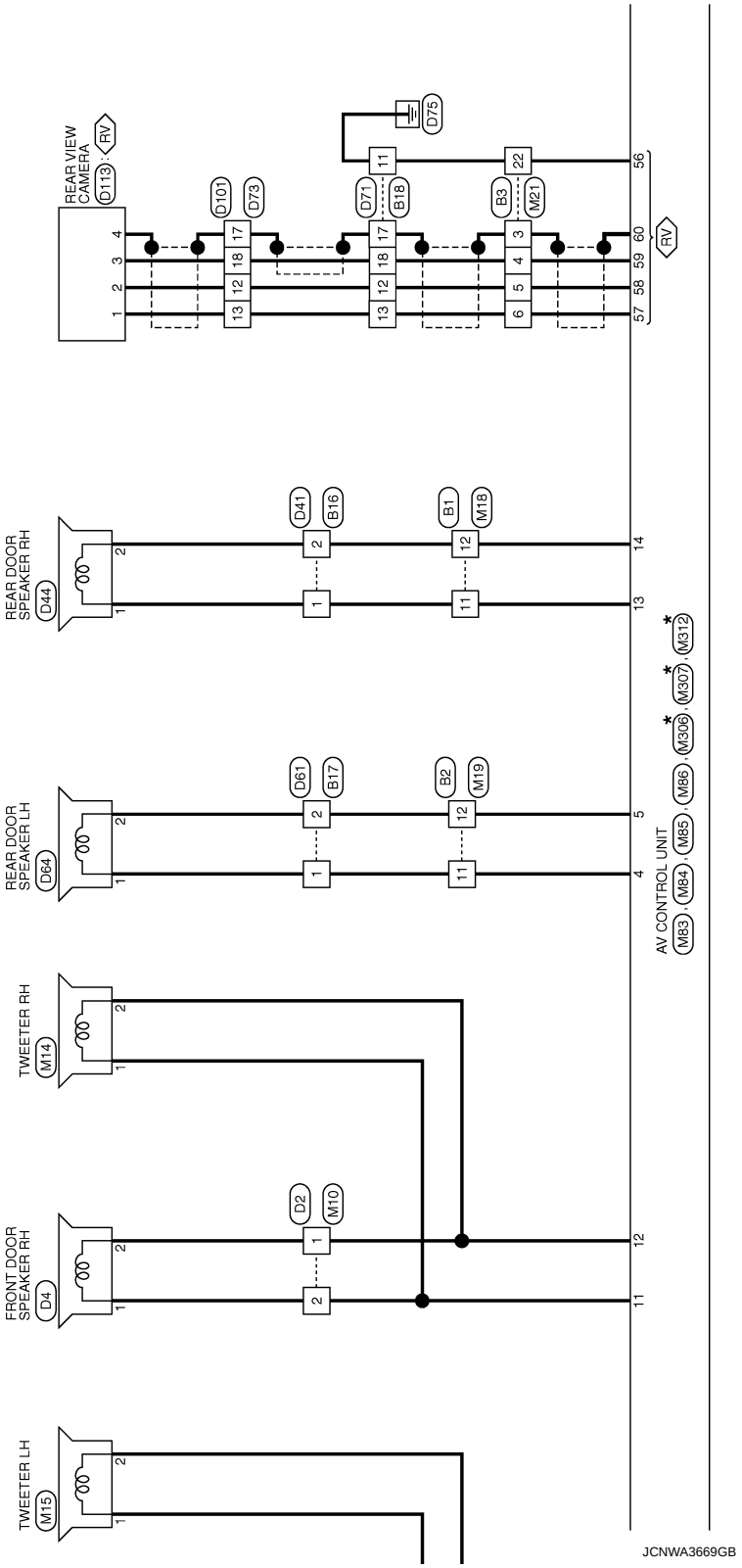
MULTI AV SYSTEM

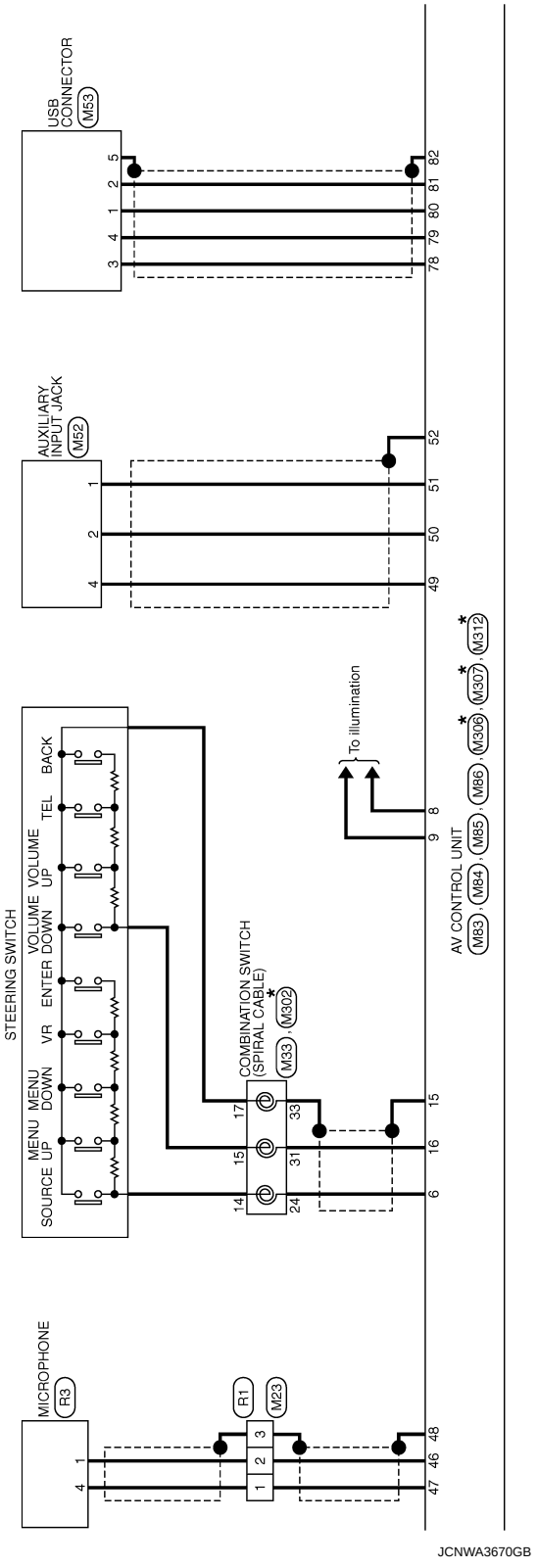
Wiring Diagram

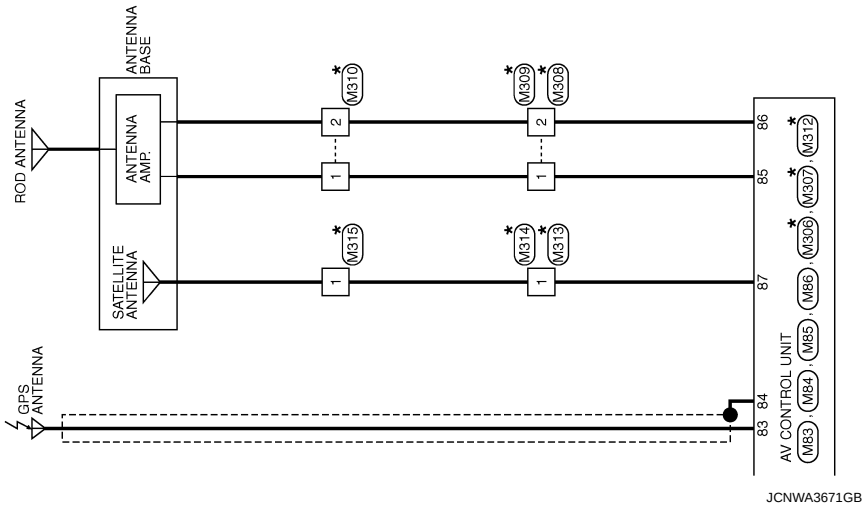
INFOID:0000000007079152




FRONT DOOR SPEAKER LH
D24
D22
M11
MULTIFUNCTION SWITCH
M51
M35
M76
DATA LINK CONNECTOR
M4
DATA LINE
DATA LINE
AV CONTROL UNIT
M83, M84, M85, M86, M306*, M307*, M312*
COMBINATION METER
M34
To CAN system
BCM (BODY CONTROL MODULE)
M68
DATA LINE
DATA LINE
JCNWA3668GB


REAR VIEW CAMERA
D113
RV
D101
D73
D71
B18
D75
B3
M21
RV
REAR DOOR SPEAKER RH
D44
D41
B16
B1
M18
REAR DOOR SPEAKER LH
D64
D61
B17
B2
M19
TWEETER RH
M14
FRONT DOOR SPEAKER RH
D4
D2
M10
TWEETER LH
M15
AV CONTROL UNIT
M83
M84
M85
M86
M306
M307
M312
JCNWA3669GB


USB CONNECTOR
M53
AUXILIARY INPUT JACK
M52
STEERING SWITCH
SOURCE
MENU UP
MENU DOWN
VR
ENTER
VOLUME DOWN
VOLUME UP
TEL
BACK
COMBINATION SWITCH (SPIRAL CABLE)
M33
M302
To illumination
AV CONTROL UNIT
M83
M84
M85
M86
M306
M307
M312
MICROPHONE
R3
R1
M23
JCNWA3670GB


ANTENNA BASE
ROD ANTENNA
ANTENNA AMP.
SATELLITE ANTENNA
GPS ANTENNA
M310
M309
M308
M315
M314
M313
M312
M307
M306
M86
M85
M84
M83
AV CONTROL UNIT
86
85
87
84
83
2
1
JCNWA3671GB

MULTI AV SYSTEM

Connector No.	B1
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
6	R	–
7	BR	–
10	W	–
11	LG	–
12	P	–
13	V	–
14	Y	–
15	W	–
16	L	–

Connector No.	B2
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
4	V	–
7	V	–
8	P	–
9	GR	–
10	SB	–
11	V	–
12	LG	–
13	V	–
14	GR	–
15	L	–
16	G	–

Connector No.	B3
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	–
3	SHIELD	–
4	B	–
5	W	–
6	R	–
11	G	–
15	L	–
16	G	–
18	L	–
19	BR	–
20	V	–
22	B	–
27	L	–
31	L	–
32	P	–

Connector No.	B4
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
8	BR	–
11	R	–
12	G	–
17	G	–
18	R	–
20	B	–
21	W	–

22	V	–
23	LG	–
24	SHIELD	–

Connector No.	B16
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8

Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
2	P	–
11	G	–
12	R	–
14	W	–
15	Y	–
16	L	–

Connector No.	B17
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8

Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	LG	–
11	GR	–
12	V	–
14	L	–
15	V	–
16	GR	–

Connector No.	B18
Connector Name	WIRE TO WIRE
Connector Type	NH10MW-CS10

Terminal No.	Color of Wire	Signal Name [Specification]
5	P	–
6	R	–
7	P	–
9	P	–
10	Y	–
11	B	–
12	W	–
13	R	–
14	L	–
15	LG	–
17	SHIELD	–
18	B	–
20	GR	–

Connector No.	B22
Connector Name	ELECTRIC PARKING BRAKE CONTROL MODULE
Connector Type	TB04FW-TM4

Terminal No.	Color of Wire	Signal Name [Specification]
17	L	ELECTRIC PARKING BRAKE CONTROL MODULE WAKEUP SIGNAL
18	P	PARKING BRAKE SW INDICATOR SIGNAL
21	L	MOTOR POWER SUPPLY (+)
22	R	PARKING BRAKE ACTUATOR BATTERY
23	G	MOTOR POWER SUPPLY (–)
24	B	GND

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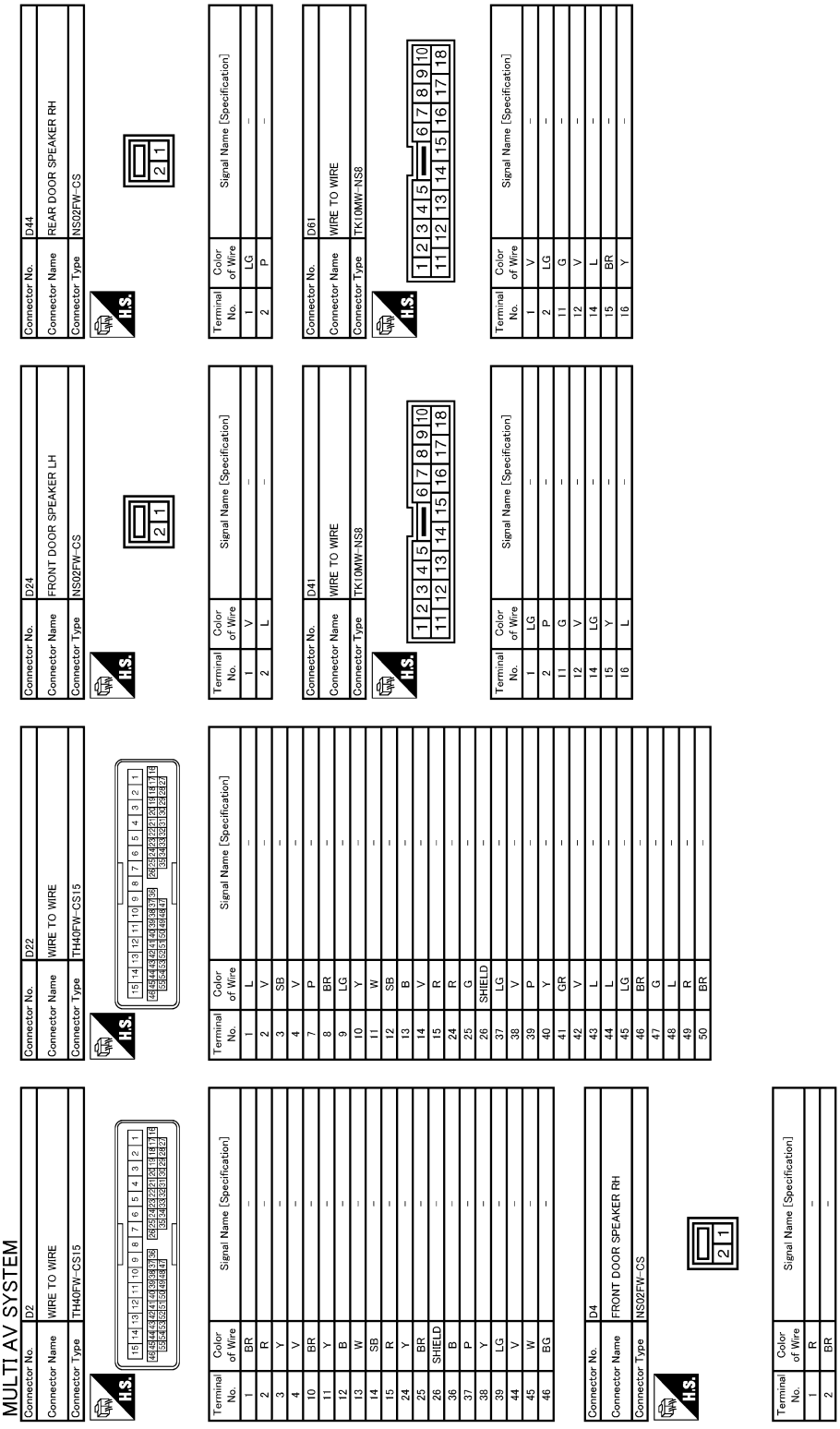

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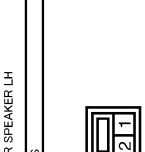
MULTI AV SYSTEM

Connector No.	D64
Connector Name	REAR DOOR SPEAKER LH
Connector Type	NS02FW-CS

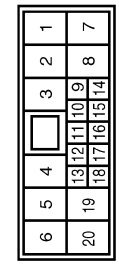
Terminal No.	Color of Wire	Signal Name [Specification]
1	V	–
2	LG	–

Connector No.	D71
Connector Name	WIRE TO WIRE
Connector Type	NH10FW-CS10



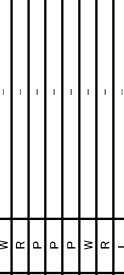
Terminal No.	Color of Wire	Signal Name [Specification]
5	W	–
6	R	–
7	P	–
9	P	–
10	P	–
11	B	–
12	W	–
13	R	–
14	L	–
15	LG	–
17	SHIELD	–
18	Y	–
20	GR	–

Connector No.	D73
Connector Name	WIRE TO WIRE
Connector Type	NH10FW-CS10



Terminal No.	Color of Wire	Signal Name [Specification]
5	W	–
6	R	–
7	P	–
9	P	–
10	P	–
12	W	–
13	R	–
14	L	–
15	LG	–
17	SHIELD	–
18	Y	–
20	GR	–

Connector No.	D101
Connector Name	WIRE TO WIRE
Connector Type	NH10MW-CS10



Terminal No.	Color of Wire	Signal Name [Specification]
5	P	–
6	R	–
7	P	–
9	P	–
10	P	–
11	W	–
12	R	–
13	L	–
14	LG	–
15	SHIELD	–
17	–	–

18	B	–
20	GR	–

Connector No.	D113
Connector Name	REAR VIEW CAMERA
Connector Type	TH04MW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	CAMERA POWER SUPPLY
2	W	CAMERA GND
3	B	CAMERA IMAGE SIGNAL
4	SHIELD	–

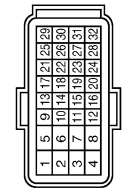
Connector No.	E15
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
49	Y	–
50	G	–
51	L	–
52	P	–
55	LG	–
57	R	–
58	O	–
60	GR	–
61	Y	–
62	V	–

Connector No.	E27
Connector Name	REVERSE LAMP RELAY
Connector Type	MS02FL-M2-LC

Terminal No.	Color of Wire	Signal Name [Specification]
1	O	–
2	SB	–
3	O	–
5	G	–

Connector No.	E61
Connector Name	VCM
Connector Type	RH24FGY-RZ8-R-RH



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	POWER ON POWER SUPPLY
4	B/R	GROUND
5	SB	A/C RELAY
6	R	BATTERY POWER SUPPLY
7	W	SSOFF RELAY
8	B/R	GROUND
9	L	EV SYSTEM CAN-H
13	G	EV SYSTEM CAN-L
15	O	ASCD BRAKE SWITCH SIGNAL
18	SB	STOP LAMP SW SIGNAL
21	R	POWER ON POWER SUPPLY
23	P	HIGH VOLTAGE CABLE INTERLOCK
25	L	CAN-H
26	Y	WATER PUMP 2 SIGNAL
28	W	WATER PUMP 1 SIGNAL
29	P	CAN-L

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MULTI AV SYSTEM

Connector No.	E62
Connector Name	VCM
Connector Type	RH40FBR-RZ8-L-RH

Terminal No.	Color of Wire	Signal Name [Specification]
33	L	SENSOR POWER SUPPLY (REFRIGERANT PRESSURE SENSOR)
34	B	REFRIGERANT PRESSURE SENSOR SIGNAL
35	BR	SENSOR GROUND (REFRIGERANT PRESSURE SENSOR)
37	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
38	R	ACCELERATOR PEDAL POSITION SENSOR 1 SIGNAL
39	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 1)
40	SHIELD	–
41	R	SENSOR POWER SUPPLY (BATTERY CURRENT SENSOR)
42	Y	BATTERY CURRENT SENSOR SIGNAL
43	L	SENSOR GROUND (BATTERY CURRENT SENSOR)
45	W	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
46	R	ACCELERATOR PEDAL POSITION SENSOR 2 SIGNAL
47	B	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
48	SHIELD	–
50	L	BATTERY TEMPERATURE SENSOR SIGNAL
51	O	COOLANT TEMPERATURE SENSOR SIGNAL
52	W	SENSOR GROUND (COOLANT TEMPERATURE SENSOR)
57	LG	POWER VOLTAGE VARIABLE CONTROL SIGNAL
59	V	RADIATOR FAN CONTROL SIGNAL
62	G	WATER PUMP 1 ACTIVATION SIGNAL
64	R	WATER PUMP 2 ACTIVATION SIGNAL
67	Y	DC/DC CONVERTER TEMPERATURE SIGNAL
70	W	DC/DC CONVERTER ACTIVATION SIGNAL
73	GR	F/S RELAY
75	W	F/S CHG RELAY
77	LG	F/S RELAY POWER SUPPLY
78	G	M/C RELAY
80	SB	REVERSE LAMP RELAY

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 STTERING SWICH GROUND
110	L/Y	SYSTEM MAIN RELAY 2
111	B/R	GROUND
112	B/R	GROUND

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	–
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.	M2
Connector Name	TCU
Connector Type	TH40FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	BR	BATTERY POWER SUPPLY
2	B	GROUND
3	G	ACC POWER SUPPLY
4	V	POWER SWITCH ON SIGNAL
9	L	EV SYSTEM CAN-H
10	G	EV SYSTEM CAN-L
11	LG	EV SYSTEM ACTIVATION REQUEST SIGNAL

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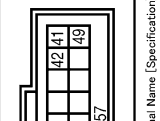
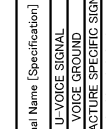
MULTI AV SYSTEM

Connector No.	M3
Connector Name	TCU
Connector Type	HAA18FGY



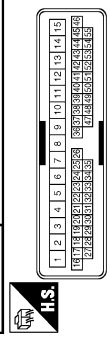
Terminal No.	Color of Wire	Signal Name [Specification]
41	Y	U-VOICE SIGNAL
42	B	VOICE GROUND
46	V	MANUFACTURE SPECIFIC SIGNAL
47	BR	USB VBUS SIGNAL
48	L	USB D- SIGNAL
49	G	D-VOICE SIGNAL
55	B	USB GROUND
56	R	USB D+ SIGNAL
57	SHIELD	SHIELD

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



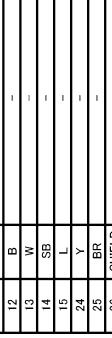
Terminal No.	Color of Wire	Signal Name [Specification]
3	LG	-
4	B	-
5	B	-
6	L	-
7	GR	-
8	G	-
11	SB	-
12	G	-
13	L	-
14	P	-
16	Y	-

Connector No.	M10
Connector Name	WIRE TO WIRE
Connector Type	TH40MW-CS15



Terminal No.	Color of Wire	Signal Name [Specification]
1	R	-
2	G	-
3	LG	-
4	V	-
10	BR	-
11	Y	-
12	B	-
13	W	-
14	SB	-
15	L	-
24	Y	-
25	BR	-
26	SHIELD	-
36	B	-
37	P	-
38	Y	-
39	LG	-
44	L	-
45	LG	-
46	BR	-

Connector No.	M11
Connector Name	WIRE TO WIRE
Connector Type	TH40MW-CS15



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

3	G	-
4	V	-
7	BR	-
8	Y	-
9	LG	-
10	Y	-
11	W	-
12	SB	-
13	B	-
14	L	-
15	R	-
24	R	-
25	G	-
26	SHIELD	-
37	LG	-
38	V	-
39	P	-
40	Y	-
41	B	-
42	P	-
43	L	-
44	L	-
45	LG	-
46	BR	-
47	W	-
48	GR	-
49	R	-
50	BR	-

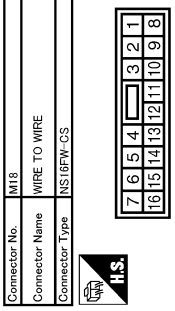
Connector No.	M14
Connector Name	TWEETER RH
Connector Type	TK02FBR

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	-
2	R	-

Connector No.	M15
Connector Name	TWEETER LH
Connector Type	TK02FBR

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	-
2	P	-

Connector No.	M18
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
6	V	-
7	P	-
10	W	-
11	LG	-
12	GR	-
13	W	-
14	Y	-
15	LG	-
16	L	-

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Connector No.	M19
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
4	BR	–
7	V	–
8	P	–
9	L	–
10	V	–
11	V	–
12	R	–
13	BR	–
14	Y	–
15	L	–
16	G	–

Connector No.	M21
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
3	SHIELD	–
4	B	–
5	W	–
6	R	–
11	G	–
15	L	–
16	G	–
18	BR	–
19	G	–
20	V	–

22	B	–
27	L	–
31	L	–
32	P	–

Connector No.	M23
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	–
2	L	–
3	SHIELD	–
5	B	–
6	BR	–
7	P	–
8	Y	–
9	R	–
10	B	–
11	O	–

Connector No.	M33
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08FGY-1V

Terminal No.	Color of Wire	Signal Name [Specification]
24	BR	–
25	LG	–
26	B	–
31	Y	–
32	SB	–
33	SHIELD	–

34	G	–

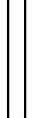
Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH

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
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 SWITCH 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	COMMUNICATION SIGNAL (UPPER → METER)
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.	M51
Connector Name	MULTIFUNCTION SWITCH
Connector Type	TH08FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	–
2	LG	–
4	R	–
5	B	–
6	SB	–
8	W	–

Connector No.	M52
Connector Name	AUXILIARY INPUT JACK
Connector Type	TH04FW-NH



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

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MULTI AV SYSTEM

Connector No.	M53
Connector Name	USB CONNECTOR
Connector Type	HAA04FG

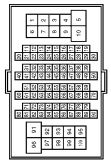
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	L	–
3	G	–
4	R	–
5	SHIELD	–

Connector No.	M68
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH

Terminal No.	Color of Wire	Signal Name [Specification]
2	L	COMBI SW INPUT 5
3	GR	COMBI SW INPUT 4
4	BR	COMBI SW INPUT 3
5	G	COMBI SW INPUT 2
6	V	COMBI SW INPUT 1
7	GR	KEY CYL UNLK SW
8	R	KEY CYL LOCK SW
9	BR	STOP LAMP SW 1
12	Y	DOOR LK & UNLK SW LOCK
13	BR	DOOR LK & UNLK SW UNLOCK
14	G	OPTICAL SENS
15	W	REAR WINDOW DEF SW
16	R	DIMMER
17	Y	OPTICAL SENS PWR SPLY
18	V	SENS./RECEIV GND
21	P	NATS ANTENNA AMP.
23	R	SECURITY IND LAMP CONT

25	LG	NATS ANTENNA AMP.
29	P	HAZARD SW
30	L	BK DOOR OPENER SW
31	W	DR DOOR UNLK SENS
32	LG	COMBI SW OUTPUT 5
33	Y	COMBI SW OUTPUT 4
34	W	COMBI SW OUTPUT 3
35	R	COMBI SW OUTPUT 2
36	P	COMBI SW OUTPUT 1
37	W	P POSITION
38	SB	RECEIVER COMM
39	L	CAN–H
40	P	CAN–L

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

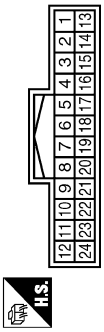


Terminal No.	Color of Wire	Signal Name [Specification]
1	GR	–
2	V	–
3	GR	–
4	LG	–
6	W	–
7	V	–
8	P	–
9	SB	–
10	L	–
11	LG	–
12	W	–
13	R	–
14	Y	–
15	R	–
16	GR	–
17	BR	–
19	G	–
20	G	–
21	P	–
22	LG	–
23	GR	–
24	L	–
25	V	–

26	W	–
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	–
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	–

Connector No.	M79
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
8	BR	–
11	R	–
12	G	–
17	G	–
18	V	–
20	B	–
21	W	–
22	V	–
23	LG	–
24	SHIELD	–

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Connector No.	M83
Connector Name	AV CONTROL UNIT
Connector Type	TH18FW-CS2

Terminal No.	Color of Wire	Signal Name [Specification]
2	L	SOUND SIGNAL FRONT LH (+)
3	P	SOUND SIGNAL FRONT LH (–)
4	V	SOUND SIGNAL REAR LH (+)
5	R	SOUND SIGNAL REAR LH (–)
6	BR	STEERING SWITCH SIGNAL A
7	L	ACC POWER SUPPLY
8	B	GROUND
9	W	ILLUMINATION SIGNAL
11	G	SOUND SIGNAL FRONT RH (+)
12	R	SOUND SIGNAL FRONT RH (–)
13	LG	SOUND SIGNAL REAR RH (+)
14	GR	SOUND SIGNAL REAR RH (–)
15	SHIELD	STEERING SWITCH SIGNAL GROUND
16	Y	STEERING SWITCH SIGNAL B
19	BR	BATTERY POWER SUPPLY

Connector No.	M84
Connector Name	AV CONTROL UNIT
Connector Type	TH40FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
21	LG	AV COMM (L)
22	SB	AV COMM (H)
23	LG	AV COMM (L)
24	SB	AV COMM (H)
25	P	CAN-L
26	L	CAN-H
28	GR	VEHICLE SPEED SIGNAL (8-PULSE)

29	BR	PARKING BRAKE SIGNAL
30	G	REVERSE SIGNAL
31	V	POWER SWITCH ON SIGNAL
32	R	DIMMER SIGNAL
46	L	MICROPHONE SIGNAL
47	Y	MICROPHONE VCC
48	SHIELD	MICROPHONE SHIELD
49	R	AUX SOUND SIGNAL LH (+)
50	W	AUX SOUND SIGNAL RH (+)
51	B	AUX SOUND SIGNAL (–)
52	SHIELD	SHIELD
56	B	CAMERA CONNECTION RECOGNITION SIGNAL
57	R	CAMERA POWER SUPPLY
58	W	CAMERA GROUND
59	R	CAMERA IMAGE SIGNAL
60	SHIELD	SHIELD

Connector No.	M85
Connector Name	AV CONTROL UNIT
Connector Type	HAA16FGY

Terminal No.	Color of Wire	Signal Name [Specification]
61	SB	U-VOICE SIGNAL
62	P	VOICE GROUND
66	P	MANUFACTURE SPECIFIC SIGNAL
67	L	USB VBUS SIGNAL
68	Y	USB D– SIGNAL
69	O	D-VOICE SIGNAL
75	–	USB GROUND
76	LG	USB D+ SIGNAL
77	–	SHIELD

Connector No.	M86
Connector Name	AV CONTROL UNIT
Connector Type	HAA04FL

Terminal No.	Color of Wire	Signal Name [Specification]
78	G	USB GROUND
79	R	USB D– SIGNAL
80	W	V BUS SIGNAL
81	L	USB D+ SIGNAL
82	SHIELD	SHIELD

Connector No.	M302
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK08FGY

Terminal No.	Color of Wire	Signal Name [Specification]
13	R	–
14	W	–
15	L	–
16	B	–
17	BR	–
18	G	–
19	Y	–
20	Y	–

Connector No.	M306
Connector Name	AV CONTROL UNIT
Connector Type	GT5–IS–HU

Terminal No.	Color of Wire	Signal Name [Specification]
83	–	GPS ANTENNA SIGNAL
84	–	SHIELD

Connector No.	M307
Connector Name	AV CONTROL UNIT
Connector Type	GT13SH–1/1S–HU

Terminal No.	Color of Wire	Signal Name [Specification]
85	–	ANTENNA AMP. ON SIGNAL
86	–	Radio antenna signal

Connector No.	M308
Connector Name	WIRE TO WIRE
Connector Type	GT13SS–1/1S–HU

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

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Connector No.	M309
Connector Name	WIRE TO WIRE
Connector Type	GT13SSN-1/1PP-HU

H.S.

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

Connector No.	M310
Connector Name	ANTENNA BASE
Connector Type	GT13SSN-1/1PP-HU

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	–	ANTENNA AMP. ON SIGNAL
2	–	AM-FM MAIN

Connector No.	M311
Connector Name	TCU
Connector Type	GT16C-IS-HU

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
58	–	TEL ANTENNA SIGNAL
59	–	SHIELD

Connector No.	M312
Connector Name	AV CONTROL UNIT
Connector Type	FAKRA-JACK

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
87	–	SATELLITE ANTENNA

Connector No.	M313
Connector Name	WIRE TO WIRE
Connector Type	GT16C-IS-HU(A)

H.S.

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

Connector No.	M314
Connector Name	WIRE TO WIRE
Connector Type	GT16C-IPP-HU(A)

H.S.

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

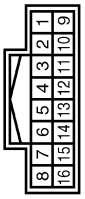
Connector No.	M315
Connector Name	ANTENNA BASE
Connector Type	GT16C-IPP-HU(B)

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	–	SATELLITE ANTENNA

Connector No.	R1
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH

H.S.



Terminal No.	Color of Wire	Signal Name [Specification]
1	P	–
2	L	–
3	SHIELD	–
5	B	–
6	R	–
7	Y	–
8	B/Y	–
9	V	–
10	G	–
11	B/R	–

Connector No.	R3
Connector Name	MICROPHONE
Connector Type	TK04FW

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
4	P	–

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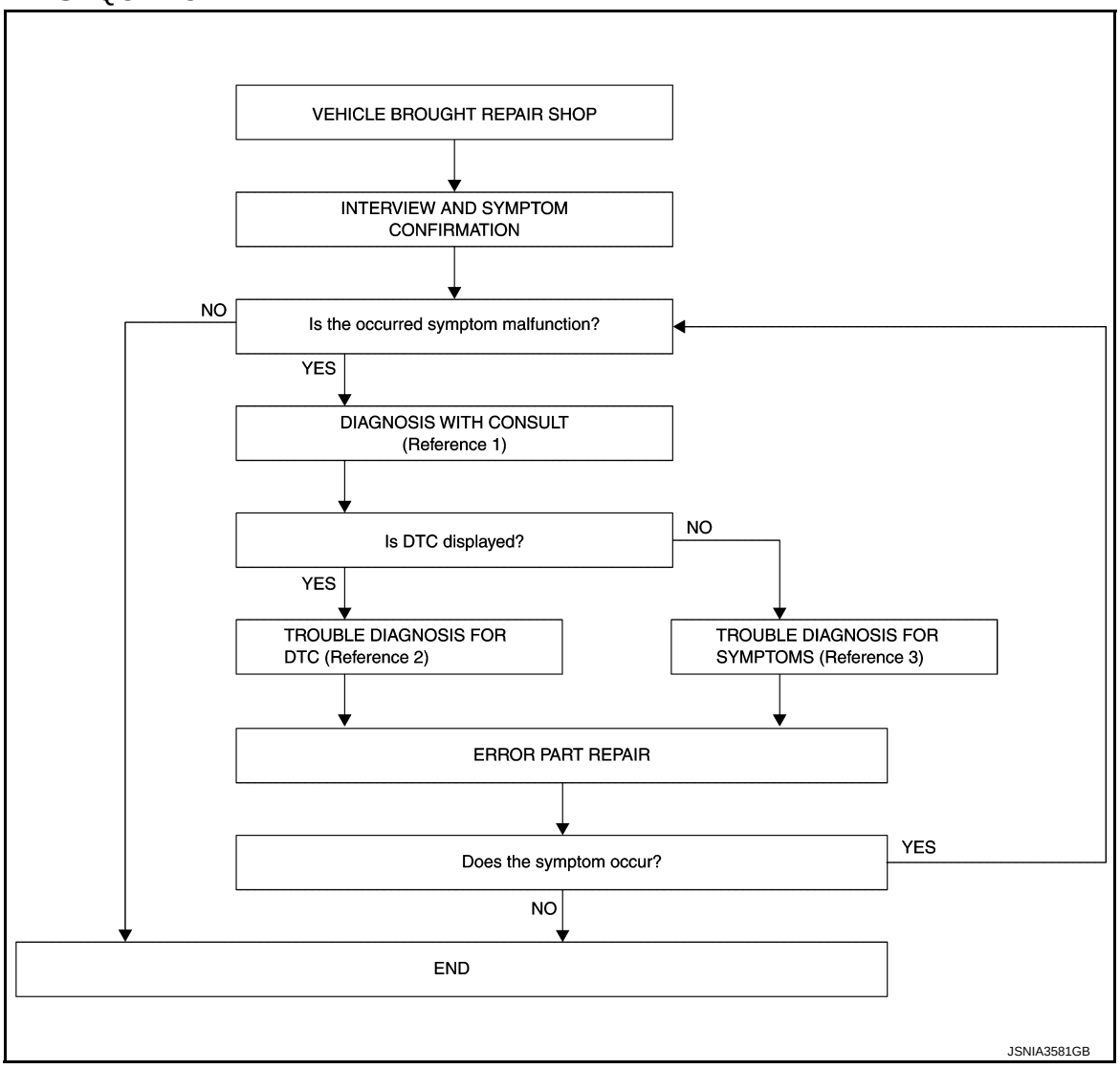
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000006838273

OVERALL SEQUENCE



- Reference 1··· Refer to AV-159, "CONSULT Function".
- Reference 2··· Refer to AV-170, "DTC Index".
- Reference 3··· Refer to AV-202, "Diagnosis Chart by Symptom".

DETAILED FLOW

1.INTERVIEW AND SYMPTOM CONFIRMATION

Check the malfunction symptoms by performing the following items.
- Interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred).
- Check if there is no deformation, scratches, or other damage to the sonar sensor.
- Check if water has not accumulated in the sonar sensor.
- Check the symptom.

Is the occurred symptom malfunction?

YES >> GO TO 2.
NO >> INSPECTION END

2.DIAGNOSIS WITH CONSULT

1. Connect CONSULT and perform a self-diagnosis for “SONAR”. Refer to AV-159, "CONSULT Function".
2. Check if any DTC is displayed in the self-diagnosis results.

Is DTC displayed?

YES >> GO TO 3.
NO >> GO TO 4.

3.TROUBLE DIAGNOSIS FOR DTC

1. Check the DTC indicated in the self-diagnosis results.
2. Perform the relevant diagnosis referring to the DTC Index. Refer to AV-170, "DTC Index".

>> GO TO 5.

4.TROUBLE DIAGNOSIS FOR SYMPTOMS

Perform the relevant diagnosis referring to the diagnosis chart by symptom. Refer to AV-202, "Diagnosis Chart by Symptom".

>> GO TO 5.

5.ERROR PART REPAIR

1. Repair or replace the identified malfunctioning parts.
2. Perform a self-diagnosis for “SONAR” with CONSULT.
3. Check that the symptom does not occur.

Does the symptom occur?

YES >> GO TO 1.
NO >> INSPECTION END

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM (WORK STEP VIEW)

ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM (WORK STEP VIEW) : Process Chart

INFOID:0000000006968250

	Initial Subscription (AV-187)	TCU Replacement (AV-188)	Cancellation/ Scrap	Re-subscription (AV-187)	Data Center relocate (AV-189)
TCU; Read VIN data		1			
TCU; Remove and Install		2			
TCU; Write VIN data		3			
TCU; Turn on RF	1	4			
Multi channel to confirm connection	2	5		1	
VIN Check	3	6		2	
SIM ID; Notice to Carrier (Activation New TCU)		7			
SIM ID; Notice to Carrier (Deactivation Old TCU)		8	1		
TCU; Input User ID &Password	4	9		3	
Telematics system; Confirmation of operation	5	10		4	
Change of APN Manually					1

ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM FOR THE FIRST TIME/RE-SUBSCRIPTION

ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM FOR THE FIRST TIME/RE-SUBSCRIPTION : Description

INFOID:0000000006838274

When the driver uses telematics system for the first time/re-subscription, TCU activation operation is required.

PREPARATION FOR ACTIVATION
- Subscribe to telematics service.
- Pre-register user ID and password (can be performed from owner homepage).

ADDITIONAL SERVICE WHEN USING TELEMATICS SYSTEM FOR THE FIRST TIME/RE-SUBSCRIPTION : Work Procedure

INFOID:0000000006838275

1.TCU ACTIVATION

CONSULT work support
Select "TCU ACTIVATE SETTING", then "ON" on changing screen to activate TCU.

>> GO TO 2.

2.COMMUNICATION TEST

Perform TCU communication test by vehicle operation.

1. Press “MENU”“ ”of multifunction switch.
2. Select "CARWINGS"→"Information channel"→ "My channel"→ "ID check".
3. Communication test is performed and the result of communication with Nissan CARWINGS Data Center is displayed on the monitor.

Is communication test result normal?

Displays "Can't connect to center">>GO TO 1.

Normal >> GO TO 3.

3.INPUT OF PERSONAL ID AND PASSWORD (USER OPERATION)

Enter personal ID and password by vehicle operation.

1. Press "MENU"/"" of multifunction switch.
2. Select "Setting"→"CARWINGS setting"→ “Sign in".
3. Enter personal ID and password and register it.

>> GO TO 4.

4.CONFIRMATION OF OPERATION

Prepare the information channel for confirmation, and use the service to confirm the operation.

>> operation end.

ADDITIONAL SERVICE WHEN REPLACING TCU

ADDITIONAL SERVICE WHEN REPLACING TCU : Description

INFOID:0000000006968251

When TCU is replaced, TCU activation operation is required.

Pre-paration before activation operation

- Subscribe to telematics service
- Preregister user ID and password (can be performed from owner homepage)

ADDITIONAL SERVICE WHEN REPLACING TCU : Work Procedure

INFOID:0000000006968252

1.READING OF VIN DATA

CONSULT work support
Select "SAVE VIN DATA", "START SAVE VIN DATA" then "YES" on START SAVE VIN DATA screen to save the VIN data stored in replaced TCU in CONSULT. If it cannot be saved, writing operation must be performed manually.

>> GO TO 2.

2.TCU REPLACEMENT

Replace TCU.Refer to AV-211, "Removal and Installation".

>> GO TO 3.

3.NOTICE TO CARRIER “ATX HELP DESK”

Contact ATX help desk to notice the termination of replaced TCU and connection of new TCU. (VIN is required)

Can ID data be saved to CONSULT at 1st step?

YES >> GO TO 4.
NO >> GO TO 5.

4.AUTOMATIC WRITING OF VIN DATA TO TCU

CONSULT work support
Select "WRITE VIN DATA", "WRITE SAVED VIN DATA" then "YES" at WRITE SAVED VIN DATA screen to write the VIN data saved in CONSULT into new TCU.

>> GO TO 6.

5.MANUAL WRITING OF VIN DATA TO TCU

CONSULT work support
Select "WRITE VIN DATA (MANUAL)", "WRITE VIN DATA" then "START" on changing screen to write the VIN data saved into new TCU.

>> GO TO 6.

6.TCU ACTIVATION

CONSULT work support
Select "TCU ACTIVATE SETTING", then "ON" on changing screen to activate TCU.

>> GO TO 7.

7.COMMUNICATION TEST

Perform TCU communication test by vehicle operation.

1. Press “MENU”“ (Zero emission)” of multifunction switch.
2. Select "CARWINGS", "Information channel", "My channel" then "ID check".
3. Communication test is performed and the result of communication with Nissan CARWINGS Data Center is displayed on the monitor.

Is communication test result normal?

When VIN writing error is present, "Change" is displayed for "VIN">>GO TO 5.
When activation is OFF, "Can't connect to center" is displayed>>GO TO 6.
"Change" is displayed just for "TCU" and "SIM">>GO TO 8.

8.CONFIRMATION OF OPERATION

Prepare the information channel for confirmation, and use the service to confirm the operation.

>> WORK END

ADDITIONAL SERVICE WHEN TCU CONNECTING CENTER CHANGED

ADDITIONAL SERVICE WHEN TCU CONNECTING CENTER CHANGED : Description

INFOID:0000000006968253

When TCU connecting center change must be performed manually, below operation is required.

Operation to change the connecting center
Use CONSULT and enter connecting center of TCU.

ADDITIONAL SERVICE WHEN TCU CONNECTING CENTER CHANGED : Work Procedure

INFOID:0000000006968254

1.SAVE VEHICLE INFORMATION

CONSULT work support
Select “CENTER CONNECTION SETTING”, and then “CENTER CONNECTION SETTING” to save the new connecting center.

>> GO TO 2.

2.COMMUNICATION TEST

Perform TCU communication test by vehicle operation.

1. Press “MENU”/“ (Zero emission)”of the multifunction switch.
2. Select “CARWINGS”, “Information channel”, “Multi channel” then “ID check”.
3. Communication test is performed and the result of communication with Nissan CARWINGS Data Center is displayed on the monitor.

Is communication test result normal?

Displays “Can't connect to center”>>GO TO 1.
Normal >> GO TO 3.

3.CONFIRMATION OF OPERATION

Prepare the information channel for confirmation, and use the service to confirm the operation.

>> WORK END

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006968317

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on board multiplex communication line with high data communication speed and excellent error detection ability. A modern vehicle is equipped with many ECMs, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, 2 control units are connected with 2 communication lines (CAN H-line and 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.
Refer to LAN-33, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart" for details of the communication signal.

DTC Logic

INFOID:0000000006968318

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Malfunction detection condition	Probable malfunction location
U1000	CAN COMM CIRC [U1000]	When the AV control unit cannot communicate for 2 seconds or more.	CAN communication system

Diagnosis Procedure

INFOID:0000000006968319

1.PERFORM SELF-DIAGNOSIS

1. Turn the ignition switch ON and hold it for 2 seconds or more.
2. Check the self-diagnosis result of “multi-AV”.

Is CAN communication system displayed?

YES >> Refer to LAN-15, "Trouble Diagnosis Procedure".
NO >> Refer to GI-51, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:0000000006968320

DTC DETECTION LOGIC

DTC	Display contents of CONSULT	Malfunction detection condition	Action to take
U1010	CONTROL UNIT (CAN) [U1010]	Malfunction is detected during initial diagnosis of the AV control unit CAN controller.	Replace the AV control unit if malfunction constantly occurs. Refer to AV-119, "Removal and Installation".

U1A00 TCU

DTC Logic

INFOID:0000000006968321

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A00	ACC NO CONN [U1A00]	No input of ACC signal	• Check the ACC power circuit. Refer to AV-201, "TCU : Diagnosis Procedure". • If the ACC circuit is normal, replace TCU. AV-211, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006968322

1.CHECK ACC POWER CIRCUIT

1. Check the ACC power circuit. Refer to AV-201, "TCU : Diagnosis Procedure".

Is the check result normal?

YES >> Replace TCU. AV-211, "Removal and Installation".
NO >> Repair the harnesses or connectors.

U1A01 TCU

DTC Logic

INFOID:0000000006968323

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A01	INTERNAL ERROR (TCU) [U1A01]	Malfunction in TCU is detected.	• Check the connector wiring and erase DTC. • Replace TCU if the malfunction constantly occurs. AV-211, "Removal and Installation".

U1A02 TCU

DTC Logic

INFOID:0000000006968324

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A02	TEL COMMUNICATION MODULE [U1A02]	Malfunction on the communication module in TCU is detected.	• Check the harness connection and erase DTC. • Replace TCU if the malfunction constantly occurs. AV-211, "Removal and Installation".

U1A03 TCU

DTC Logic

INFOID:0000000006968325

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A03	SIM CARD [U1A03]	SIM card is not inserted or unable to be read.	• Check if there is a contact malfunction at the SIM card and card slot. • Check the harness connection and erase DTC. • Replace TCU if the malfunction constantly occurs. AV-211, "Removal and Installation".

U1A04 TCU

DTC Logic

INFOID:0000000006968326

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A04	VIN UNFINISHED [U1A04]	No write of VIN number is detected.	• Write VIN number using CONSULT. Refer to AV-197, "Diagnosis Procedure". • Replace TCU if the malfunction is detected after VIN number is written. Refer to AV-211, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006968327

1.MANUAL WRITING OF VIN DATA TO TCU

CONSULT work support
Select “WRITE VIN DATA (MANUAL)”→ “WRITE VIN DATA” → “START” on changing screen to write the VIN data saved into new TCU.

>> GO TO 2.

2.COMMUNICATION TEST

Perform TCU communication test by vehicle operation.

1. Press “MENU”/“ ” of multifunction switch.
2. Select “CARWINGS”→ “Information channel”→“My channel”→ “ID check”.
3. Communication test is performed and the result of communication with Nissan CARWINGS Data Center is displayed on the monitor.

Is communication test result normal?

YES >> INSPECTION END
NO >> Replace TCU. Refer to AV-211, "Removal and Installation".

U1A05 TCU

DTC Logic

INFOID:0000000006968328

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A05	USB COMM [U1A05]	It is detected for malfunction of the USB communication module (communication disabled) between TCU and AV control unit.	• Check the USB harness connection and erase DTC. • Replace TCU if the malfunction constantly occurs. Refer toAV-211, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006968329

1.CHECK USB HARNESS CONTINUITY

1. Turn the power switch OFF.
2. Disconnect TCU and AV control unit connectors.
3. Check the continuity between TCU vehicle-side harness connector and TCU vehicle-side harness connector.

TCU		AV control unit		Continuity
Connector	Terminal	Connector	Terminal	
M3	47	M85	67	Exists
	48		68	
	55		75	
	56		76	

4. Check the continuity between TCU vehicle-side harness connector and ground.

TCU		Ground	Continuity
Connector	Terminal		
M3	47		Does not exist
	48		
	56		

Is the check result normal?

YES >> Replace TCU. Refer to AV-211, "Removal and Installation".
NO >> Repair or replace the harnesses or connectors.

U1A07 TEL ANTENNA

DTC Logic

INFOID:0000000006968330

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A07	TEL ANTENNA SHORT [U1A07]	TEL antenna was short-circuited.	• Check the TEL antenna harness connection and the harness condition, and erase DTC. • If poor harness condition or the malfunction constantly occurs, replace the TEL antenna. Refer to AV-212, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006968331

1. HARNESS INSPECTION

1. Turn the power switch OFF.
2. Disconnect the TEL antenna feeder connector of TCU.
3. Check the continuity between TEL antenna-side harness connector.

TEL antenna			Continuity
Connector	Terminal		
M311	58	59	Does not exist

Is the check result normal?

YES >> Replace TCU. AV-211, "Removal and Installation".
NO >> Replace the TEL antenna. AV-212, "Removal and Installation".

U1A08 TEL ANTENNA

DTC Logic

INFOID:0000000006968332

DTC	Display contents of CONSULT	DTC detection condition	Action to take
U1A08	TEL ANTENNA NO CONN [U1A08]	TEL ANTENNA NO CONN	• Check the harness connection and erase DTC. • Replace TCU if the malfunction constantly occurs. AV-211, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000006968333

1.CHECK OF TEL ANTENNA

1. Turn the ignition switch OFF.
2. Disconnect the TEL antenna feeder connector.
3. Visually check TEL antenna and antenna feeder.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair malfunctioning parts.

2.CHECK AV CONTROL UNIT VOLTAGE

1. Disconnect TEL antenna connector.
2. Turn ignition switch ON.
3. Check voltage between TCU and ground.

(+)		(–)	Voltage (Approx.)
TCU			
Terminal	Connector		
M311	58	Ground	2.8 V

Is the inspection result normal?

YES >> Replace TEL antenna. Refer to AV-212, "Removal and Installation".
NO >> Replace TCU. Refer to AV-211, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT
TCU

TCU : Diagnosis Procedure

INFOID:0000000006968334

1.CHECK FUSE

Check if the fuse is burned out.

Power supply	Fuse No.
BAT	34
Power switch ACC or ON	19
Power switch ON	3

Is the check result normal?

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

2.CHECK BATTERY VOLTAGE

Check the voltage between the TCM harness connector and ground.

Signal	TCU	Probe		Test condition	Standard	Reference value
		Terminal				
	Connector	(+)	(-)	Ignition switch		
BAT	M2	1	2	OFF	9 – 16 V	Battery Voltage
ON		4		ON	9 – 16 V	
ACC		3		ACC	9 – 16 V	

Is the check result normal?

YES >> GO TO 3.
NO >> Repair harness between TCU and fuse.

3.GROUND CIRCUIT INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the TCU connector.
3. Check the continuity between TCU vehicle-side harness connector and ground.

Signal	Connector	Terminal	Ignition switch	Continuity
Ground	M2	2	OFF	Exists

Is the check result normal?

YES >> INSPECTION END
NO >> Repair the harnesses or connectors.

SYMPTOM DIAGNOSIS

TELEMATICS SYSTEM

Diagnosis Chart by Symptom

INFOID:0000000006838298

AV RELATED

Symptoms	Check items	Possible malfunction location/Action to take
AV control unit does not start (Display is not indicated).	—	Refer toAV-106, "Symptom Table".

RELATED TO TELEMATICS

On board (on the vehicle)

Symptoms	Check items	Radio wave icon display	Pop-up message	Possible malfunction location/Action to take
Telematics operation is not available.	Check the display when Telematics is operated.	—	—	Perform self-diagnosis with CONSULT. Refer to AV-159, "CONSULT Function".
			TCU is not connected.	Perform self-diagnosis with CONSULT. Refer to AV-159, "CONSULT Function".
			The connection to The call center failed.	Check ON/OFF status of TCU using the data monitor of CONSULT. • Replace TCU if it is ON. Refer toAV-211, "Removal and Installation". • Turn it ON again if it is OFF. Replace TCU if ON is switched to OFF. Refer toAV-211, "Removal and Installation".
			No service.	Use another cellular phone to check radio wave condition. • If the service is available, replace TCU or TEL antenna. - For TCU replacement, refer toAV-211, "Removal and Installation". - For TEL antenna replacement, refer toAV-212, "Removal and Installation". • If the service is not available, move the vehicle to the position where service is available and perform the operation again.
			Service is not continued due to poor radio wave status.	Use another cellular phone to check radio wave condition. • If it is OK, there may be a cause at the Nissan CARWINGS Data Center. Check connection after a short period of time. If there is no problem at the Nissan CARWINGS Data Center, replace TCU or TEL antenna. - For TCU replacement, refer toAV-211, "Removal and Installation". - For TEL antenna replacement, refer toAV-212, "Removal and Installation". • If it is NG, check connection again after a short period of time.
			You need to make registration for this service.	Check input of user ID and password from the navigation setting screen. If malfunction such as input or no memory despite input is detected, replace AV control unit. Refer to AV-207, "Removal and Installation".
			TCU line is used.	Check connection after a short period of time. Replace TCU if it is frequently displayed. Refer toAV-211, "Removal and Installation".
			The connection to The call center failed.	There may be a cause at the Nissan CARWINGS Data Center. Check connection after a short period of time. If there is no problem at the Nissan CARWINGS Data Center, replace TCU or TEL antenna. • For TCU replacement, refer toAV-211, "Removal and Installation". • For TEL antenna replacement, refer toAV-212, "Removal and Installation".

OFF board (off the vehicle)

Symptoms	Check items	Return message from the Nissan CARWINGS Data Center	Possible malfunction location/Action to take
Telematics operation is not available. (Remote operation and battery monitor operation cannot be made.)	Check the return message from the Nissan CARWINGS Data Center when telematics is operated.	Return message for unsuccessful remote operation	Perform self-diagnosis with CONSULT. Refer to AV-159, "CONSULT Function".

NORMAL OPERATING CONDITION

Description

INFOID:0000000006838299

NOTE:
For Telematics system operation detail information, refer to Navigation system Owner's Manual.

BASIC OPERATIONS

Symptom	Possible cause	Possible solution
No image is displayed.	The brightness is at the lowest setting.	Adjust the brightness of the display.
	The system in the audio mode.	Press “CD·AUX” to change the mode.
	The display is turned off.	Press “☀/☽” to turn on the display.
	The interior of the vehicle becomes the a little less than 80°C (176°F) or high temperature, and the protection of the display acts, and a display is turned off.	Wait until the interior of the vehicle has cooled down.
The screen is darker.	The cabin temperature is too low.	Wait until the interior of the vehicle temperature becomes moderate.
	The adjustment ofdisplay brightness is set to the maximum of darkness.	Adjust the brightness setting of the displaydisplay.
The screen is brighter.	The adjustment of display brightness is set to the maximum of brightness.	
When looking at the screen from an angle, the screen lightens or darkens.	This is a typical phenomenon for liquid crystal displays.	
The screen is too dim. The movement is slow.	The temperature in the interior of the vehicle is less than 50°F (0°C).	Wait until the interior of the vehicle temperature becomes within 50°F(0°C) to 122°F (50°C).
The screen is too dim. The movement is slow.	The temperature in the interior of the vehicle is low.	Wait until the interior of the vehicle has warmed up.
No voice guidance is available. Or The volume is too high or too low.	The volume is not set correctly, or it is turned off.	Adjust the volume of voice guidance.
	Voice guidance is not provided for certain streets (roads displayed in gray).	This is not a malfunction.
No map is displayed on the screen.	A screen other than map screen is displayed.	Press “MAP”.
Some pixels in the display are darker or brighter than others.	This condition is an inherent characteristic of liquid crystal displays.	This is not a malfunction.
Some menu items cannot be selected.	Some menu items become unavailable while the vehicle is driven.	Park the vehicle in a safe location, and then operate the navigation system.
A small black spot or a small bright spot appears on the screen.	This is a typical phenomenon for liquid crystal displays.	This is not a malfunction.
A dot or stripe pattern appears on the screen.	Electromagnetic wave that is generated from neon billboards, high voltage electric power cables, ham radios or other radio devices equipped to other vehicles may adversely affect the screen.	
Image lag appears on the screen.	This is a typical phenomenon for liquid crystal displays.	

NOTE:
Locations stored in the Address Book and other memory functions may be lost if the vehicle's battery is disconnected or becomes discharged. If this occurs, service the vehicle's battery as necessary and re-enter the information in the Address Book.

RELATED TO CARWINGS™

Symptom	Possible cause	Possible solution
The system cannot connect to the NISSAN CARWINGS Data Center.	A subscription for the CARWINGS™ service has not been established.	Sign up for a subscription to the CARWINGS™® service. For details about subscriptions, contact a NISSAN dealer or visit the Nissan CARWINGS Data Center website.
	The user ID and password are not entered.	Enter the user ID and password.
	The communication line is busy.	Try again after a short period of time.
	The vehicle is in a location where it is difficult to receive radio waves.	When the vehicle moves to an area where radio waves can be transmitted sufficiently, communication will be restored. When the icon on the display shows that the vehicle is inside the communication area, the system can be used.
	Radio wave reception for TCU is insufficient.	When the vehicle moves to an area where radio waves can be transmitted sufficiently, communication will be restored. When the icon on the display shows that the vehicle is inside the communication area, the system can be used.
Some of the items that are displayed on the menu screen cannot be selected.	The vehicle is being driven and some menu items are disabled.	The vehicle is being driven. Stop the vehicle in a safe location and apply the parking brake before operating the functions.
Some parts of the screen are notdisplayed	The vehicle is being driven and some menu items are disabled.	Operate the system after stopping the vehicle in a safe location and applying the parking brake.
The system does not announce information.	The volume level is set to the minimum.	Adjust the volume level by operating the VOL switches located on the control panel or on the steering wheel switch while the system is announcing information.

REMOVAL AND INSTALLATION

AV CONTROL UNIT

Removal and Installation

INFOID:0000000006838300

REMOVAL

CAUTION:

Remove 12V battery terminal and AV control unit after a lapse of 30 seconds or more after turning the power switch OFF.

NOTE:

After the power switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if 12V battery voltage is cut off within 30 seconds.

1. Remove the cluster lid C. IP-13, "Removal and Installation".
2. After removing the AV control unit mounting screws to disconnect the connectors, remove the AV control unit with the bracket attached.
3. Remove the bracket mounting screw and remove the bracket from AV control unit.

INSTALLATION

Note the following, and install in the reverse order of removal.

CAUTION:

- **If the AV control unit is replaced, input of the user ID and password, and time adjustment with VCM are required.**
- **If the AV control unit is not replaced, time adjustment with VCM is required.**

Input Method of User ID and Password·

1. Turn power switch ON.
2. Select “Sign in” from the CARWINGS screen.
3. Enter the user ID and password.

NOTE:

Since the user ID and password are determined by the user in advance, they are input by the user.

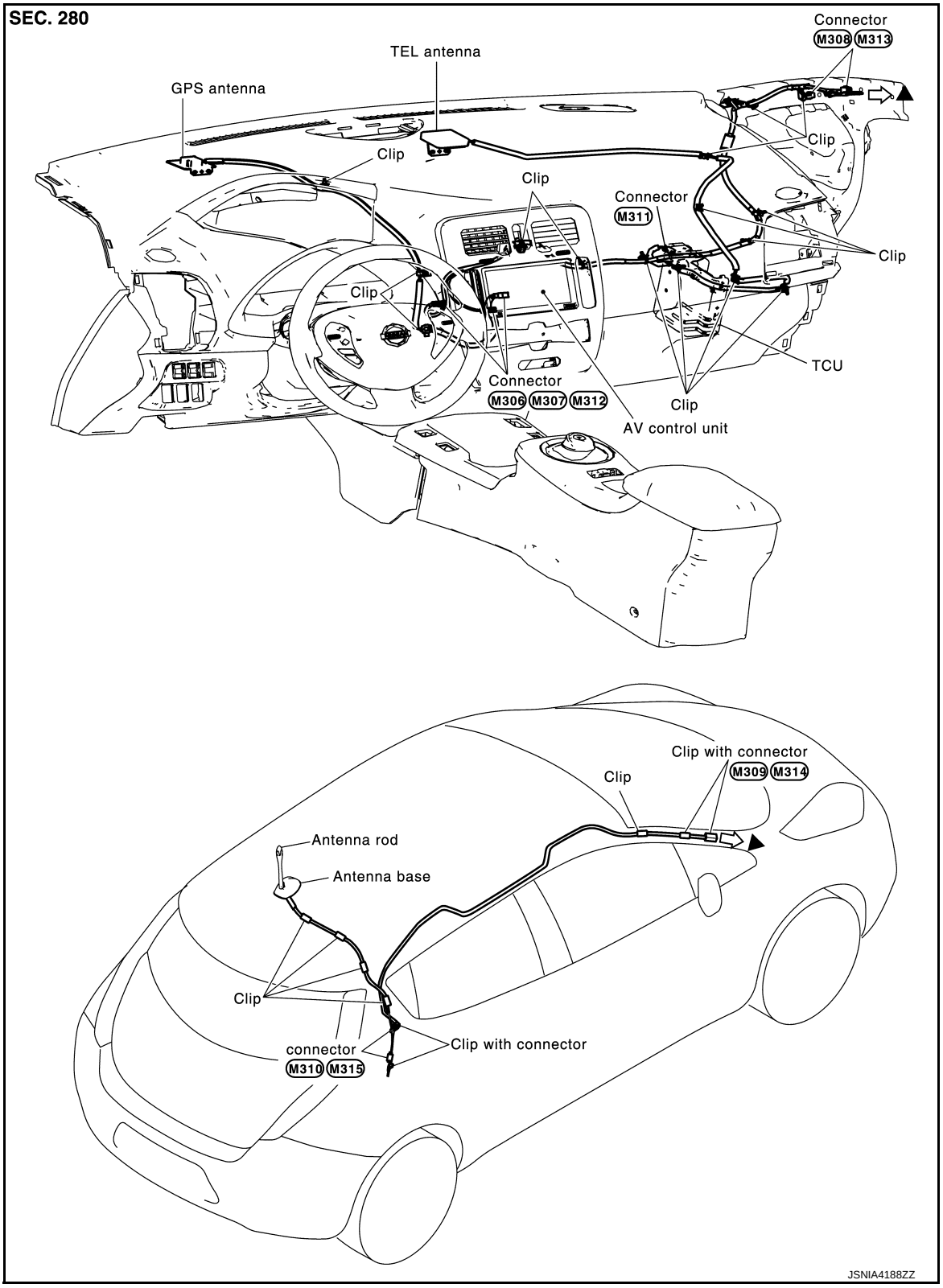
Time Adjustment and Check Method with VCM

Refer to AV-82, "ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL : Work Procedure".

GPS ANTENNA

Feeder Layout

INFOID:0000000006838301

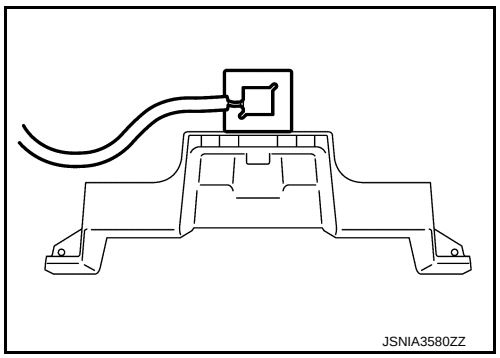


Removal and Installation

INFOID:0000000006838302

REMOVAL

1. Remove the instrument panel assembly. Refer to IP-13, "Removal and Installation".
2. Remove the screws and clips to remove the GPS antenna.



INSTALLATION

Install in the reverse order of removal.

MICROPHONE

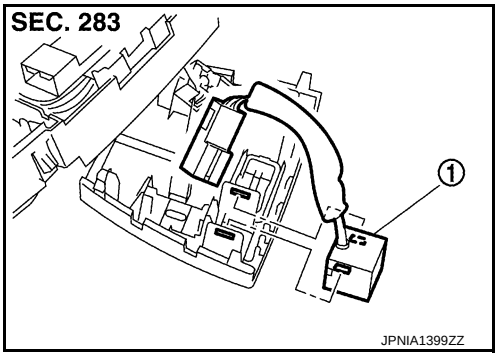
Removal and Installation

INFOID:0000000006838303

REMOVAL

1. Remove the map lamp assembly. Refer to INL-50, "Removal and Installation".
2. Press the pawl to remove the microphone (1) from the map lamp assembly.

CAUTION:
Carefully handle the pawl fixing the microphone because the pawl is fragile.



INSTALLATION

Install in the reverse order of removal.

NOTE:
Check the microphone for looseness after the installation.

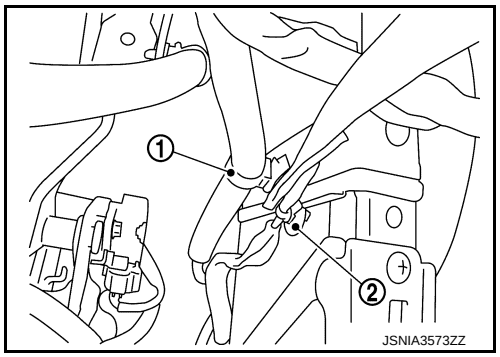
TCU

Removal and Installation

INFOID:0000000006838304

REMOVAL

1. Check the SIM ID. Refer to AV-159, "CONSULT Function".
2. Remove the glove box lid assembly. Refer toIP-13, "Removal and Installation".
3. Remove the harness fixing clip (1) and antenna feeder fixing clip (2) from the upper bracket.
4. After removing the TCU mounting screws to disconnect the connectors, remove TCU with the bracket attached.
5. Remove the bracket mounting screw and remove the bracket from TCU.



NOTE:
If it is difficult to remove the harness fixing clip and the antenna feeder fixing clip, remove the vehicle mounting screw first and pull TCU forward together with the bracket. Be careful not to apply a load to the harness.

INSTALLATION

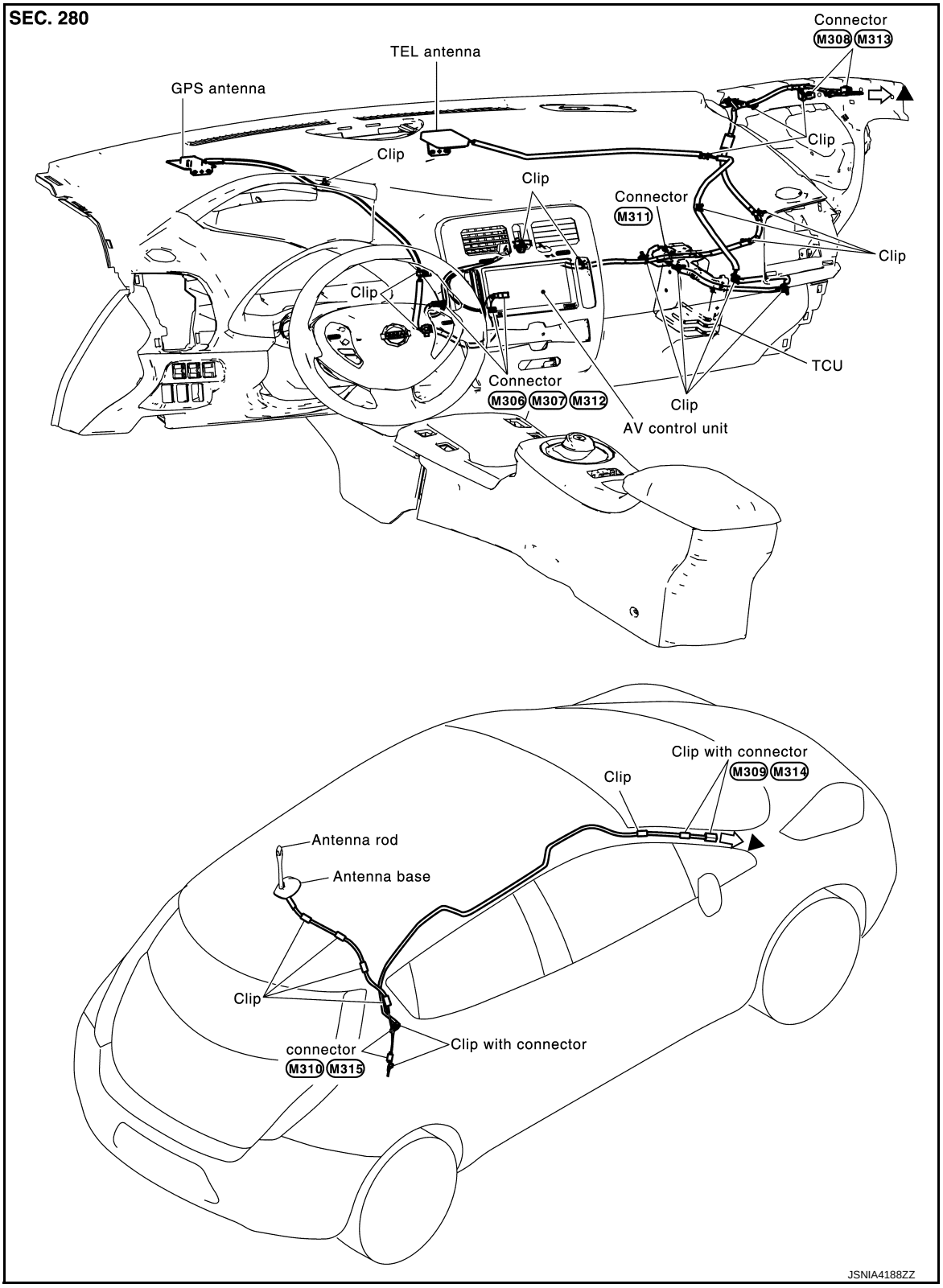
1. Install in the reverse order of removal.
2. When replaced TCU, perform activation. Refer to AV-188, "ADDITIONAL SERVICE WHEN REPLACING TCU : Work Procedure".

NOTE:
When replacing the TCU, it is necessary to contact the communications service provider to activate the new TCU. Please refer to the appropriate Nissan LEAF Technical Service Bulletin for the correct TCU activation procedure and communications provider contact information.

TEL ANTENNA

Feeder Layout

INFOID:0000000006838305



Removal and Installation

INFOID:0000000006838306

REMOVAL

1. Remove the defroster duct. Refer to IP-13, "Removal and Installation".

2. Remove screws and remove it from the defroster duct.