SECTION AV
AUDIO, VISUAL & NAVIGATION SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

Precaution for Working Range at a Regular Dealership

INFOID:0000000009188121

CAUTION:
The service items unmentioned on this manual are recommended to be performed by a GT-R certified NISSAN dealer. Because those service items require special equipment and a GT-R certified technical staff who completed special training.

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

INFOID:0000000009163192

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 Battery Service

INFOID:0000000009163193

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

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

INFOID:0000000009163194

CAUTION:
Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.
NOTE:
After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

Precaution for Trouble Diagnosis

INFOID:0000000009163195

AV COMMUNICATION SYSTEM

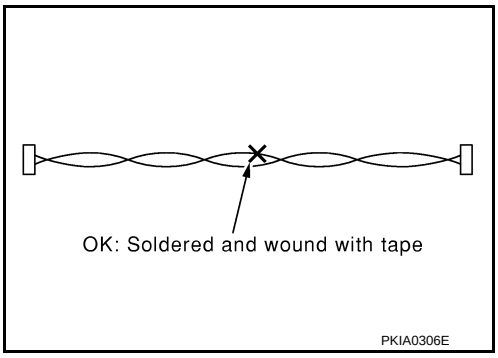
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

Precaution for Harness Repair

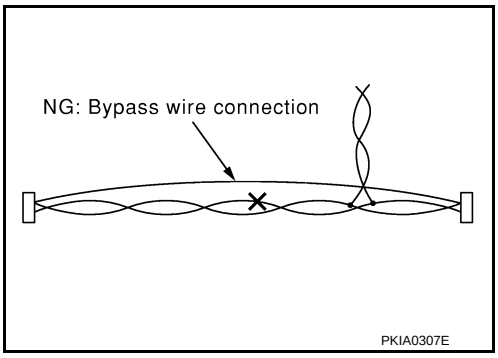
INFOID:0000000009163196

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.)

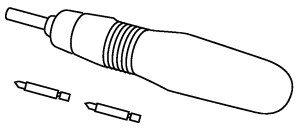


PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000009163197

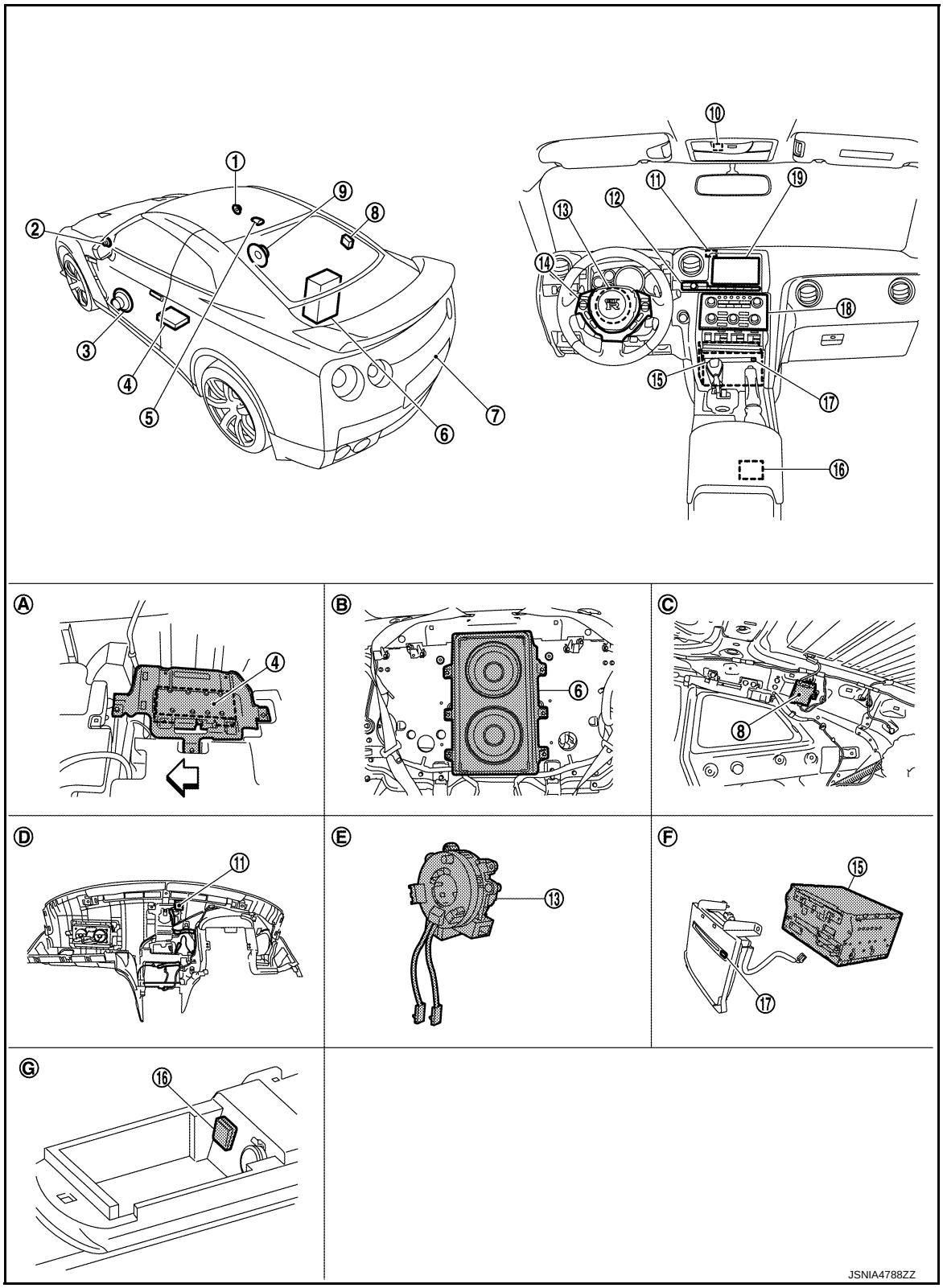
Tool name	Description
Power tool  PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

MULTI AV SYSTEM

Component Parts Location

INFOID:0000000009163198



1. Tweeter RH
2. Tweeter LH
3. Front door speaker LH
4. Audio amp.
5. Satellite radio antenna
6. Rear speaker
7. Rear view camera
8. Antenna amp.
9. Front door speaker RH
10. Microphone
11. GPS antenna
12. Multifunction switch
13. Steering angle sensor
14. Steering switch
15. AV control unit
16. USB connector
17 Disk eject switch
18. Preset switch
19. Display unit

A. Under front LH seat
B. Inside rear seat back
C. Inside rear pillar finisher RH
D. Back of instrument panel
E. Spiral cable remove condition
F. Bottom side of cluster lid C
G. Center console

⇦ : Front of vehicle

Component Description

INFOID:0000000009163199

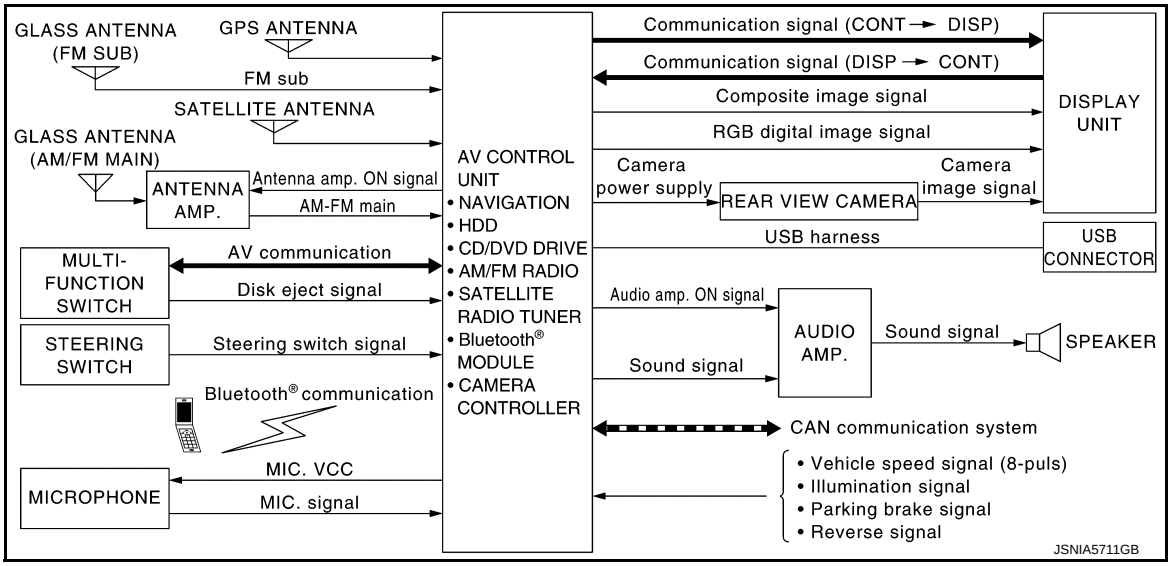
Part name	Description
AV control unit	• Integrates hard disk drive (HDD) allowing map data to be stored. • It is the master unit of the MULTI AV system, and it is connected to each control unit by communication. It operates each system according to communication signals from the AV control unit. • The AV control unit includes the audio, hands-free phone, voice control, navigation, USB connection, DVD play function, multifunction meter function and vehicle information functions. • It is connected to ECM and combination meter via CAN communication to obtain necessary information for the vehicle information function. • It is connected to low tire pressure warning control unit with the CAN communication line to obtain necessary information for the tire pressure status. • It inputs the illumination signals that are required for the display dimming control. • It inputs the signals for driving status recognition (vehicle speed, reverse and parking brake). • Update of map data is performed with the DVD-ROM.
Display unit	• Display image is controlled by the serial communication from AV control unit. • RGB digital image signal is input from AV control unit. • Composite image signal is input from AV control unit. • Touch panel function can be operated for each system by touching a display directly. • Camera image signal is input from rear view camera.
Audio amp.	It inputs the power supply (Audio amp. ON signal) and audio signal from the AV control unit and outputs the audio signal to each speaker.
Front door speaker	• Outputs audio signal from audio amp. • Outputs high, mid and low range sounds.
Rear speaker	• Outputs audio signal from audio amp. • Outputs high, mid and low range sounds.
Tweeter	• Outputs audio signal from audio amp. • Outputs high range sound.
Multifunction switch	• It can operate the multifunction meter, etc. • It is connected to the preset switch with hardwire. The operation signal is transmitted to the AV control unit through the preset switch via AV communication.
Disk eject switch	It is connected to the preset switch with hardwire. The operation signal is transmitted to the AV control unit through the preset switch.
Preset switch	• It is equipped with the switch where audio and air conditioner operations are integrated. • It is connected with the AV control unit via AV communication. The operation signal is transmitted to the AV control unit via AV communication. • The disk ejection operating signal is performed by hardwire.
Steering switch	• Operations for audio, hands-free phone, and voice control, etc. are possible. • Steering switch signal (operation signal) is output to AV control unit.

Part name	Description
Microphone	• Used for hands-free phone operation and voice recognition. • Microphone signal is transmitted to AV control unit. • Power (Mic. VCC) is supplied from AV control unit.
GPS antenna	GPS signal is received and transmitted to AV control unit.
Antenna amp.	• The radio signal received by glass antenna is amplified and sent to AV control unit. • The power (antenna amp. ON signal) is supplied from the AV control unit.
USB connector	Image signal* and audio signal of USB input is transmitted to AV control unit.
Satellite radio antenna	Satellite radio signal is received and transmitted to AV control unit.
Rear view camera	• Camera power supply is input from AV control unit. • The image of vehicle rear view is transmitted to display unit.

*: Image signal can not be getting from iPod®.

System Diagram

INFOID:0000000009163200



NOTE:
The name MULTIFUNCTION SWITCH indicates the integration of PRESET SWITCH, DISK EJECT SWITCH and MULTIFUNCTION SWITCH virtually.

System Description

INFOID:0000000009163201

Multi AV system means that the following systems are integrated.

FUNCTION NAME
Navigation system function
Audio function
Hands-free phone function
Voice recognition function
Touch panel function
Rear view monitor function
Vehicle information function
USB connection function
DVD play function
Multifunction meter system function

COMMUNICATION SIGNAL

- AV control unit function by transmitting/receiving data one by one with each unit (slave unit) that configures them completely as a master unit by connecting between units that configure MULTI AV system with two AV communication lines (H, L).
- Two AV communication lines (H, L) adopt a twisted pair line that is resistant to noise.
- The AV control unit is connected with CAN communication line and receives data signals from the ECM, combination meter, TCM, AWD control unit, A/C auto amp., ABS actuator and electric unit (control unit), steering angle sensor and low tire pressure warning control unit. Using the obtained information, it computes values for the display items relating to the fuel consumption information, multifunction meter, and tire pressure information and displays them.
- AV control unit is connected with display and serial communication, and it transmits the required signal of display and display control and receives the response signal from display.
- The AV control unit, which has the vehicle setting function, transmits and receives data on vehicle setting condition via CAN communication with the BCM.

NAVIGATION SYSTEM FUNCTION

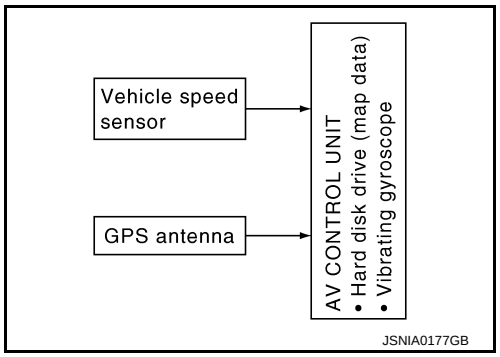
Description

- The AV control unit controls navigation function while GPS tuner has built-in map data, GYRO (angle speed sensor), on the HDD (Hard Disk Drive).
- The AV control unit inputs operation signal with communication signal, through display (touch panel) and multifunction switch and steering switch.
- Guide sound is output to front speaker through audio amp. 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 HDD (Hard Disk Drive), and transmits the map image signal (RGB digital image signal) to the display.

Position Detection Principle

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

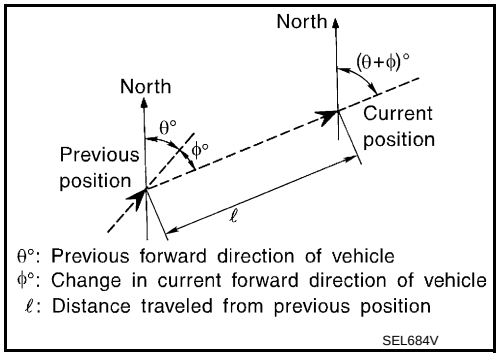
- Travel distance of the vehicle as determined by the vehicle speed sensor
- Vehicle turning angle determined by the gyroscope (angular speed sensor)
- The travel direction of the vehicle determined by the GPS antenna (GPS information)



The current position of the vehicle is then identified by comparing the calculated vehicle position with map data, which is stored in the HDD (Hard Disk Drive) (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.

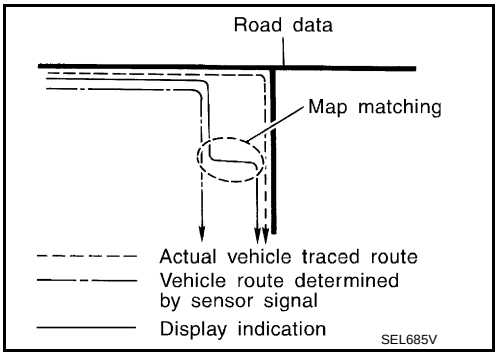


Type	Advantage	Disadvantage
Gyroscope (angular velocity sensor)	The turning angle is precisely detected.	Errors are accumulated when driving a long distance without stopping.
GPS antenna (GPS information)	The travel direction (North/South/East/West) is detected.	The travel direction is not precisely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

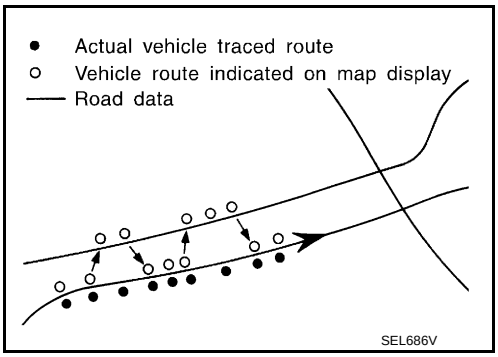
Map-matching

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 HDD (Hard Disk Drive).

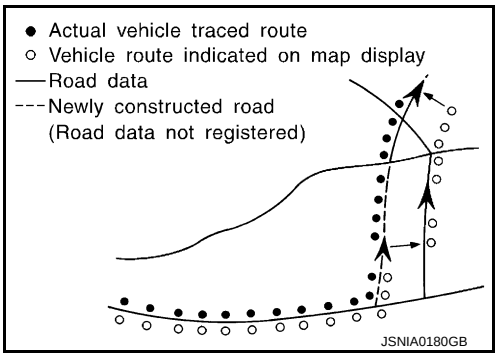


There is a possibility that the vehicle position may not be corrected in the following case, and when vehicle is driven over a certain distance or time in which GPS information is hard to receive. Correct manually the current location mark on the screen.

- 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.



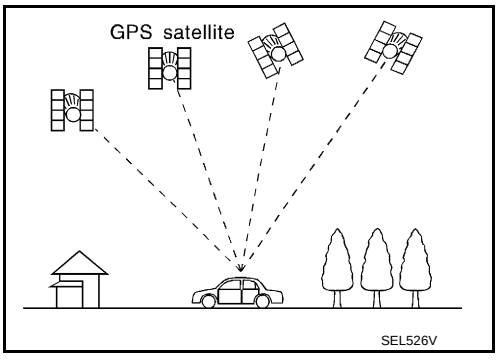
- Map-matching does not function correctly when road on which the vehicle is driving is new, etc. and not recorded in the map data. Also, map-matching does not function correctly when road pattern stored in the map data and the actual road pattern are different due to repair, etc.
  Therefore, the map-matching 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.

AUDIO FUNCTION

The audio system is equipped with the following functions. Each function is operated with multifunction switch, preset switch, touch panel, steering switch or audio recognition. Operation status of audio is indicated at display.

FUNCTION
AM/FM radio
Satellite radio
CD
Bluetooth® audio
USB connection

Operating Signal

Audio system operation can be performed with multifunction switch, preset switch, steering switch, touch panel function or voice recognition function.

- Operating signal is transmitted to AV control unit with AV communication when it is operated by multifunction switch or preset switch. The disk ejection operating signal is performed by hardwire.
- Operating signal is transmitted to AV control unit with steering switch signal when it is operated by steering switch.

Screen Display

Switching of display is performed with serial communication between display unit and AV control unit.

AM/FM Radio Mode

- AM/FM radio tuner is built into AV control unit.
- Audio signal is received by glass antenna, next it is amplified by antenna amp., and finally it is input to AV control unit. Audio signal is input to audio amp., and audio amp. outputs to each speakers.

Satellite Radio Mode

- Satellite radio tuner is built into AV control unit.
- Audio wave (satellite radio) is received by satellite radio antenna, and it is input to AV control unit. AV control unit outputs audio signal to audio amp. The signal is also outputted from audio amp.

CD Mode

- CD function is built into AV control unit.
- AV control unit outputs audio signal to audio amp., and audio amp. outputs to each speakers when CD is inserted to AV control unit.

Bluetooth® Audio

- Bluetooth® audio function is built into AV control unit.
- When the Bluetooth® audio is connected to the portable audio equipped with the Bluetooth® communication compliant profile via Bluetooth® communication, it can be play the music data in the portable audio.
- A maximum of five Bluetooth® devices including the audio devices and cellular phones can be registered in the AV control unit.

HANDS-FREE PHONE FUNCTION

- Hands-free communication can be operated by connecting using Bluetooth® communication with cellular phone.

- Operation is performed by steering switch and multifunction switch, and operating condition is indicated on display.
- Guide sound that is heard during operation is input from AV control unit to audio amp., and is output from front door speaker.

When A Call Is Originated

Spoken voice sound output from the microphone (Mic. Signal) is input to AV control unit. AV control unit outputs to cellular phone with Bluetooth® communication as a TEL voice signal. Voice sound is then heard at the other party.

When Receiving A Call

Voice sound is input to own cellular phone from the other party. TEL voice signal is output to front door speaker, and the signal is input to audio amp. via AV control unit by establishing Bluetooth® communication from cellular phone.

VOICE RECOGNITION FUNCTION

- Each operation of multi AV system can be performed by inputting sound to microphone.
- Start of voice recognition system can be performed by steering switch.

TOUCH PANEL SYSTEM

Each operation of multi AV system can be performed by directly touching a display.

REAR VIEW MONITOR FUNCTION

- The AV control unit supplies power to the rear view camera when receiving a reverse signal.
- The rear view camera transmits camera images to the display unit when power is supplied from the AV control unit.
- The AV control unit transmits a warning message, fixed guide lines, and predictive course lines to the display unit by RGB digital image signal. Rear view monitor images are displayed by combining the RGB digital image signal and the camera image signals from the rear view camera.
- Predictive course lines are controlled by a steering angle sensor signal received the AV control unit via CAN communication.

VEHICLE INFORMATION FUNCTION

- Status of audio, climate control system, fuel economy, tire pressure and maintenance is displayed.
- AV control unit displays the fuel consumption status while receiving data signal through CAN communication from ECM, combination meter.
- AV control unit displays the tire pressure status while receiving data signal through CAN communication from low tire pressure warning control unit.

USB CONNECTION FUNCTION

- iPod or music files and video data* of USB memory can be played.
- iPod audio signals are transmitted from USB connector to the AV control unit and to each speaker via audio amp.
- Video signals are transmitted from USB connector to the display unit via the AV control unit.
- iPod® is recharged when connected to USB connector.

*: Image signal can not be getting from iPod®.

iPod® is a trademark of Apple inc., registered in the U.S. and other countries.

NOTE:

Use the enclosed USB harness when connecting iPod® to USB connector.

DVD PLAY FUNCTION

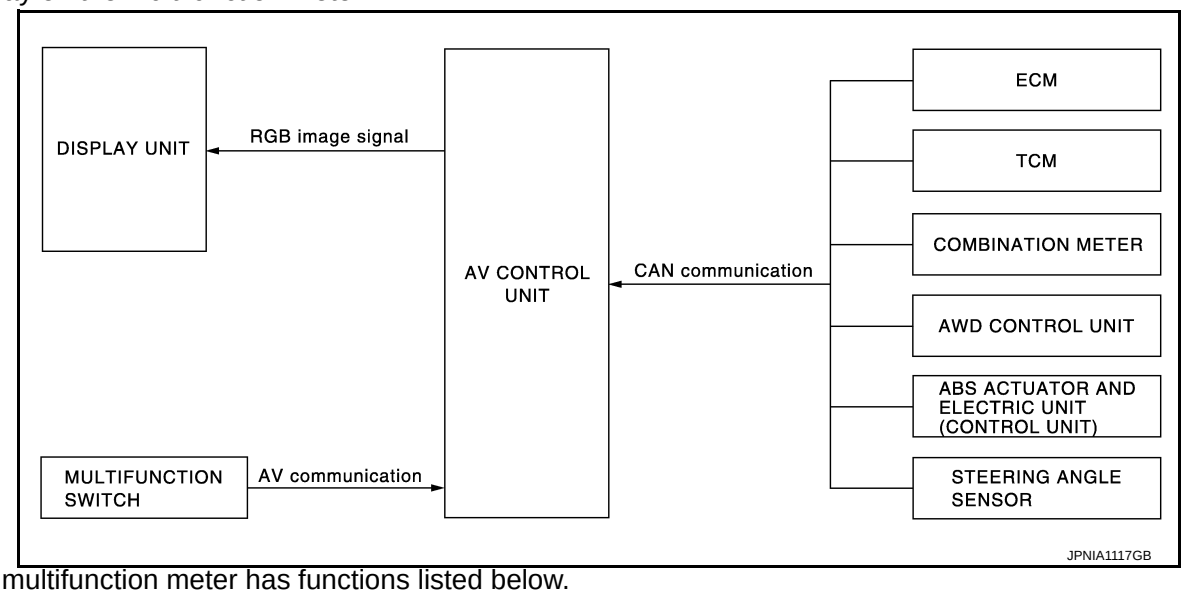
- DVD is played by inserting DVD into the AV control unit.
- DVD image signals are transmitted to the display unit and DVD audio signals are transmitted to each speaker via audio amp.

MULTIFUNCTION METER SYSTEM

Multi function meter system can be performed with multi function switch.

- To inform the user of the most suitable usage of the high-performance vehicle, the mechanical information display function, driving assist display function, gear and fuel consumption display function, and driving history information display function are adopted.

- The necessary information is transmitted from each unit to the AV control unit via CAN communication to display on the multifunction meter.



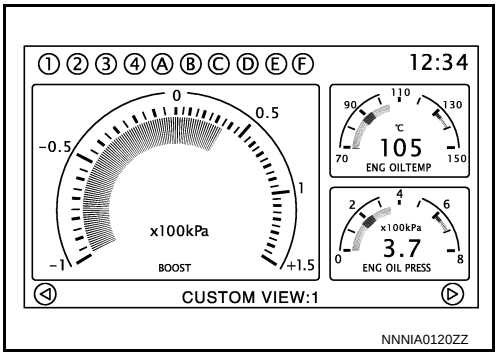
- The multifunction meter has functions listed below.

Function	Description	Display
Vehicle information mode	Displays mechanical information to use the vehicle in good condition.	CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4
Driving assist display mode	Displays major elements to improve the driving technique.	ACCELERATION BRAKING STEERING
Gear & fuel consumption display mode	Displays proper gear selection, ECO level and fuel consumption to improve the fuel efficiency.	GEAR POSITION FUEL ECONOMY
Driving history information display mode	Displays the measured TIME results.	STOP WATCH

NOTE:
For further information about the procedure for handling and setting each function, refer to the Operation Manual.

Vehicle Information Mode

To continue to use the vehicle in good condition, it can display the mechanical information if necessary.

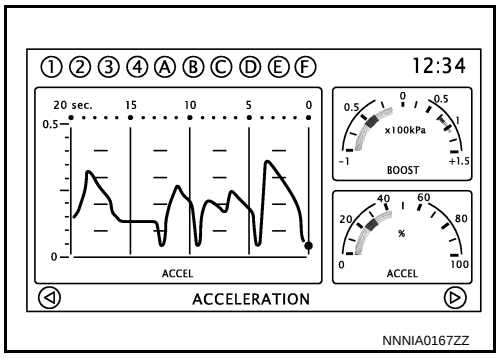


Display	Display Item	Description	Signal route	Display form	Display range	Unit
CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4	COOLANT TEMP	Engine coolant temperature	Coolant temperature sensor → ECM → Combination meter → AV control unit	Gauge	50 - 130	°C
				Value	(–40) - (200)	
				Gauge	120 - 270	°F
				Value	(–40) - (390)	
	ENGINE OIL TEMP	Engine oil temperature	Fluid temperature sensor → ECM → Combination meter → AV control unit	Gauge	70 - 150	°C
				Value	(–50) - (200)	
				Gauge	150 - 300	°F
				Value	(–50) - (390)	
	ENGINE OIL PRES	Engine oil pressure	Oil pressure sensor → Combination meter → AV control unit	Gauge	0 - 8	x100 kPa
						PSI
	TRANS OIL TEMP	Transmission oil temperature	Transmission oil sensor → TCM → Combination meter → AV control unit	Gauge	40 - 160	°C
				Value	(–40) - (200)	
				Gauge	120 - 320	°F
				Value	(–40) - (390)	
	TRANS OIL PRESSURE	Transmission oil pressure	Transmission oil pressure sensor → TCM → Combination meter → AV control unit	Gauge	Lo - Hi	—
	BOOST	Boost pressure	Boost sensor → ECM → Combination meter → AV control unit	Gauge	(–1.0) - (1.5)	x100 kPa
						PSI
	SPEED	Vehicle speed (small display only)	Wheel sensor → ABS actuator and electric unit (control unit) → Combination meter → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	FUEL/RANGE	Fuel level and possible driving distance	Combination meter → AV control unit	Gauge	E - F	—
				Value	0 - 999	km
						mile
	FUEL FLOW	Fuel Flow	ECM → AV control unit	Gauge	—	—

Display	Display Item	Description	Signal route	Display form	Display range	Unit
CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4	FUEL ECON	Interval fuel consumption Small display: Latest fuel consumption during the past minute Large display: Displays the history of an average ECO level per minute (20 minutes data)	ECM/Combination meter → AV control unit	Value	0 - 30	l/100 km
				Graph	0 - 30	
				Value	0 - 60	MPG
				Graph	0 - 30	
	TORQUE SPLIT	Front torque distribution (small display only)	AWD control unit → Combination meter → AV control unit	Gauge	RWD - AWD	—
	ACCEL BRAKING G	Longitudinal G (Accelerator pedal/brake G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	—
	CORNERING G	Transverse G (Cornering G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	—
	TOTAL G	Synthetic G (Absolute G generated on the vehicle synthesized from longitudinal G and transverse G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
	CLOCK	Clock	GPS antenna → AV control unit	Value	12/24	Time
	ACCEL PEDAL	Accelerator pedal position (small display only)	ECM → AV control unit	Gauge	0 - 100	%
	BRAKE PEDAL	Braking pressure (small display only)	Pressure sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 100	%
	STEERING	Steering angle (small display only)	Steering angle sensor → AV control unit	Gauge	Auto scale	—

Driving Assist Display Mode

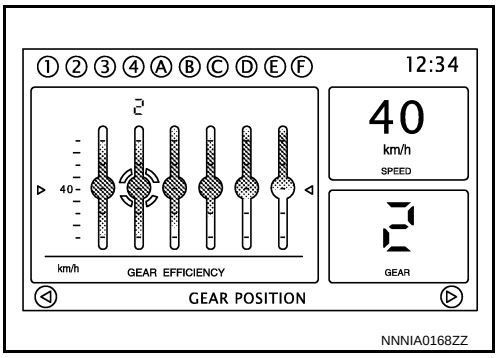
Displays major elements (accelerator, brake and steering operations) to improve the driving technique, and also displays the longitudinal/transverse G history.



Display	Display Item	Description	Signal route	Display form	Display range	Unit
ACCELERATION	ACCEL PEDAL	Accelerator pedal position	ECM → AV control unit	Gauge	0 - 100	%
	BOOST	Boost pressure	Boost sensor → ECM → Combination meter → AV control unit	Gauge	(–1.0) - (1.5)	x100 kPa
						PSI
	ACCEL G	History display of accelerator G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
BRAKING	BRAKE PEDAL	Braking pressure	Pressure sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 100	%
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	BRAKING G	History display of brake G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
STEERING	STEERING	Steering angle	Steering angle sensor → AV control unit	Gauge	Auto scale	—
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	CORNERING G	History display of cornering G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	

Gear & Fuel Consumption Display Mode

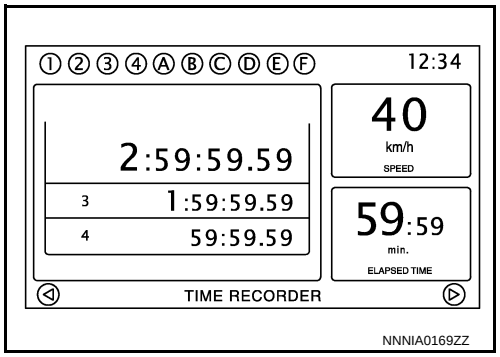
Displays proper gear selection to improve the fuel efficiency, and also displays fuel consumption and ECO driving level.



Display	Display item	Description	Signal route	Display form	Display range	Unit
GEAR POSITION	GEAR	Selected gear position	Position sensor → TCM → Combination meter → AV control unit	Value/ symbol	R, P, N, 1 - 6	—
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	GEAR EFFICIENCY	Displays ECO/power band per gear.	TCM → Combination meter → AV control unit	Special display	—	—
FUEL ECONOMY	FUEL EFFICIENCY	Displays the current ECO level.	ECM/TCM/Combination meter → AV control unit	Gauge	10 levels	—
	FUEL ECON	Interval fuel consumption (for 1 minuets)	ECM/Combination meter → AV control unit	Value	0 - 30	l/100 km
				Graph	0 - 30	
				Value	0 - 60	MPG
				Graph	0 - 30	
	FUEL EFFICIENCY	Displays the history of an average ECO level per minute (20 minutes data)	ECM/TCM/Combination meter → AV control unit	Graph	10 levels	—

Driving History Information Display Mode

Displays the sub-functions (driving route history and required time history) indicating the driving history.



Display	Description	Display form
STOP WATCH	Displays the measured TIME results.	Special display
DRIVER'S NOTES	Displays the driving history information	Special display

Fail-Safe

INFOID:0000000009163202

When the ambiance temperature becomes extremely low or extremely high, AV control unit displays the message and limits the AV control unit function.

FAIL-SAFE CONDITIONS

When the ambiance temperature is –20°C (–4°F) or lower, or when it is 70°C (158°F) or higher

Display

The messages displayed on fail-safe conditions are as shown below:

Fail-safe mode	Display (display of the fail-safe condition)
When HDD temperature is low	HDD system is experiencing problems due to extreme low temperature. Normal operation will resume when temperature rises.
When HDD temperature is high	HDD system is experiencing problems due to extreme high temperature. Normal operation will resume when temperature drops.

DESCRIPTION OF CONTROLS

Function		When Fail-safe Function is activated
Air conditioner	Operation	Only multifunction switch (preset switch) can be operated.
	Display	• LED of multifunction switch (preset switch) illuminates. • Aimed temperature, blow angle, and flow rate are displayed in simplified mode.
Audio	Operation	Only ON/OFF and volume control operations by multifunction switch (preset switch) are possible.
	Display	No display (“Fail-safe mode” is displayed)
Camera	Operation	Image tone cannot be controlled.
	Display	Cannot be superimposed. (warning display, tone control display)
Hands-free phone	Operation	Cannot be operated.
Navigation	Operation	Cannot be operated.
Self diagnosis		The display in simplified mode of fail-safe condition
CONSULT diagnosis		Cannot be operated.

Ability Operation Mode
There is an ability operation mode for Fail-safes due to low or high ambiance temperature.
If HDD data can be read, fail-safe is shown, then normal displays are displayed only for functions which can be operated.

RELEASE CONDITIONS OF FAIL-SAFE

Fail-safe is released on following conditions and normal mode is restored.

When The Temperature of HDD Is Low or High
If the ambient temperature becomes out of fail-safe condition range, normal mode is restored.

DIAGNOSIS SYSTEM (AV CONTROL UNIT)

Description

INFOID:0000000009163203

- The AV control unit diagnosis function starts up with multifunction switch operation and the AV control unit performs a diagnosis for each unit in the system during the on board diagnosis.
- Perform a CONSULT diagnosis if the on board diagnosis does not start, e.g., the screen does not display anything, the multifunction switch does not function, etc.

On Board Diagnosis Function

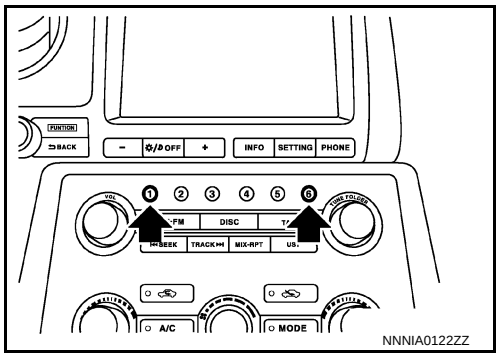
INFOID:0000000009163204

MULTIFUNCTION SWITCH AND PRESET SWITCH SELF-DIAGNOSIS FUNCTION

The ON/OFF operation (continuity) of each switch in the multifunction switch and preset switch can be checked.

Self-diagnosis Mode

- Press both the preset switches “1” and “6” simultaneously within 10 seconds after turning the ignition switch from OFF to ACC and hold them for 3 seconds or more. Then release the switches. The buzzer sounds, all indicators of the centralized and preset switches illuminate, and the self-diagnosis mode starts.
- The continuity of each switch at the ON position can be checked by pressing the switch. The buzzer sounds if the switch is normal.



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Finishing Self-diagnosis Mode

Self-diagnosis mode is canceled when turning the ignition switch OFF.

ON BOARD DIAGNOSIS ITEM

Description

- The trouble diagnosis function has a self-diagnosis mode for conducting trouble diagnosis automatically and a confirmation/adjustment mode for operating manually.
- The self-diagnosis mode performs diagnoses on the AV control unit, connections between system components as well as connections between AV control unit and GPS antenna. Then it displays the diagnosis 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 checking, modifying or adjusting generally require human intervention and judgment (the system cannot make judgment automatically).

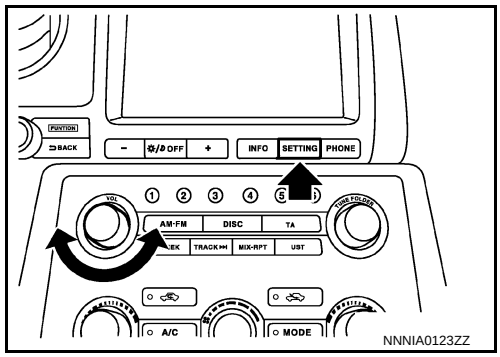
On Board Diagnosis Item

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

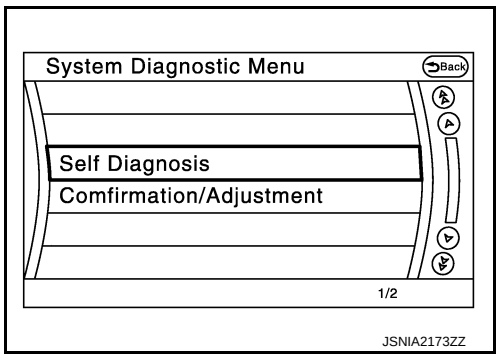
Mode			Description
Confirmation/ Adjustment	Display Diagnosis		The following check functions are available: color tone check by color bar display, light and shade check by gray scale display, touch panel calibration, touch panel response check and color tone check by white display.
	Vehicle Signals		Diagnosis of signals can be performed for vehicle speed, parking brake, lights, ignition, reverse, side view switch and room lamp.
	Speaker Test		The connection of a speaker can be confirmed by test tone.
	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.
		XM SAT Subscription Status	The XM NavTraffic subscription status can be checked.
	Error History		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.
	Synchronizer FES Clock		–
	Vehicle CAN Diagnosis		The transmitting/receiving of CAN communication can be monitored.
	AV COMM Diagnosis		The communication condition of each unit of Multi AV system can be monitored.
	Hands-free Phone		The received volume adjustment of hands-free phone, microphone speaker check, and erase memory can be performed.
	Camera Cont.		The four functions of “Correct Draw Line of Rear view Camera”, “Alter/ Confirm Configuration”, “Reset Configuration” and “Camera Syst Type” are available.
	XM	XM Navi Trffic	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.
		XM NavWeather	
		XM CGS	
		Diag	Not used.
	Delete Unit Connection Log		Erase the connection history of unit and error history.
	Initialize Settings		Initializes the AV control unit memory.
	Version Information		Version information of the AV control unit is displayed.

METHOD OF STARTING

1. Start the engine.
2. Turn the audio system OFF.
3. Turn the “VOL” dial either clockwise or counterclockwise for 40 clicks or more while pressing the “SETTING” button. (Beep sounds when starting the self-diagnosis mode.) Press the “BACK” switch and the initial system screen will be shown.



4. The trouble diagnosis initial screen is displayed, and then the items of “Self Diagnosis” and “Confirmation/Adjustment” can be selected.

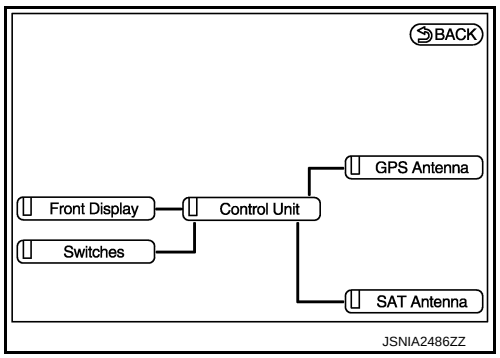


SELF-DIAGNOSIS MODE

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.



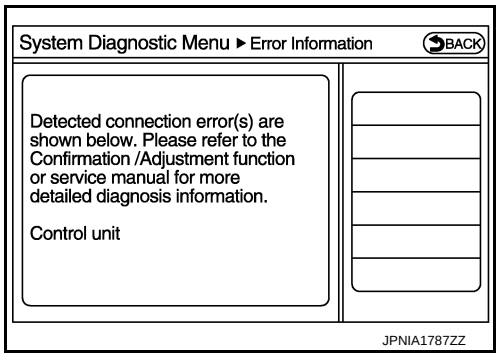
Diagnosis results	Unit	Connection line
Normal	Green	Green
Connection malfunction	Gray	Yellow
Unit malfunction Note	Red	Green

NOTE:

- Only the 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-77, "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.



SELF-DIAGNOSIS RESULTS

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

Only Unit Part Is Displayed In Red.

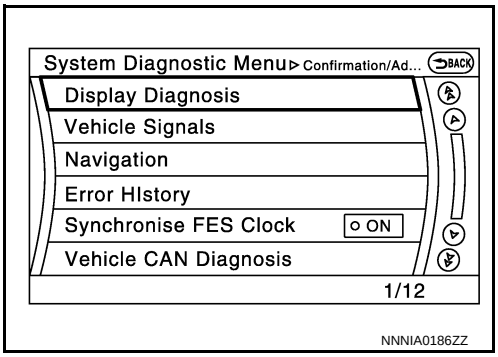
Screen switch	Description	Possible malfunction location / Action to take
Control unit	Malfunction is detected in AV control unit power supply and ground circuits.	Check AV control unit power supply and ground circuits. When detecting no malfunction in those components, replace AV control unit.

A Connecting Cable Between Units Is Displayed In Yellow.

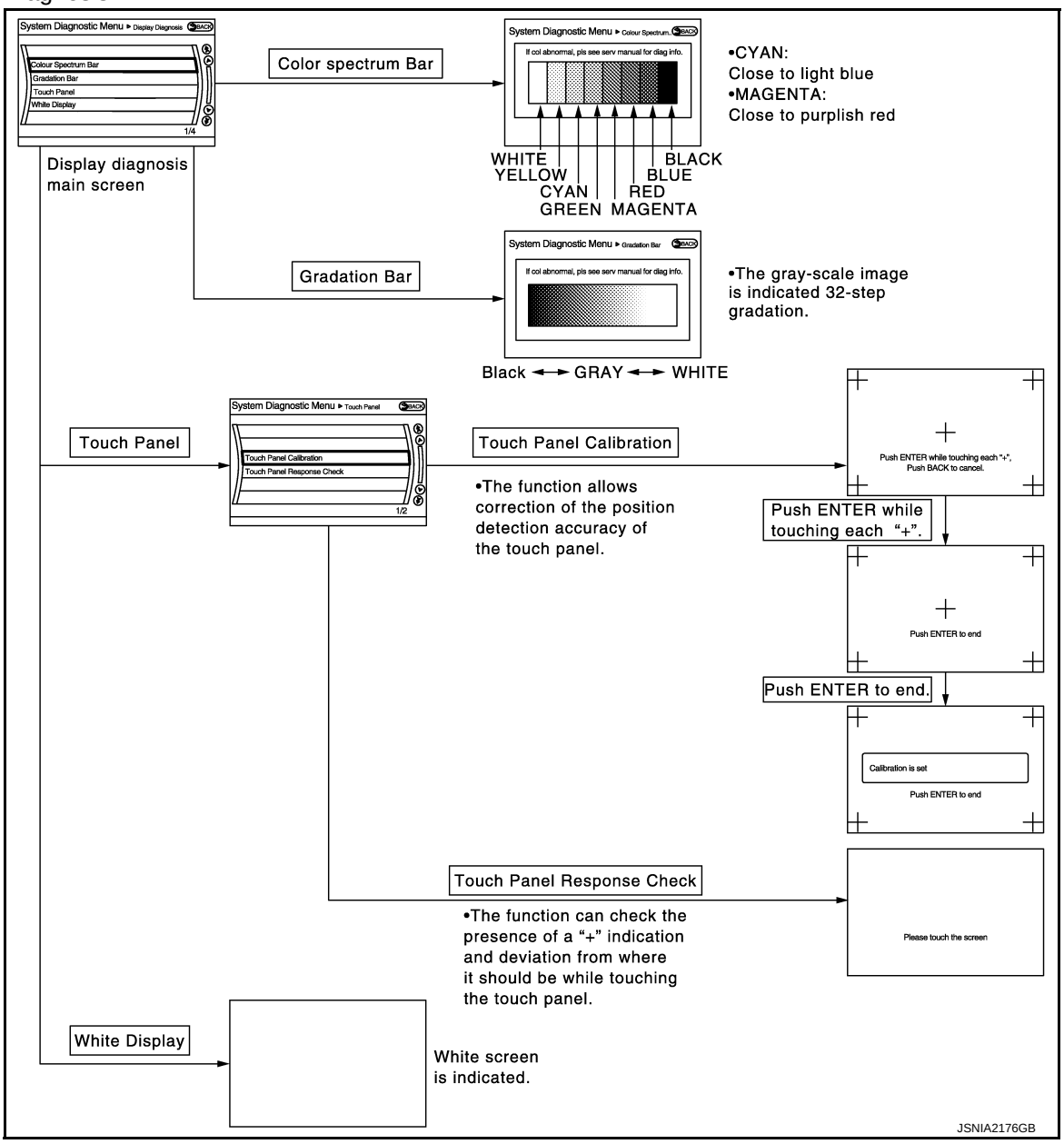
Area with yellow connection lines	Description	Possible malfunction location / Action to take
Control unit ⇔ Front Display	Malfunction is detected in serial communication circuits between AV control unit and display unit.	Serial communication circuits between AV control unit and display unit.
Control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

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.

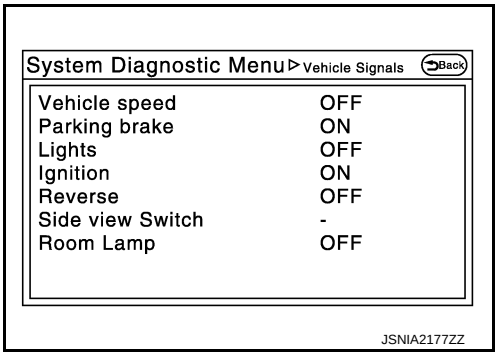


Display Diagnosis



Vehicle Signals

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

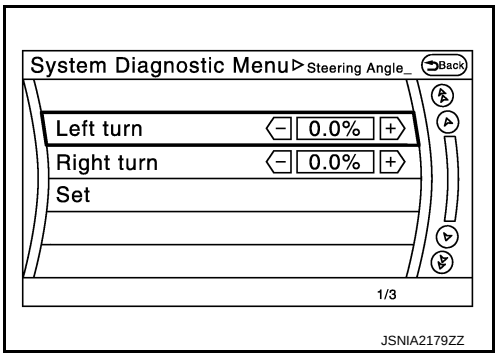


Diagnosis item	Display	Vehicle status	Remarks
Vehicle speed	ON	Vehicle speed > 0 km/h (0 MPH)	Changes in indication may be delayed. This is normal.
	OFF	Vehicle speed = 0 km/h (0 MPH)	
Parking brake	ON	Parking brake is applied	
	OFF	Parking brake is released	
Lights	ON	Light switch ON	—
	OFF	Light switch OFF	
Ignition	ON	Ignition switch ON	—
	OFF	Ignition switch 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	
SIDE VIEW SW	—	—	This item is displayed, but cannot be monitored.
ROOM LAMP	OFF	—	This item is displayed, but not used.

Navigation

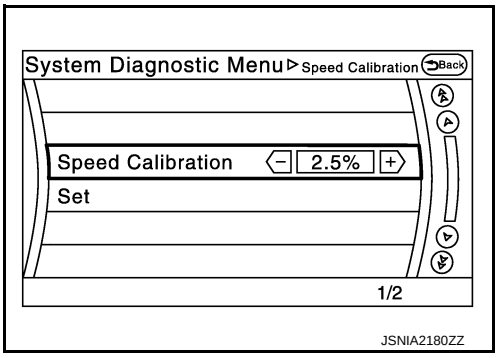
STEERING ANGLE ADJUSTMENT

The steering angle output value detected with the gyroscope is adjusted.



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.



XM SAT SUBSCRIPTION STATUS

The XM NavTraffic subscription status can be checked.

Error History

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.

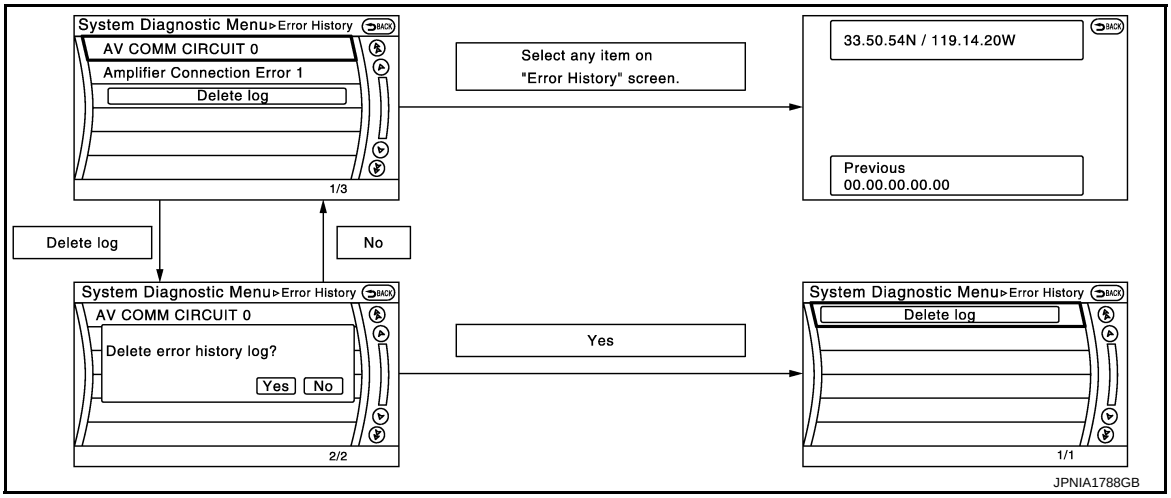
Count up method A

- The counter resets to 0 if an error occurs when IGN switch is turned ON. The counter increases by 1 if the condition is normal at a next IGN 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.

Count up method B

- The counter increases by 1 if an error occurs when IGN switch is ON. The counter will not decrease even if the condition is normal at the next IGN ON cycle.
- The counter upper limit is 50. Any counts exceeding 50 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)
Count up method B	Other than the above



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

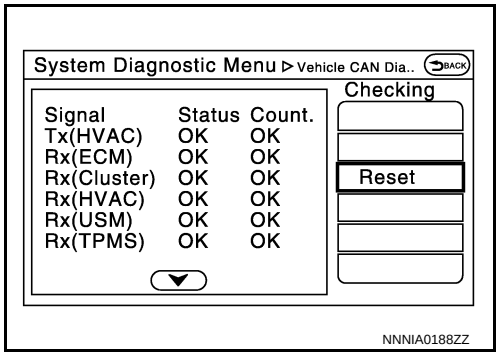
Error item	Description	Possible malfunction factor/Action to take
CAN COMM CIRCUIT	CAN communication malfunction is detected.	This work is recommended to be performed by NHPC.

Error item	Description	Possible malfunction factor/Action to take
CONTROL UNIT (CAN)	CAN initial diagnosis malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly.
CONTROL UNIT (AV)	AV communication circuit initial diagnosis malfunction is detected.	
FLASH-ROM Error Of Control Unit	AV control unit malfunction is detected.	
Connection Of Gyro		
Connection of G Sensor		
CAN Controller Memory Error		
Bluetooth Module Connection Error		
Sub CPU Connection Error		
iPod authentification chip error		
Audio connection error		
DSP Connection Error	AV control unit malfunction is detected.	• If a disc can be played, then there is a possibility of the detection of a temporary malfunction. • Replace the AV control unit if the malfunction occurs constantly.
DSP Communication Error		
HDD Connection Error	AV control unit malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly.
HDD Read Error		
HDD Write Error		
HDD Communication Error		
HDD Access Error		
GPS Communication Error	GPS malfunction is detected.	An intermittent error caused by strong radio interference may be detected unless any symptom (GPS reception error, etc.) occurs. Replace the AV control unit if the malfunction occurs constantly.
GPS ROM Error		
GPS RAM Error		
GPS RTC Error		
Unfinished configuration	The writing of configuration data is incomplete.	Write configuration data with CONSULT.
USB Controller Communication Error	USB connection malfunction is detected.	Check that the connection to the USB connector is normal.
DVD Mechanism Communication Error	AV control unit malfunction is detected.	• If DVD can be played, then there is a possibility of the detection of a temporary malfunction. • Replace the AV control unit if the malfunction occurs constantly.
Front Display Connection Error	• Display unit power supply and ground circuits malfunction is detected. • Malfunction is detected in communication circuits between AV control unit and display unit.	• Display unit power supply and ground circuits. • Communication circuits between AV control unit and display unit.
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 feeder. • Satellite radio antenna.
USB electric current Error	Detection of over current in USB connector.	Check USB harness between the AV control unit and USB connector.
AM/FM antenna amplifier short to ground	Radio antenna amp. ON signal circuit malfunction is detected.	Radio antenna amp. ON signal circuit between AV control unit and antenna amp.
AM/FM antenna amplifier open		

Error item	Description	Possible malfunction factor/Action to take
Ext_Amp_ON output terminal short to ground	BOSE amp. ON signal circuit malfunction is detected.	BOSE amp. ON signal circuit between AV control unit and BOSE amp.
Ext_Amp_ON output terminal :open		
• 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.

Vehicle CAN Diagnosis

- CAN communication status and error counter is displayed.
- 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.

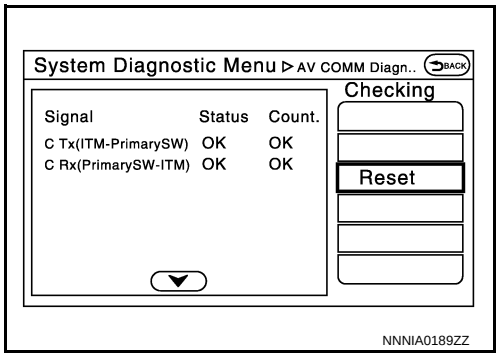


Items	Display (Current)	Malfunction counter (Past)
Tx(HVAC)	OK / ???	OK / 0 – 39
Rx(ECM)	OK / ???	OK / 0 – 39
Rx(Cluster)	OK / ???	OK / 0 – 39
Rx(HVAC)	OK / ???	OK / 0 – 39
Rx(USM)	OK / ???	OK / 0 – 39
Rx (TPMS)	OK / ???	OK / 0 - 39
Rx (VDC)	OK / ???	OK / 0 - 39

NOTE:
“???” indicates UNKWN

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.

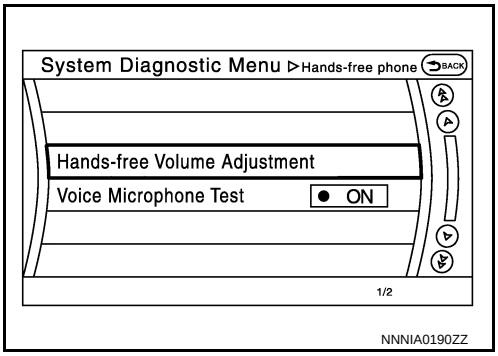


Items	Status (Current)	Counter (Past)
C Tx(ITM–PrimarySW)	OK / ???	OK / 0 – 39
C Rx(PrimarySW–ITM)	OK / ???	OK / 0 – 39

NOTE:
“???” indicates UNKWN

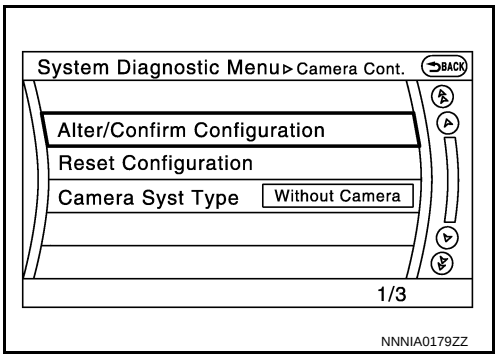
Hands-Free Phone

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



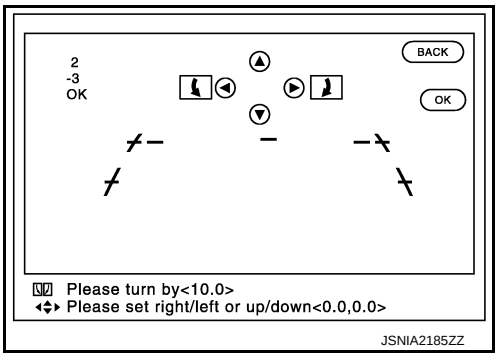
Camera Cont.

The four functions of “Correct Draw Line of Rear view Camera”, “Alter/Confirm Configuration”, “Reset Configuration” and “Camera Syst Type” are 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.



Alter/Confirm Configuration

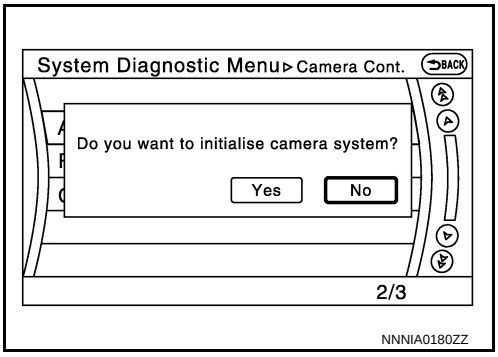
- Configuration stored in the AV control unit can be checked and modified.

Configuration list

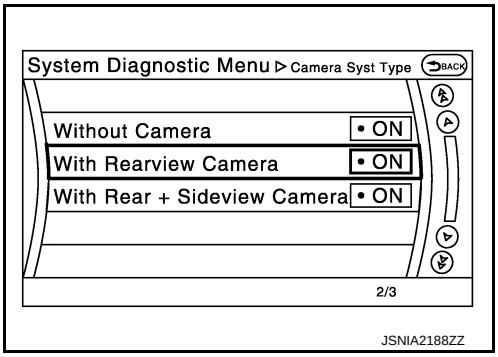
Setting item	Setting	Setting item	Setting
Predi. Course Lines	With	Wheelbase	2.7800000
Rear Coeff. K	–133446.7	Total Length	0.0000000
Rear Coeff. F	0.0016960	Steering Gear Ratio	14.368316
Rear Coeff. P1	0.0000046	Side Coeff. K	0.0000000
Rear Coeff. P2	0.0000056	Side Coeff. F	0.0000000
Rear Coeff. C1	823.00000	Side Coeff. P1	0.0000000
Rear Coeff. C2	480.00000	Side Coeff. P2	0.0000000
Rear Coeff. D1	800.00000	Side Coeff. C1	0.0000000
Rear Coeff. D2	494.00000	Side Coeff. C2	0.0000000
Car Width	1.8950000	Side Coeff. D1	0.0000000
Rear Offset	–0.207930	Side Coeff. D2	0.0000000
Rear Height	0.6846400	Side Offset	0.0000000

Setting item	Setting	Setting item	Setting
Rear L/R Angle	0.0000000	Overall Height	0.0000000
Rear Up/Dn Angle	49.409999	Side L/R Angle	0.0000000
Rear Roll Angle	0.0000000	Side Up/Dn Angle	0.0000000
Bumper Rear Dist.	0.0383800	Side Roll Angle	0.0000000
Bumper Rear Ax Dist	0.9710000	Side Front End Dist	0.0000000
Steer. Max Angle	443.83728	Total Width	0.0000000
Min. Turning Red.	5.7049999	—	—

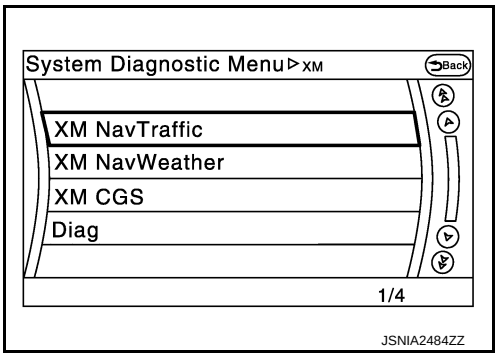
Reset Configuration
- Configuration stored in the AV control unit can be initialized.



Camera Syst Type
- Type of camera system is selectable.

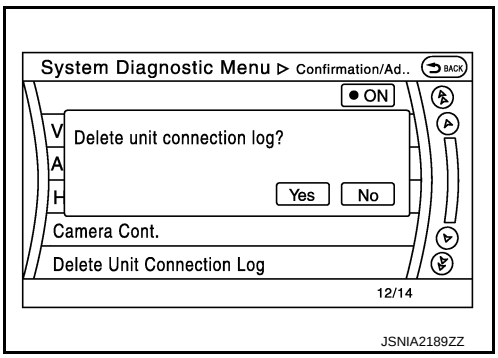


XM
- Change Channel
  - Any necessary channels required to receive traffic information from the satellite radio system can be set.
- Change Application ID
  - Any application ID'-s required to receive traffic information from the satellite radio system can be set.



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.)

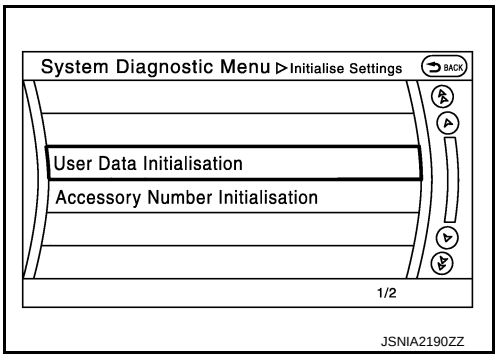


Initialize Settings

"User Data Initialization" and "Accessory Number Initialization" are possible.

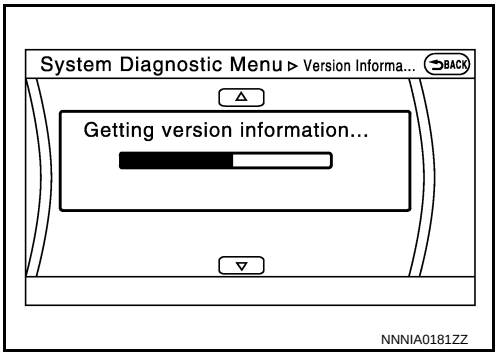
CAUTION:

- **Never perform Accessory Number Initialization except when configuration is unsuccessful.**
- **Accessory Number Initialization requires configuration. For details, refer to AV-49, "CONFIGURATION (AV CONTROL UNIT) : Description".**



Version Information

Version information of the AV control unit is displayed.



CONSULT Function (MULTI AV)

INFOID:0000000009163205

APPLICATION ITEMS

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

Diagnosis mode	Description
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing AV control unit.

CONFIGURATION

Configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in AV control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the AV control unit.
Manual Configuration		Allows the writing of the vehicle specification into the AV control unit by hand.

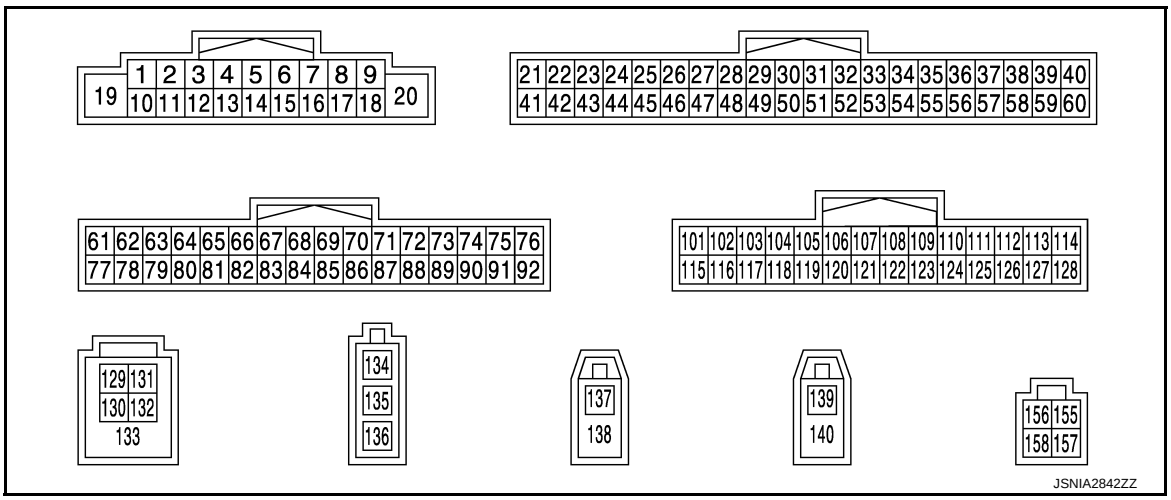
ECU DIAGNOSIS INFORMATION

AV CONTROL UNIT

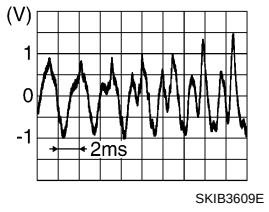
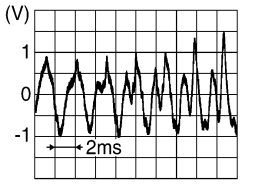
Reference Value

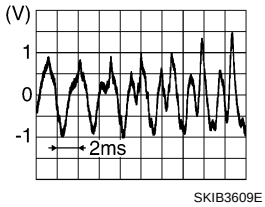
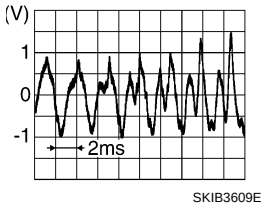
INFOID:0000000009163206

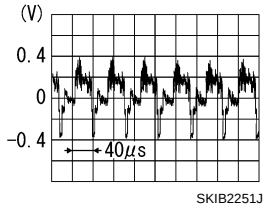
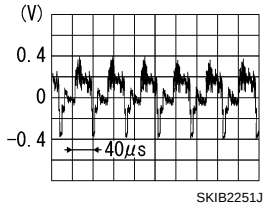
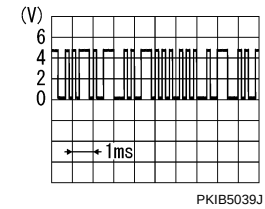
TERMINAL LAYOUT

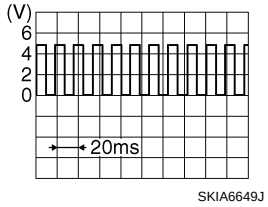
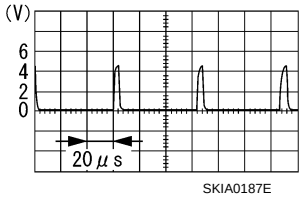
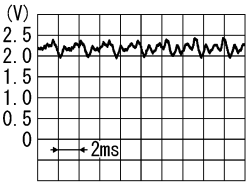
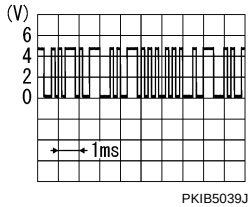


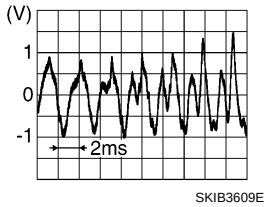
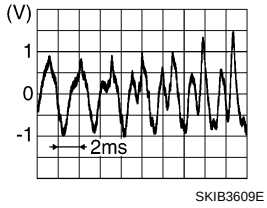
PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	Audio amp. ON signal	Output	Ignition switch ON	—	12.0 V
2 (L)	3 (G)	Audio signal front LH	Output	Ignition switch ON	Sound output	 SKIB3609E
4 (B)	5 (LG)	Audio signal rear LH	Output	Ignition switch ON	Sound output	 SKIB3609E

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
6 (V)	15 (GR)	Steering switch signal A	Input	Ignition switch ON	Keep pressing SOURCE switch.	0 V
					Keep pressing SEEK switch to △.	1.0 V
					Keep pressing SEEK switch to ▽.	2.0 V
					Keep pressing switch.	3.0 V
					Keep pressing START / STOP switch.	4.0 V
					Except for above.	5.0 V
7 (V)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
10 (B)	—	Shield	—	—	—	—
11 (O/L)	12 (W/L)	Audio signal front RH	Output	Ignition switch ON	Sound output	 SKIB3609E
13 (L/G)	14 (L/Y)	Audio signal rear RH	Output	Ignition switch ON	Sound output	 SKIB3609E
16 (SB)	15 (GR)	Steering switch signal B	Input	Ignition switch ON	Keep pressing VOL switch to -.	0 V
					Keep pressing VOL switch to +.	1.0 V
					Keep pressing switch.	2.0 V
					Keep pressing MRK switch.	3.0 V
					Except for above.	5.0 V
19 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
20 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
22 (G)	Ground	Camera power supply	Output	Ignition switch ON	At rear view camera image is displayed.	6.0 V
					Except for above.	0 V

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
26 (G)	Ground	AUX image signal	Input	Ignition switch ON	At AUX image is displayed.	 SKIB2251J
29 (SB)	Ground	Disk eject signal	Input	Ignition switch ON	Pressing the eject switch.	0 V
					Except for above.	5.0 V
42 (R)	Ground	Camera ground	—	Ignition switch ON	—	0 V
46 (R)	Ground	AUX image signal ground	—	Ignition switch ON	—	0 V
47	—	Shield	—	—	—	—
49 (BR)	Ground	Switch ground	—	Ignition switch ON	—	0 V
65 (R)	Ground	Parking brake signal	Input	Ignition switch ON	Parking brake is ON.	4.5 V
					Parking brake is OFF.	0 V
67 (W)	Ground	Composite image ground	—	Ignition switch ON	—	0 V
68 (R)	Ground	Composite image signal	Output	Ignition switch ON	At DVD image is displayed.	 SKIB2251J
72 (L)	Ground	Microphone VCC	Output	Ignition switch ON	—	5.0 V
73 (V)	Ground	Communication signal (CONT→DISP)	Output	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
74 (P)	—	CAN–L	Input/ Output	—	—	—
75 (R)	—	AV communication signal (L)	Input/ Output	—	—	—
76 (R)	—	AV communication signal (L)	Input/ Output	—	—	—

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
79 (R)	Ground	Illumination signal	Input	Ignition switch OFF	Lighting switch is OFF.	0 V
					Lighting switch is ON.	12.0 V
80 (W)	Ground	Ignition signal	Input	Ignition switch ON	—	Battery voltage
81 (O)	Ground	Reverse signal	Input	Ignition switch ON	R position	12.0 V
					Other than R position	0 V
82 (V)	Ground	Vehicle speed signal (8-pulse)	Input	Ignition switch ON	When vehicle speed is approx. 40 km/h (25 MPH)	**NOTE:** Maximum voltage may be 12.0 V due to specifications (connected units).  SKIA6649J
83	—	Shield	—	—	—	—
84 (B)	Ground	Composite synchronizing signal	Output	Ignition switch ON	—	 SKIA0187E
87 (P)	71	Microphone signal	Input	Ignition switch ON	Give a voice	 PKIB5037J
88	—	Shield	—	—	—	—
89 (SB)	Ground	Communication signal (DISP→CONT)	Input	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
90 (L)	—	CAN–H	Input/ Output	—	—	—
91 (G)	—	AV communication signal (H)	Input/ Output	—	—	—
92 (G)	—	AV communication signal (H)	Input/ Output	—	—	—

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
104 (W)	119 (B)	AUX sound signal LH	Input	Ignition switch ON	When AUX mode is selected.	 SKIB3609E
117	—	Shield	—	—	—	—
118 (R)	119 (B)	AUX sound signal RH	Input	Ignition switch ON	When AUX mode is selected.	 SKIB3609E
129 (G)	—	USB ground	—	—	—	—
130 (R)	—	USB D–	—	—	—	—
131 (W)	—	V BUS signal	—	—	—	—
132 (L)	—	USB D+	—	—	—	—
133	—	Shield	—	—	—	—
134	Ground	Antenna amp. ON signal	Output	Ignition switch ON	—	12.0 V
135	—	AM–FM main	Input	—	—	—
136	—	FM sub	Input	—	—	—
137	Ground	GPS antenna signal	Input	Ignition switch ON	Not connected to GPS antenna connector	5.0 V
138	—	Shield	—	—	—	—
139	Ground	Satellite radio antenna signal	Input	Ignition switch ON	Not connected to satellite radio antenna connector.	5.0 V
140	—	Shield	—	—	—	—
157	Ground	RGB digital image signal (+)	Output	Ignition switch ON	Not connected connector.	3.3 V
158	Ground	RGB digital image signal (–)	Output	Ignition switch ON	Not connected connector.	3.3 V

Fail-Safe

INFOID:0000000009163207

When the ambiance temperature becomes extremely low or extremely high, AV control unit displays the message and limits the AV control unit function.

FAIL-SAFE CONDITIONS

When the ambiance temperature is –20°C (–4°F) or lower, or when it is 70°C (158°F) or higher

Display

The messages displayed on fail-safe conditions are as shown below:

Fail-safe mode	Display (display of the fail-safe condition)
When HDD temperature is low	HDD system is experiencing problems due to extreme low temperature. Normal operation will resume when temperature rises.
When HDD temperature is high	HDD system is experiencing problems due to extreme high temperature. Normal operation will resume when temperature drops.

DESCRIPTION OF CONTROLS

Function		When Fail-safe Function is activated
Air conditioner	Operation	Only multifunction switch (preset switch) can be operated.
	Display	• LED of multifunction switch (preset switch) illuminates. • Aimed temperature, blow angle, and flow rate are displayed in simplified mode.
Audio	Operation	Only ON/OFF and volume control operations by multifunction switch (preset switch) are possible.
	Display	No display (“Fail-safe mode” is displayed)
Camera	Operation	Image tone cannot be controlled.
	Display	Cannot be superimposed. (warning display, tone control display)
Hands-free phone	Operation	Cannot be operated.
Navigation	Operation	Cannot be operated.
Self diagnosis		The display in simplified mode of fail-safe condition
CONSULT diagnosis		Cannot be operated.

Ability Operation Mode

There is an ability operation mode for Fail-safes due to low or high ambiance temperature.
If HDD data can be read, fail-safe is shown, then normal displays are displayed only for functions which can be operated.

RELEASE CONDITIONS OF FAIL-SAFE

Fail-safe is released on following conditions and normal mode is restored.

When The Temperature of HDD Is Low or High

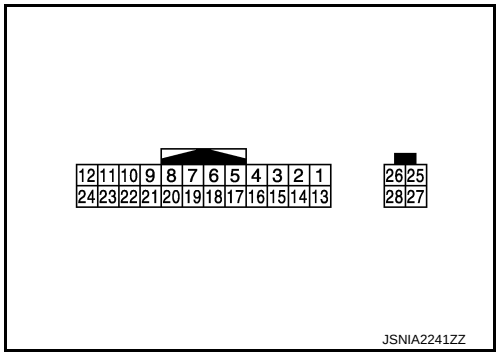
If the ambient temperature becomes out of fail-safe condition range, normal mode is restored.

DISPLAY UNIT

Reference Value

INFOID:0000000009163209

TERMINAL LAYOUT



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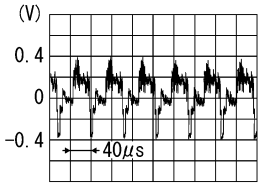
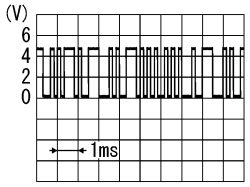
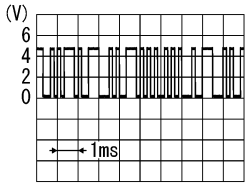
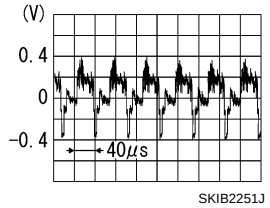
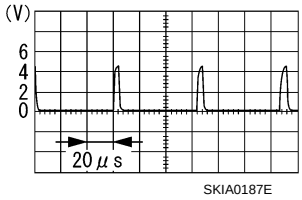
PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
6	—	Shield	—	—	—	—
7	—	Shield	—	—	—	—
8 (W)	Ground	Camera image signal	Input	Ignition switch ON	At rear view camera image is displayed.	 SKIB2251J
9 (SB)	Ground	Communication signal (DISP→CONT)	Output	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
10 (V)	Ground	Communication signal (CONT→DISP)	Input	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
11 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
12 (B)	Ground	Ground	—	Ignition switch ON	—	0 V

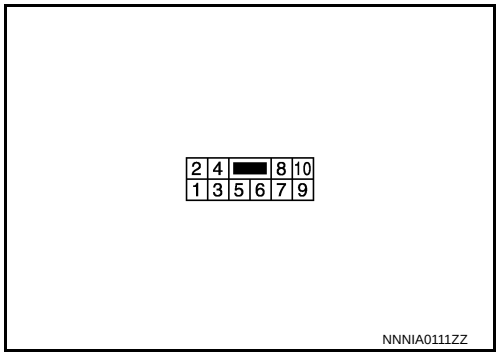
Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
18 (R)	Ground	Composite image signal	Input	Ignition switch ON	At DVD image is displayed.	 SKIB2251J
19 (W)	Ground	Composite image ground	—	Ignition switch ON	—	0 V
20 (B)	Ground	Composite synchronizing signal	Input	Ignition switch ON	—	 SKIA0187E
22	—	Shield	—	—	—	—
23 (P)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
27	—	RGB digital image signal (+)	Input	—	—	—
28	—	RGB digital image signal (–)	Input	—	—	—

AUDIO AMP.

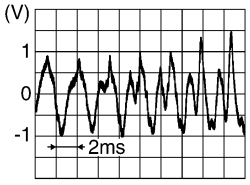
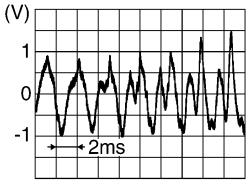
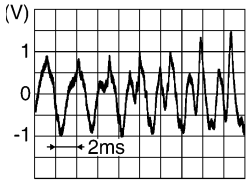
Reference Value (AUDIO AMP. LH)

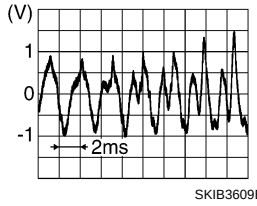
INFOID:0000000009163210

TERMINAL LAYOUT



PHYSICAL VALUE

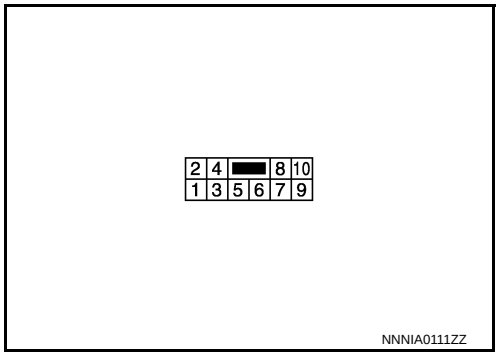
Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
2 (B)	1 (W)	Audio signal rear LH	Input	Ignition switch ON	Audio signal input	 SKIB3609E
4 (R)	3 (G)	Audio signal front LH	Input	Ignition switch ON	Audio signal input	 SKIB3609E
6 (R)	5 (G)	Audio signal front door speaker LH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
7 (V)	Ground	Audio amp. ON signal	Input	Ignition switch ON	—	12.0 V

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
9 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
10 (L)	8 (W)	Audio signal rear speaker LH	Output	Ignition switch ON	Audio signal output	 SKIB3609E

Reference Value (AUDIO AMP. RH)

INFOID:0000000009163211

TERMINAL LAYOUT



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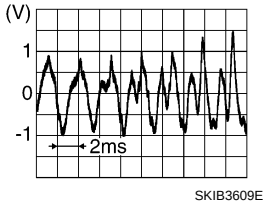
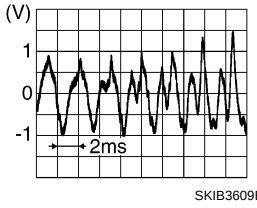
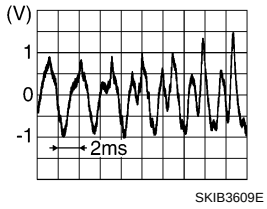
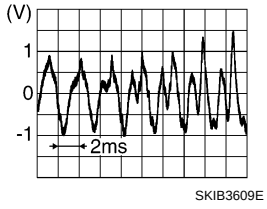
PHYSICAL VALUE

Terminal (Wire color)		Description		Condition		Reference Value (Approx.)
+	–	Signal name	Input/ Output			
2 (B)	1 (Y)	Audio signal rear RH	Input	Ignition switch ON	Audio signal input	 SKIB3609E
4 (R)	3 (L)	Audio signal front RH	Input	Ignition switch ON	Audio signal input	 SKIB3609E

Terminal (Wire color)		Description		Condition		Reference Value (Approx.)
+	–	Signal name	Input/ Output			
6 (Y)	5 (LG)	Audio signal front door speaker RH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
7 (V)	Ground	Audio amp. ON signal	Input	Ignition switch ON	—	12.0 V
9 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
10 (LG)	8 (O)	Audio signal rear speaker RH	Output	Ignition switch ON	Audio signal output	 SKIB3609E

WIRING DIAGRAM

BASE AUDIO WITH NAVIGATION SYSTEM

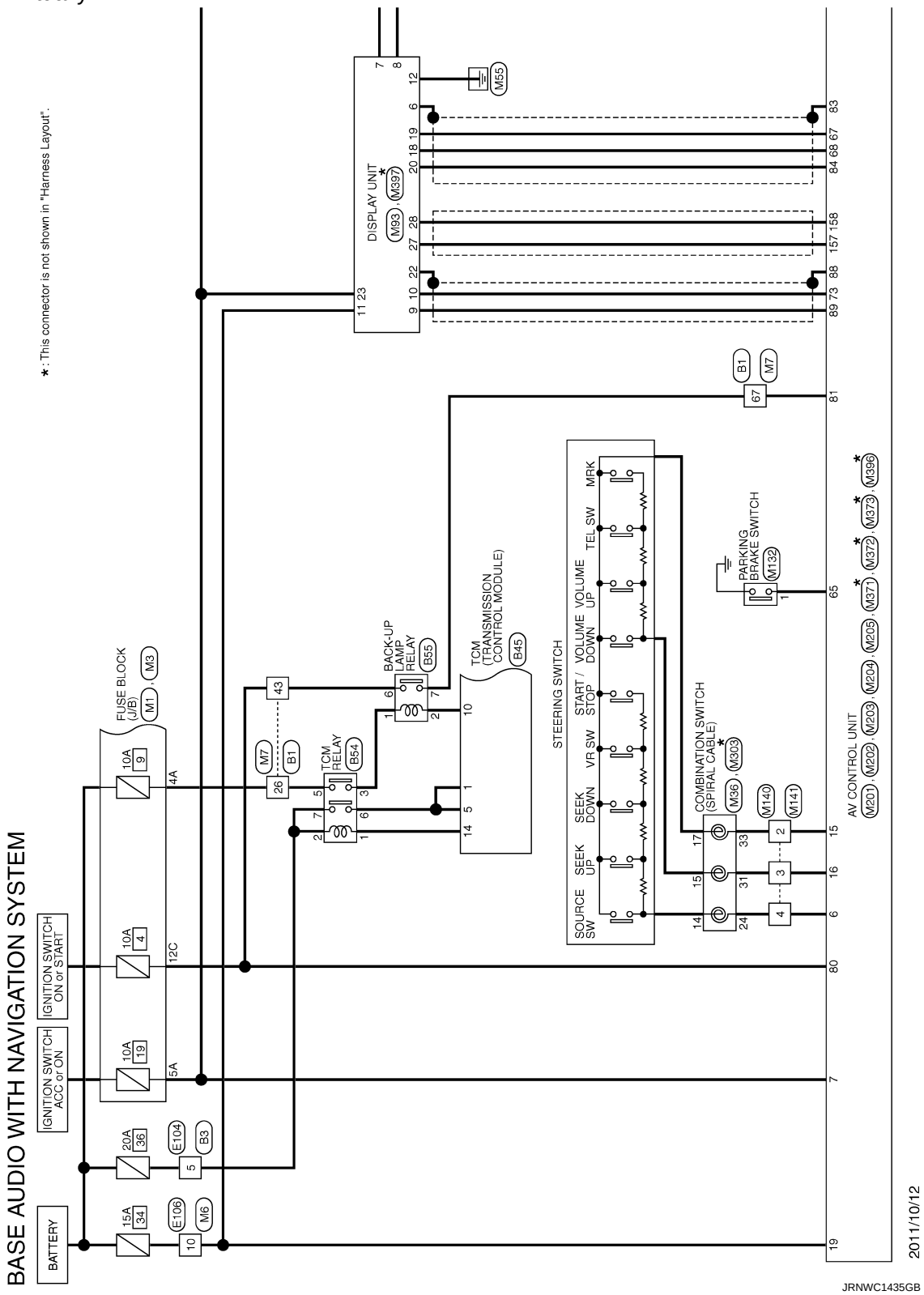
Wiring Diagram

INFOID:0000000009163212

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

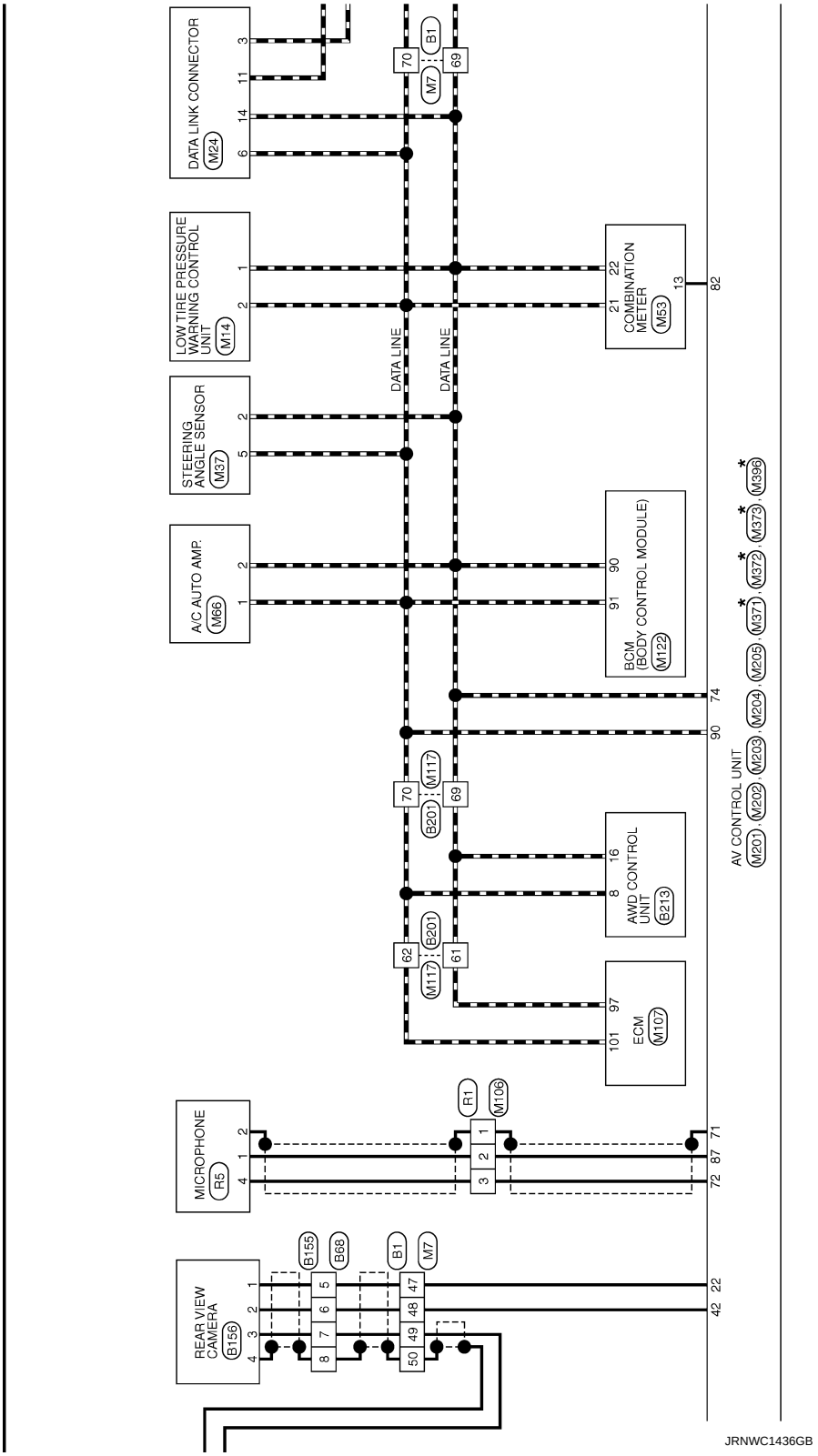
NOTE:

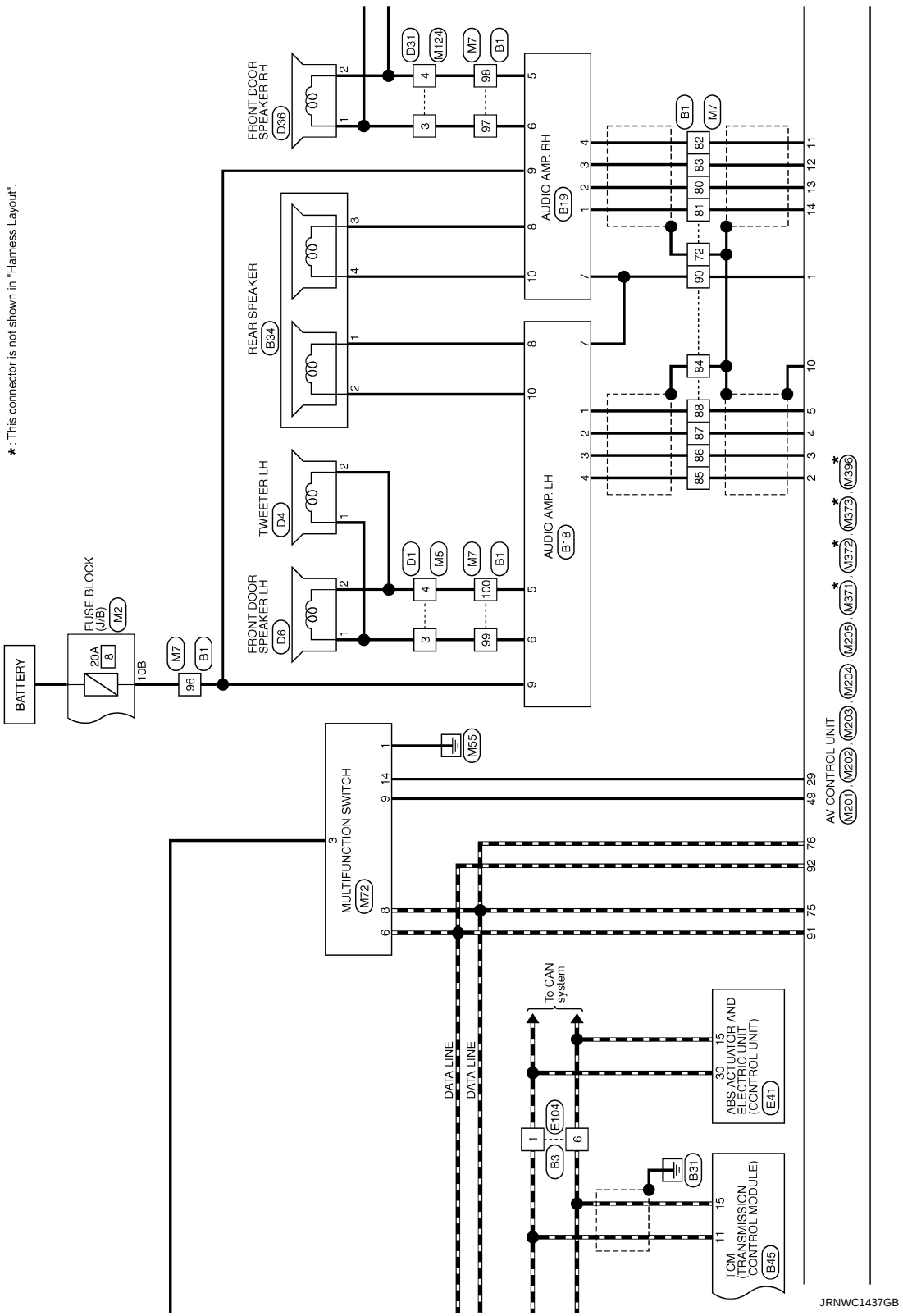
The name MULTIFUNCTION SWITCH indicates the integration of PRESET SWITCH and MULTIFUNCTION SWITCH virtually.



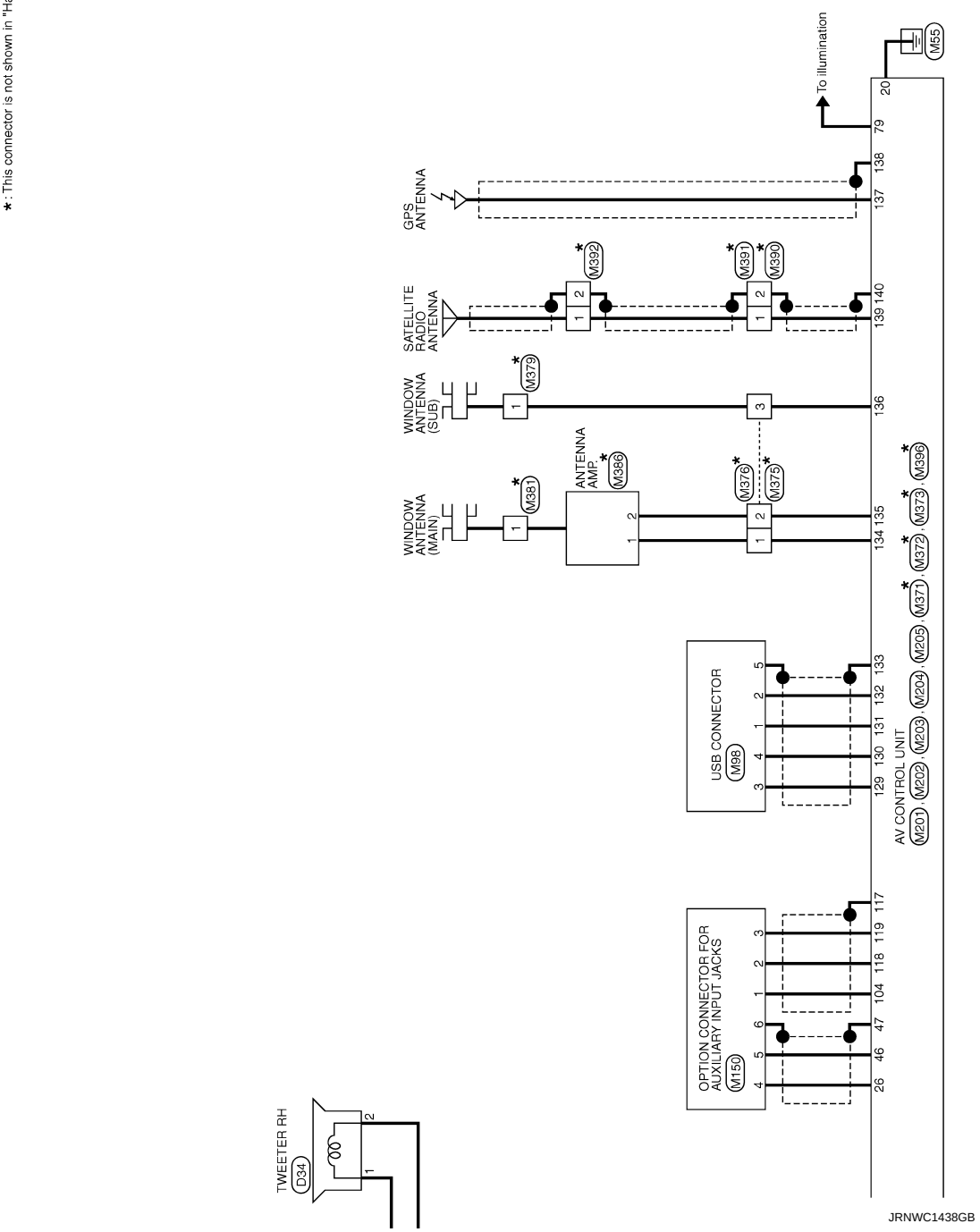
*: This connector is not shown in "Harness Layout".

*: This connector is not shown in "Harness Layout".




*: This connector is not shown in "Harness Layout".
BATTERY
FUSE BLOCK (J/B) M2
20A 8
10B
M7
B1
96
FRONT DOOR SPEAKER RH D36
FRONT DOOR SPEAKER LH D6
TWEETER LH D4
REAR SPEAKER B34
AUDIO AMP. RH B19
AUDIO AMP. LH B18
D31
M124
M7
B1
98
97
D1
M5
100
99
M55
MULTIFUNCTION SWITCH M72
AV CONTROL UNIT M201, M202, M203, M204, M205, M371, M372, M373, M396
DATA LINE
DATA LINE
To CAN system
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) E41
E104
B3
B31
TCM (TRANSMISSION CONTROL MODULE) B45
JRNWC1437GB

*: This connector is not shown in "Harness Layout".



BASIC INSPECTION

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:0000000009163214

BEFORE REPLACEMENT

When replacing AV control unit, save or print current vehicle specification with CONSULT configuration before replacement.

AFTER REPLACEMENT

CAUTION:

When replacing AV control unit, you must perform “After Replace ECU” or “Manual Configuration” with CONSULT.

- **Complete the procedure of “After Replace ECU” or “Manual Configuration” in order.**
- **If you set incorrect “After Replace ECU” or “Manual Configuration”, incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:0000000009163215

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “Before Replace ECU” to save or print current vehicle specification. Refer to AV-49, "CONFIGURATION (AV CONTROL UNIT) : Description".

NOTE:

If “Before Replace ECU” can not be used, use the “Manual Configuration”.

>> GO TO 2.

2. REPLACE AV CONTROL UNIT

Replace AV control unit. Refer to AV-77, "Removal and Installation".

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “After Replace ECU” or “Manual Configuration” to write vehicle specification. Refer to AV-50, "CONFIGURATION (AV CONTROL UNIT) : Special Repair Requirement".

>> GO TO 4.

4. OPERATION CHECK

Check that the operation of the AV control unit and camera images (fixed guide lines and predictive course lines) are normal.

>> WORK END

CONFIGURATION (AV CONTROL UNIT)

CONFIGURATION (AV CONTROL UNIT) : Description

INFOID:0000000009163216

- Since vehicle specifications are not included in the AV control unit after replacement, it is required to write vehicle specifications with CONSULT.
- The AV control unit configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in AV control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the AV control unit.
Manual Configuration		Allows the writing of the vehicle specification into the AV control unit by hand.

CONFIGURATION (AV CONTROL UNIT) : Special Repair Requirement

INFOID:0000000009163217

1.WRITE VEHICLE SPECIFICATION

CONSULT Configuration
Write vehicle specification into AV control unit.

To write vehicle specification stored in CONSULT into the AV control unit>>GO TO 2.
To write vehicle specification into the AV control unit by hand>>GO TO 3.

2.WRITE STORED DATA

CONSULT Configuration
Select “After Replace ECU” in “Read/Write Configuration”. Write data stored in CONSULT with the “Before Replace ECU” function into the AV control unit.

>> GO TO 4.

3.MANUALLY WRITE VEHICLE SPECIFICATION

CONSULT Configuration
Perform “Manual Configuration”. Refer to AV-50, "CONFIGURATION (AV CONTROL UNIT) : Configuration List".
NOTE:
If selection items are not displayed on the CONSULT screen, touch “NEXT”.

>> GO TO 4.

4.OPERATION CHECK

Check that the operation of the AV control unit and camera images (fixed guide lines and predictive course lines) are normal.

>> WORK END

CONFIGURATION (AV CONTROL UNIT) : Configuration List

INFOID:0000000009163218

CAUTION:
Grasp vehicle specifications precisely. The control of ECU may not function normally if the specifications are misread.
NOTE:
- The items shown in this list depend on vehicle specifications.
- The config list may not be displayed depending on vehicle specifications. This is not a malfunction.

MANUAL SETTING ITEM		Note
Items	Setting value	
STEERING	LHD	—
	RHD	—

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

AV CONTROL UNIT

AV CONTROL UNIT : Diagnosis Procedure

INFOID:0000000009163269

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	34
Ignition switch ACC or ON	19

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between AV control unit harness connectors and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Value (Approx.)
Battery power supply	M201	19	OFF	Battery voltage
ACC power supply		7	ACC	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between AV control unit and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AV control unit connectors.
3. Check continuity between AV control unit harness connectors and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	M201	20	OFF	Existed

Is the inspection result normal?

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

DISPLAY UNIT

DISPLAY UNIT : Diagnosis Procedure

INFOID:0000000009163270

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	34
Ignition switch ACC or ON	19

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between display unit harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Value (Approx.)
Battery power supply	M93	11	OFF	Battery voltage
ACC power supply		23	ACC	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between Display unit and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector.
3. Check continuity between display unit harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	M93	12	OFF	Existed

Is the inspection result normal?

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

AUDIO AMP. LH

AUDIO AMP. LH : Diagnosis Procedure

INFOID:0000000009163271

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	8

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between woofer harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Voltage (Approx.)
Battery power supply	B18	9	OFF	Battery voltage

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check harness between audio amp. and fuse.

AUDIO AMP. RH

AUDIO AMP. RH : Diagnosis Procedure

INFOID:0000000009163272

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	8

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between woofer harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Voltage (Approx.)
Battery power supply	B19	9	OFF	Battery voltage

Is the inspection result normal?

YES >> INSPECTION END
NO >> Check harness between audio amp. and fuse.

RGB DIGITAL IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163273

Transmit the image displayed with AV control unit with RGB digital image signal to the display unit.

Diagnosis Procedure

INFOID:0000000009163274

1.CHECK CONTINUITY RGB DIGITAL IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector and AV control unit connector.
3. Check continuity between display unit harness connector and AV control unit harness connector.

Display unit		AV control unit		Continuity
Connector	Terminals	Connector	Terminals	
M397	27	M396	157	Existed
	28		158	

4. Check continuity between display unit harness connector and ground.

Display unit		Ground	Continuity
Connector	Terminals		
M397	27		Not existed
	28		

Is the inspection result normal?

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

2.CHECK RGB DIGITAL IMAGE SIGNAL

1. Connect AV control unit connector.
2. Turn ignition switch ON.
3. Check signal between display unit harness connector and ground.

(+)		(–)	Condition	Voltage (Approx.)
Display unit				
Connector	Terminal			
M397	27	Ground	—	3.3 V
	28			

Is the inspection result normal?

YES >> Replace display unit.
NO >> Replace AV control unit.

COMPOSITE IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163275

AV control unit transmits the playback DVD image signal to the display unit.

Diagnosis Procedure

INFOID:0000000009163276

1.CHECK CONTINUITY COMPOSITE IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AV control unit connector and display unit connector.
3. Check continuity between AV control unit harness connector and display unit harness connector.

AV control unit		Display unit		Continuity
Connector	Terminal	Connector	Terminal	
M203	68	M93	18	Existed

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

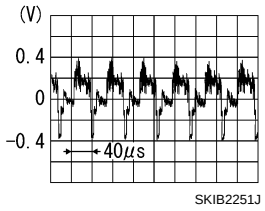
AV control unit		Ground	Continuity
Connector	Terminal		
M203	68		Not existed

Is the inspection result normal?

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

2.CHECK COMPOSITE IMAGE SIGNAL

1. Connect AV control unit connector and display unit connector.
2. Turn ignition switch ON.
3. Check signal between AV control unit harness connector and ground.

(+) AV control unit		(–)	Condition	Reference value
Connector	Terminal			
M203	68	Ground	At DVD image is displayed.	

SKIB2251J

Is the inspection result normal?

YES >> Replace display unit.
NO >> Replace AV control unit.

DISK EJECT SIGNAL CIRCUIT

Description

INFOID:0000000009163277

The eject signal is output to AV control unit when the eject switch of multifunction switch is pressed.

Diagnosis Procedure

INFOID:0000000009163278

1.CHECK CONTINUITY CD EJECT SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect multifunction switch connector and AV control unit connector.
3. Check continuity between multifunction switch harness connector and AV control unit harness connector.

Multifunction switch		AV control unit		Continuity
Connector	Terminal	Connector	Terminal	
M72	14	M202	29	Existed

4. Check continuity between multifunction switch harness connector and ground.

Multifunction switch		Ground	Continuity
Connector	Terminal		
M72	14		Not existed

Is the inspection result normal?

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

2.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)	Condition	Voltage (Approx.)
AV control unit				
Connector	Terminal			
M202	29	Ground	Pressing the eject switch	0 V
			Except for above	5.0 V

Is the inspection result normal?

YES >> Replace preset switch.
NO >> Replace AV control unit.

MICROPHONE SIGNAL CIRCUIT

Description

INFOID:0000000009163279

Supply power from AV control unit to microphone. The microphone transmits the voice signal to the AV control unit.

Diagnosis Procedure

INFOID:0000000009163280

1.CHECK CONTINUITY BETWEEN AV CONTROL UNIT AND MICROPHONE CIRCUIT

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

AV control unit		Microphone		Continuity
Connector	Terminals	Connector	Terminals	
M203	71	R5	2	Existed
	72		4	
	87		1	

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

AV control unit		Ground	Continuity
Connector	Terminals		
M203	72		Not existed
	87		

Is the inspection result normal?

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

2.CHECK VOLTAGE MICROPHONE VCC

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

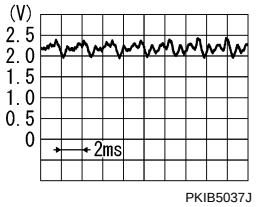
(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M203	72	M203	71	5.0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace AV control unit.

3.CHECK MICROPHONE SIGNAL

1. Connect microphone connector.
2. Check signal between AV control unit harness connector.

(+)		(–)		Condition	Reference value
AV control unit		AV control unit			
Connector	Terminal	Connector	Terminal		
M203	87	M203	71	Give a voice.	 PKIB5037J

Is the inspection result normal?

YES >> Replace AV control unit.
NO >> Replace microphone.

CAMERA IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163281

- The AV control unit supplies power to the rear view camera when receiving a reverse signal.
- The rear view camera transmits camera images to the display unit when power is supplied from the AV control unit.

Diagnosis Procedure

INFOID:0000000009163282

1.CHECK CONTINUITY CAMERA POWER SUPPLY CIRCUIT

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

AV control unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M202	22	B156	1	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M202	22		Not existed

Is inspection result normal?

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

2.CHECK VOLTAGE CAMERA POWER SUPPLY

1. Connect AV control unit connector and rear view camera connector.
2. Turn ignition switch ON.
3. Shift the selector lever to “R”.
4. Check voltage between AV control unit harness connector and ground.

(+)		(–)	Condition	Voltage (Approx.)
AV control unit				
Connector	Terminal			
M202	22	Ground	Shift position is “R”.	6.0 V

Is inspection result normal?

YES >> GO TO 3.
NO >> Replace AV control unit. Refer to AV-77, "Removal and Installation".

3.CHECK CONTINUITY CAMERA IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector and rear view camera connector.
3. Check continuity between display unit harness connector and rear view camera harness connector.

Display unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M93	8	B156	3	Existed

4. Check continuity between display unit harness connector and ground.

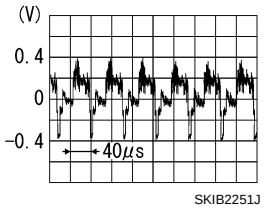
Display unit		Ground	Continuity
Connector	Terminal		
M93	8		Not existed

Is inspection result normal?

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

4. CHECK CAMERA IMAGE SIGNAL

1. Connect display unit connector and rear view camera connector.
2. Turn ignition switch ON.
3. Shift the selector lever to “R”.
4. Check signal between display unit harness connector and ground.

(+)		(–)	Condition	Reference value
Display unit				
Connector	Terminal			
M93	8	Ground	At rear view camera image is displayed.	

SKIB2251J

Is inspection result normal?

YES >> Replace display unit. Refer to AV-79, "Removal and Installation".
NO >> Replace rear view camera. Refer to AV-95, "Removal and Installation".

STEERING SWITCH SIGNAL A CIRCUIT

Description

INFOID:0000000009163283

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163284

1.CHECK STEERING SWITCH SIGNAL A CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	6	M36	24	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M201	6		Not existed

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M201	6	M201	15	5.0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-62, "Component Inspection".

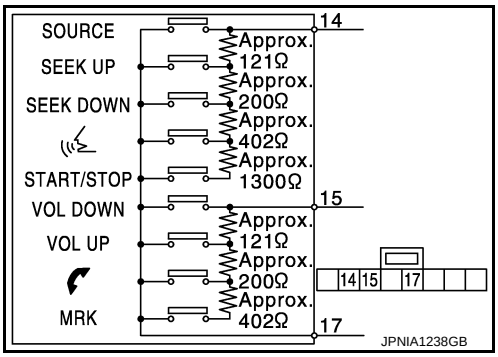
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163285

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

STEERING SWITCH SIGNAL B CIRCUIT

Description

INFOID:0000000009163286

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163287

1.CHECK STEERING SWITCH SIGNAL B CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	16	M36	31	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M201	16		Not existed

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M201	16	M201	15	5.0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-64, "Component Inspection".

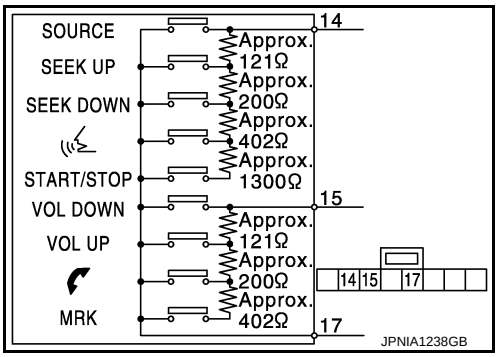
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163288

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

STEERING SWITCH GROUND CIRCUIT

Description

INFOID:0000000009163289

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163290

1.CHECK STEERING SWITCH SIGNAL GND CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	15	M36	33	Existed

3. Connect AV control unit connector.

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT

1. Connect AV control unit connector.
2. Check continuity between AV control unit harness connector and ground.

AV control unit		Ground	Continuity
Connector	Terminal		
M201	15		Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-66, "Component Inspection".

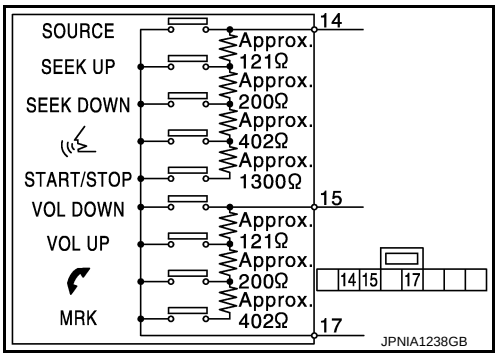
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163291

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

SYMPTOM DIAGNOSIS

MULTI AV SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000009163292

RELATED TO HANDS-FREE PHONE

- Before performing diagnosis, confirm that the cellular phone being used by the customer is compatible with the vehicle.
- It is possible that a malfunction is occurring due to a version change of the phone even though the phone is a compatible type. This can be confirmed by changing the cellular phone to another compatible type, and checking that it operates normally. It is important to determine whether the cause of the malfunction is the vehicle or the cellular phone.

Check Compatibility

1. Make sure the customer's Bluetooth® related concern is understood.
2. Verify the customer's concern.
   NOTE:
   The customer's phone may be required, depending upon their concern.
3. Write down the customer's phone brand, model, and service provider.
   NOTE:
   It is necessary to know the service provider. On occasion, a given phone may be on the approved list with one provider, but may not be on the approved list with other providers.
4. Go to “www.nissanusa.com/bluetooth/”.

a. Using the website's search engine, find out if the customer's phone is on the approved list.

b. If the customer's phone is NOT on the approved list:
   Stop diagnosis here. The customer needs to obtain a Bluetooth® phone that is on the approved list before any further action.

c. If the feature related to the customer's concern shows as “N” (not compatible):
   Stop diagnosis here. If the customer still wants the feature to function, they will need to get an approved phone showing the feature as “Y” (compatible) in the “Basic Features” list.

d. If the feature related to the customer's concern shows as “Y” (compatible):
   Perform diagnosis as per the following table.

Symptoms	Check items	Probable malfunction location
Does not recognize cellular phone connection. (no connection is displayed on the display at the guide.)	Repeat the registration of cellular phone.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "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, voice between each other cannot be heard during the conversation.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "Removal and Installation".
The other party's voice cannot be heard by hands-free phone.	Check the “microphone speaker” in Inspection & Adjustment Mode if sound is heard.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "Removal and Installation".
Originating sound is not heard by the other party with hands-free phone communication.	Sound operation function is normal.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "Removal and Installation".
	Sound operation function does not work.	Microphone signal circuit malfunction. Refer to AV-57, "Diagnosis Procedure".

Symptoms	Check items	Probable malfunction location
The system cannot be operated.	• The retractable hard top is fully closed. • The voice recognition can be controlled. • Steering switch's “MRK”, “VOL UP”, “VOL DOWN” switches works, but “ ” it does not work.	Steering switch malfunction.
	• The retractable hard top is fully closed. • The voice recognition can be controlled. • Steering switch's “MRK”, “VOL UP”, “VOL DOWN”, “ ” switches do not work.	Steering switch signal B circuit malfunction. Refer to AV-63, "Diagnosis Procedure".
	All steering switches do not work.	Steering switch ground circuit malfunction. Refer to AV-65, "Diagnosis Procedure".

RELATED TO RGB IMAGE

Symptoms	Check items	Probable malfunction location
RGB image is not shown.	—	RGB digital image signal circuit malfunction. Refer to AV-54, "Diagnosis Procedure".

RELATED TO VOICE CONTROL

Symptoms	Check items	Probable malfunction location
The voice cannot be controlled even if the voice control screen is displayed.	Voice sounds at “Voice Microphone Test” of Confirmation/Adjustment mode.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "Removal and Installation".
	Voice does not sound at “Voice Microphone Test” of Confirmation/Adjustment mode.	Microphone circuit malfunction. Refer to AV-57, "Diagnosis Procedure".
The voice cannot be controlled (Voice control screen is not displayed).	Steering switch's “SOURCE”, “SEEK UP”, “SEEK DOWN”, “ ”, “START / STOP”switches do not work.	Steering switch signal A circuit malfunction. Refer to AV-61, "Diagnosis Procedure".
	All steering switches do not work.	Steering switch ground circuit malfunction. Refer to AV-65, "Diagnosis Procedure".

RELATED TO AUDIO

Symptoms	Check items	Probable malfunction location
The disk cannot be removed.	—	Disk eject signal circuit malfunction. Refer to AV-56, "Diagnosis Procedure".

Symptoms	Check items	Probable malfunction location
No sound comes out or the level of the sound is low.	No sound from all speakers.	• Audio amp. ON signal circuit malfunction. • Audio amp. (LH and RH) power supply and ground circuits malfunction. Refer to AV-52, "AUDIO AMP. LH : Diagnosis Procedure" (audio amp. LH). Refer to AV-52, "AUDIO AMP. RH : Diagnosis Procedure" (audio amp. RH).
	No sound from all LH speakers.	• Audio amp. ON signal circuit malfunction. • Audio amp. LH power supply and ground circuits malfunction. Refer to AV-52, "AUDIO AMP. LH : Diagnosis Procedure".
	No sound from all RH speakers.	• Audio amp. ON signal circuit malfunction. • Audio amp. RH power supply and ground circuits malfunction. Refer to AV-52, "AUDIO AMP. RH : Diagnosis Procedure".
	Only a certain speaker (front right, front left, rear right, or rear left, etc.) does not output sound.	• Poor connector connection of speaker. • Sound signal circuit malfunction between AV control unit and audio amp. (LH or RH). • Sound signal circuit malfunction between audio amp. (LH or RH) and speaker. • Malfunction in speaker. • Malfunction in AV control unit. • Malfunction in audio amp. (LH or RH).
Noise is mixed with audio.	Noise comes out from all speakers.	• Malfunction in AV control unit. • Malfunction in audio amp. (LH or RH).
	Noise comes out only from a certain speaker (front right, front left, rear right, or rear left, etc.).	• Poor connector connection of speaker. • Sound signal circuit malfunction between AV control unit and audio amp. (LH or RH). • Sound signal circuit malfunction between audio amp. (LH or RH) and speaker. • Malfunction in speaker. • Poor installation of speaker (e.g. backlash and looseness) • Malfunction in AV control unit. • Malfunction in audio amp. (LH or RH).
	Noise is mixed with radio only (when the car hits a bump or while driving over bad roads).	Poor connector connection of antenna or antenna feeder.
Radio is not received or poor reception.	• Other audio sounds are normal. • Any radio cannot be received or poor reception is caused even after moving to a service area with good reception (e.g. a place with clear view and no obstacles generating external noises).	• Antenna amp. ON signal circuit malfunction. • Poor connector connection of antenna or antenna feeder.

RELATED TO USB

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

Symptoms	Check items	Possible malfunction location / Action to take
iPod® or USB memory can not be recognized.	—	• USB harness malfunction. • USB connector malfunction.

iPod® is a trademark of Apple inc., registered in the U.S. and other countries.

RELATED TO DVD MODE

Symptoms	Check items	Probable malfunction location
The disk cannot be removed.	—	Disk eject signal circuit malfunction. Refer to AV-56, "Diagnosis Procedure".
DVD sound is not heard.	No sound from all speakers LH.	• Audio amp. LH power supply and ground circuit. Refer to AV-52, "AUDIO AMP. LH : Diagnosis Procedure". • Audio amp. ON signal circuit.
	No sound from all speakers RH.	• Audio amp. RH power supply and ground circuit. Refer to AV-52, "AUDIO AMP. RH : Diagnosis Procedure". • Audio amp. ON signal circuit.
	Sound is heard only from specific places (RH front, RH rear, LH front and LH rear).	Audio signal circuit of suspect system.

RELATED TO CAMERA

Symptoms	Check items	Probable malfunction location
Camera image is not shown. (Vehicle width and predictive course line are displayed.)	—	• Camera image signal circuit. • Camera power supply and ground circuits. Refer to AV-59, "Diagnosis Procedure".
Camera image does not switch.	Select “Camera Cont.” of Confirmation/ Adjustment mode, Reverse Sensor is not turned ON at “Connection Confirmation”.	Reverse signal circuit malfunction.
	Select “Camera Cont.” of Confirmation/ Adjustment mode, Reverse Sensor is turned ON at “Connection Confirmation”.	AV control unit malfunction. Replace AV control unit. Refer to AV-77, "Removal and Installation".

RELATED TO STEERING SWITCH

Symptoms	Probable malfunction location
None of the steering switch operations work.	Steering switch ground circuit malfunction. Refer to AV-65, "Diagnosis Procedure".
Only specified switch cannot be operated.	Steering switch malfunction.
Steering switch's “SOURCE”, “SEEK UP”, “SEEK DOWN”, “”, “START / STOP” switches do not work.	Steering switch signal A circuit malfunction. Refer to AV-61, "Diagnosis Procedure".
Steering switch's “MRK”, “VOL UP”, “VOL DOWN”, “” switches do not work.	Steering switch signal B circuit malfunction. Refer to AV-63, "Diagnosis Procedure".

NORMAL OPERATING CONDITION

Description

INFOID:0000000009163293

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 systems in the video mode.	Press “DISC-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.
Screen not clear.	Contrast setting is not appropriate.	Adjust the contrast of the display.
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”.
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.
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.

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 recognize your command. or The system recognizes your command incorrectly	The interior of the vehicle is too noisy.	Close the windows or have other occupants quiet.
	The volume of your voice is too low.	Speak louder.
	The volume if your voice is too loud.	Speak softer.
	Your pronunciation is unclear.	Speak clearly.
	You are speaking before the voice recognition is ready	Press and release “” switch on the steering switch, and speak a command after the tone sounds.
	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.
	Only a limited range of voice commands is usable for each screen.	Use a correct voice command appropriate for the current screen.
	The fan of the air conditioner is too loud.	Lower the fan speed as necessary as voice commands can be recognized more easily.
The system cannot be operated.	The retractable hard top is open.	• Close the retractable hard top. • Open and close the retractable hard top before operating the system.

Related to Item Choice

The system should respond correctly to all voice commands without difficulty. If problems are encountered, follow the solutions given in this guide for the appropriate error.

Where the solutions are listed by number, try each solution in turn, starting with number one, until the problem is resolved.

Symptom/ error message	Solution
Displays “COMMAND NOT RECOGNIZED” or the system fails to interpret the command correctly.	1. Ensure that the command format is valid.
	2. Speak clearly without pausing between words and at a level appropriate to the ambient noise level.
	3. Ensure that the ambient noise level is not excessive, for example, windows open or defrost on. **NOTE:** If it is too noisy to use the phone, it is likely that voice commands will not be recognized.
	4. If optional words of the command have been omitted, then command should be tried with these in place.
The system consistently selects the wrong voicetag	1. Ensure that the voicetag requested matches what was originally stored. This can be confirmed by giving the “Addressbook” Directory or Phone Directory command.
	2. Replace one of the voicetags being confused with a different voicetag.

Related to Telephone

The system should respond correctly to all voice commands without difficulty. If problems are encountered, try the following solutions.

Where the solutions are listed by number, try each solution in turn, starting with number 1, until the problem is resolved.

Symptom	Solution
System fails to interpret the command correctly.	1. Ensure that the command is valid.
	2. Ensure that the command is spoken after the tone.
	3. Speak clearly without pausing between words and at level appropriate to the ambient noise level in the vehicle.
	4. Ensure that the ambient noise level is not excessive (for example, windows open or defroster on). **NOTE:** If it is too noisy to use the phone, it is likely that the voice commands will not be recognized.
	5. If more than one command was said at a time, try saying the commands separately.
	6. If the system consistently fails to recognize commands, the voice training procedure should be carried out to improve the recognition response for the speaker. See “Speaker adaptation (SA) mode” earlier in this section. Refer to “OWNER’S MANUAL”.
The system consistently selects the wrong voicetag	1. Ensure that the phone book entry name requested matches what was originally stored. This can be confirmed by using the “List Names” command.
	2. Replace one of the names being confused with a new name.

RELATED TO AUDIO

- The majority of the audio malfunctions are the result of outside causes (bad CD/cassette, 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) 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.

Symptom	Cause and Counter measure
Cannot play	Check if the CD was inserted correctly.
	Check if the CD is scratched or dirty.
	Check if there is condensation inside the player, and if there is, wait until the condensation is gone (about 1 hour) before using the player.
	If there is a temperature increase error, the player will play correctly after it returns to the normal temperature.
	If there is a mixture of music CD files (CD-DA data) and MP3/WMA/AAC files on a CD, only the music CD files (CD-DA data) will be played.
	Files with extensions other than ".MP3", ".WMA", ".AAC" ".mp3", ".wma", or ".aac" cannot be played. In addition, the character codes and number of characters for folder names and file names should be in compliance 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 writing applications or other text editing applications.
	Check if the finalization process, such as session close and disc close, is done for the disc.
	Check if the CD is protected by copyright.
	Disks recorded in live file system format are not supported. (For Microsoft Windows Vista, check the settings.)
Poor sound quality	Check if the CD is scratched or dirty.
It takes a relatively long time before the music starts playing.	If there are many folder or file levels on the MP3/WMA/AAC CD, or if it is a multisession disc, some time may be required before the music starts playing.
Music cuts off or skips	The writing software and hardware combination might not match, or the writing speed, writing depth, writing width might not match the specifications. Try using the slowest writing speed.
Skipping with high bit rate files	Skipping may occur with large quantities if data such as for high bit rate data.
Move immediately to the next song when playing	When a non-MP3/WMA/AAC file has been given an extension of ".MP3", ".WMA", """.AAC".mp3", ".wma", or ".aac" or when play is prohibited by copyright protection, the player will skip to the next song.
The songs do not play back in the desired order.	The playback order is the order in which the files were written by the software, so the files might not play in the desired order.
Poor reception only from a certain radio broadcast station.	Check incoming radio wave signal strength of applicable broadcast station.
Buzz/rattle sound from speaker	The majority of rattle sounds are not indicative of an issue with the speaker, usually something nearby the speaker is causing the rattle.

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 DVD

Symptom	Possible cause	Possible solution
Not working as operated	Some operations may be rejected or may not function as intended because of the manufacturer's intent, depending on DVD.	This is not a malfunction.
Operation not accepted	If a requested operation is prohibited, then a message is displayed on the screen. (Message display depends on DVD.)	This is not a malfunction.

Symptom	Possible cause	Possible solution
DVD can not be played	Check that the DVD is inserted in the right place.	Upturn the DVD (facing the title upward).
	Check if there is condensation inside the player.	wait until the condensation is gone (about 1 hour) before using the player.
	DVD menu is displayed.	Select item to touch “ENTER”
	Insertion of a DVD with a different region code.	DVDs with a different region code can not be played. Check DVD.
	Some DVD softwares may not be played because not all DVD softwares fully comply in the standard.	This is not a malfunction.
Interruption during playback or flicker in the display	Check that the DVD has no scratches and dirt.	Errors may not be corrected depending on the size of scratches.
Low sound quality		Wipe and clean the dirt on the disc.
Distortion in picture	In the process of fast-forward or fast-reverse.	This is not a malfunction.
Subtitles not shown	Subtitle setting is OFF.	Set subtitle.
	Subtitle is not included in the software.	Check DVD.
Not played in set language	If a language is not included in the DVD, then the DVD is played in a recommended language.	Check DVD.
Not played with set subtitle	If a set subtitle is not included in the DVD, then the DVD is played with a recommended subtitle.	Check DVD.
Subtitle and language not selectable (not played with set subtitle or in set language)	The DVD is not multilanguage-capable.	The inclusion of the number of languages depends on DVD. Languages may be selectable on the Menu screen. Check DVD.
	The DVD has a priority language or setting.	If the DVD has a priority language or settings, then settings changed with this device are not reflected.
Angle unchangeable	Plural angles are not recorded in the software.	Check if the DVD is multi-angle-capable.
Unusual screen display	Display mode to the output aspect ratio for the DVD software is inappropriate.	Switch to the appropriate display mode.
Playback time is indicated, but no sound comes out.	Playback of Mix mode Truck 1. (Mix mode: Format including Truck 1 with data other than music and Trucks from Truck 2 with music data.)	Play music data included in trucks from Truck 2.

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 <Day/Night> when you turn on the headlights.

Symptom	Possible cause	Possible solution
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”.
The location of the vehicle icon is misaligned from the actual position.	When using tire chains or replacing the tires, speed calculations based on the speed sensor may be incorrect.	Drive the vehicle for a while [at approximately 30 km/h (19 MPH) for about 30 minutes] to automatically correct the vehicle icon position. If this does not correct the vehicle icon position, contact an INFINITI dealer.
	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.	If you want to go to that waypoint again, you need to 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.
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.
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 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 HANDS-FREE PHONE

Symptom	Cause and Counter measure
Does not recognize cellular phone connection. (No connection is displayed on the display at the guide.)	Some Bluetooth® enabled cellular phones may not be recognized by the in-vehicle phone module. Refer to “RELATED TO HANDS-FREE PHONE (Check Compatibility)” of MULTI AV SYSTEM SYMPTOM.
Cannot use hands-free phone	Customer will not be able to use a hands-free phone under the following conditions. • The vehicle is outside of the telephone service area. • The vehicle is in an area where it is difficult to receive radio waves; such as in a tunnel, in an underground parking garage, near a tall building or in a mountainous area. • The cellular phone is locked to prevent it from being dialed. **NOTE:** While a cellular phone is connected through the Bluetooth® wireless connection, the battery power of the cellular phone may discharge quicker than usual. The Bluetooth® Hands-Free Phone System cannot charge cellular phones.
The other party's voice cannot be heard by hands-free phone.	When the radio wave condition is not ideal or ambient sound is too loud, it may be difficult to hear the other person's voice during a call.
Poor sound quality	Do not place the cellular phone in an area surrounded by metal or far away from the in-vehicle phone module to prevent tone quality degradation and wireless connection disruption.

REMOVAL AND INSTALLATION

AV CONTROL UNIT

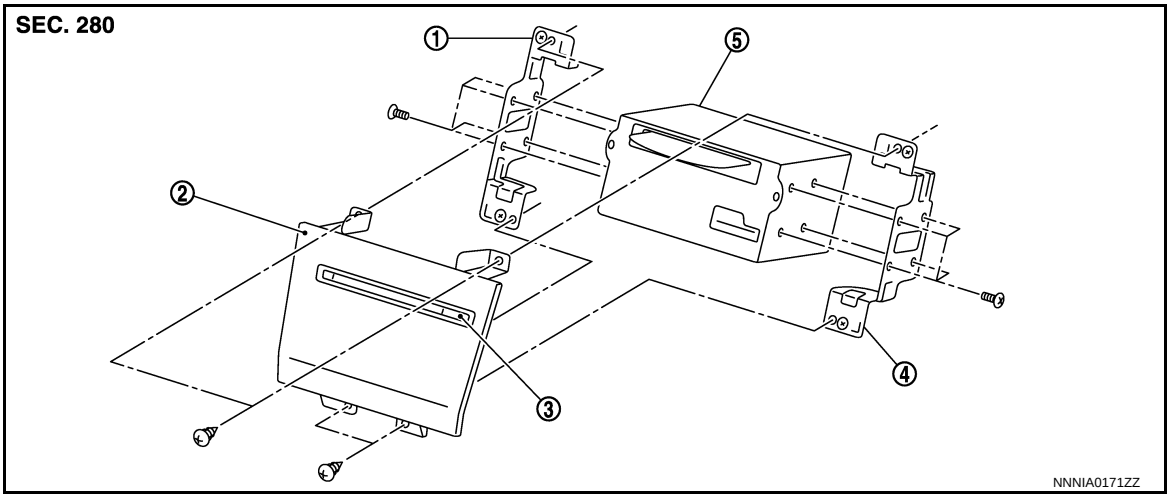
Exploded View

INFOID:0000000009163294

CAUTION:
Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.
NOTE:
After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

REMOVAL
Refer to IP-12, "Exploded View".

DISASSEMBLY



1. Bracket LH
2. Cluster lid C (lower)
3. Disk eject switch
4. Bracket RH
5. AV control unit

Removal and Installation

INFOID:0000000009163295

CAUTION:
Be careful of the following items at removal and installation of A/T shift selector. Refer to TM-16, "Removal and Installation" for details.
- **For electro-medical apparatus user, keep the range sensor away from the device.**
- **Keep the range sensor away from magnetic objects during work.**
- **Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.**

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

REMOVAL
NOTE:
When replacing AV control unit, save or print current vehicle specification with CONSULT configuration before replacement. Refer to AV-49, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

1. Remove the cluster lid C (lower). Refer to IP-13, "Removal and Installation".
2. Disconnect the connector, and then remove the AV control unit together with the bracket from the vehicle.
3. Remove the bracket from the AV control unit.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

When replacing AV control unit, you must perform “Read/Write Configuration” with CONSULT. Refer to AV-49, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

DISPLAY UNIT

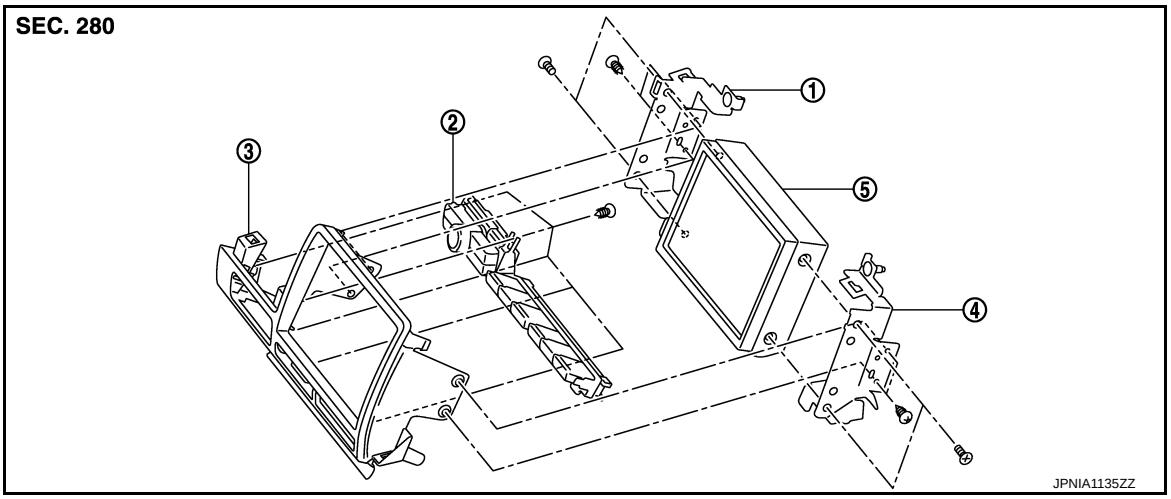
Exploded View

INFOID:0000000009163296

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



1. Bracket (LH)
2. Multifunction switch
3. Cluster lid C (upper)
4. Bracket (RH)
5. Display unit

Removal and Installation

INFOID:0000000009163297

REMOVAL

1. Remove the instrument panel pad A. Refer to IP-13, "Removal and Installation".
2. Disconnect the connector, and then remove the display together with the bracket and the cluster lid C (upper).
3. Remove the display together with the bracket from the cluster lid C (upper).
4. Remove the bracket from the display.

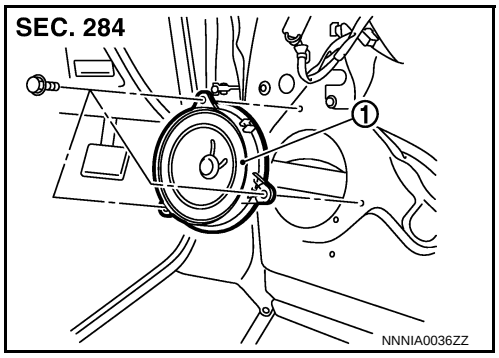
INSTALLATION

Install in the reverse order of removal.

FRONT DOOR SPEAKER

Exploded View

INFOID:0000000009163298



1. Front door speaker

Removal and Installation

INFOID:0000000009163299

REMOVAL

1. Remove the front door finisher. Refer to INT-12, "Exploded View".
2. Disconnect the connector and remove the screws, and remove the front door speaker.

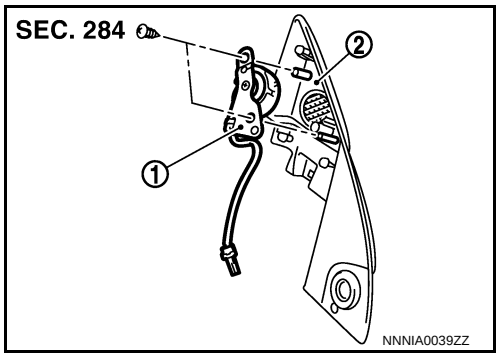
INSTALLATION

Install in the reverse order of removal.

TWEETER

Exploded View

INFOID:0000000009163300



1. Tweeter
2. Door corner cover

Removal and Installation

INFOID:0000000009163301

REMOVAL

1. Remove the door corner cover. Refer to MIR-16, "DOOR MIRROR ASSEMBLY : Exploded View".
2. Remove the screws, and remove the tweeter from the door corner cover.

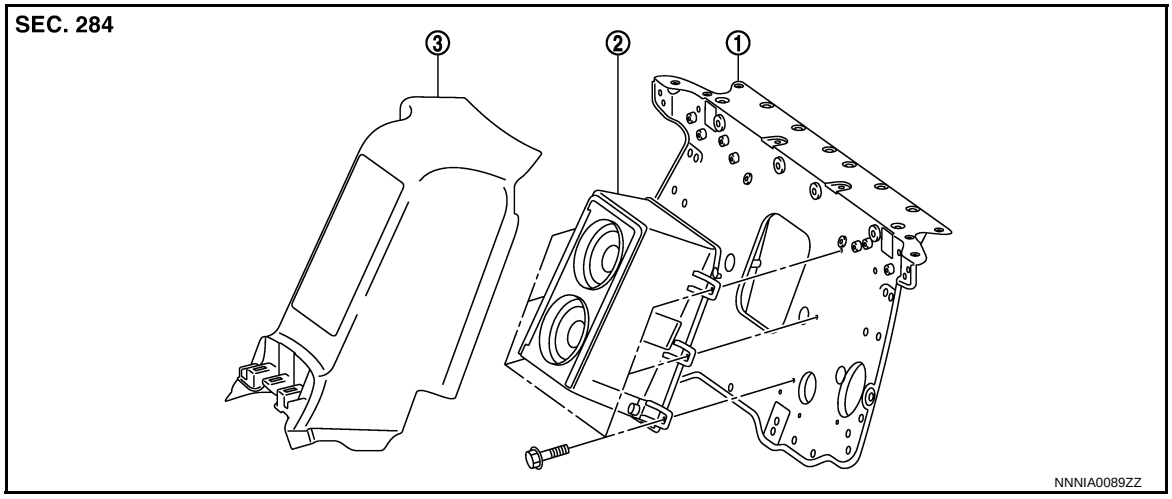
INSTALLATION

Install in the reverse order of removal.

REAR SPEAKER

Exploded View

INFOID:0000000009163302



1. Rear seatback support
2. Rear speaker
3. Rear seat center finisher

Removal and Installation

INFOID:0000000009163303

REMOVAL

1. Remove the rear seat center finisher. Refer to INT-19, "Exploded View".
2. Remove the mounting screw and disconnect the connector, and then remove the rear speaker.

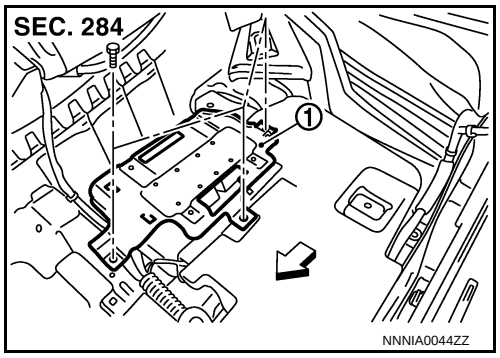
INSTALLATION

Install in the reverse order of removal.

AUDIO AMP.

Exploded View

INFOID:0000000009163304



1. Audio amp.

⇦ : Vehicle front

Removal and Installation

INFOID:0000000009163305

REMOVAL

1. Remove the passenger seat. Refer to SE-49, "Removal and Installation".
2. Turn over the floor carpet (refer to INT-22, "Exploded View"), remove the screw and disconnect the connector, and then remove the audio amplifier.

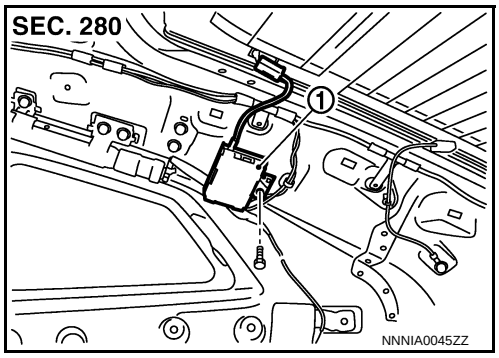
INSTALLATION

Install in the reverse order of removal.

ANTENNA AMP.

Exploded View

INFOID:0000000009163306



1. Antenna amp.

Removal and Installation

INFOID:0000000009163307

REMOVAL

1. Remove the rear pillar finisher (RH). Refer to INT-15, "Exploded View".
2. Remove the screw and disconnect the connector, and then remove the radio antenna amplifier from the vehicle.

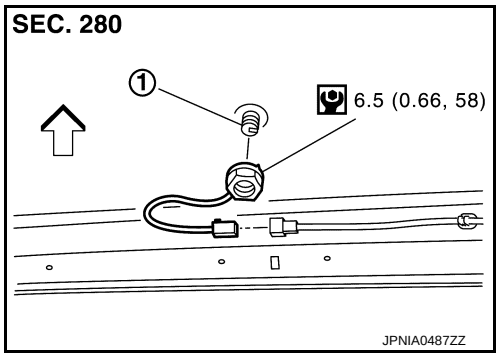
INSTALLATION

Install in the reverse order of removal.

SATELLITE RADIO ANTENNA

Exploded View

INFOID:0000000009163308



1. Satellite radio antenna

⇦: Vehicle front

Refer to GI-4, "Components" symbols in the figure.

Removal and Installation

INFOID:0000000009163309

REMOVAL

1. Remove headlining assembly (rear) to secure work space between vehicle and headlining. Refer to INT-24, "Exploded View".
2. Remove nuts, and then remove satellite radio antenna from roof panel.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

Be careful about tightening torque. Antenna sensitivity becomes poor, and when it is excessive, roof panel may be deformed, when satellite radio antenna mounting nut tightening torque is loose.

MULTIFUNCTION SWITCH

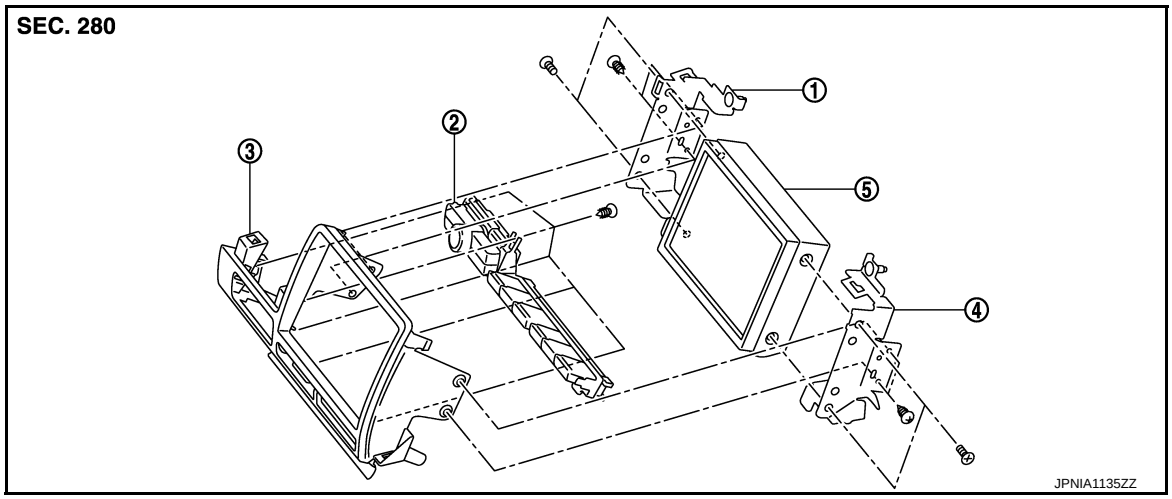
Exploded View

INFOID:0000000009163310

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



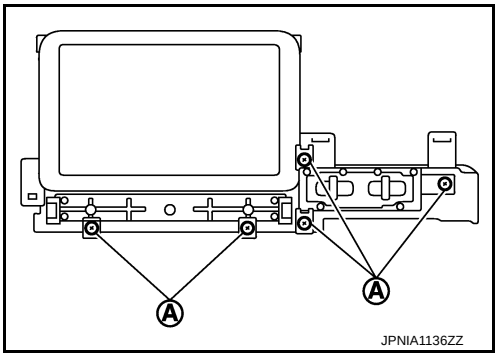
1. Bracket (LH)
2. Multifunction switch
3. Cluster lid C (upper)
4. Bracket (RH)
5. Display unit

Removal and Installation

INFOID:0000000009163311

REMOVAL

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



INSTALLATION

Installation is the reverse order of removal.

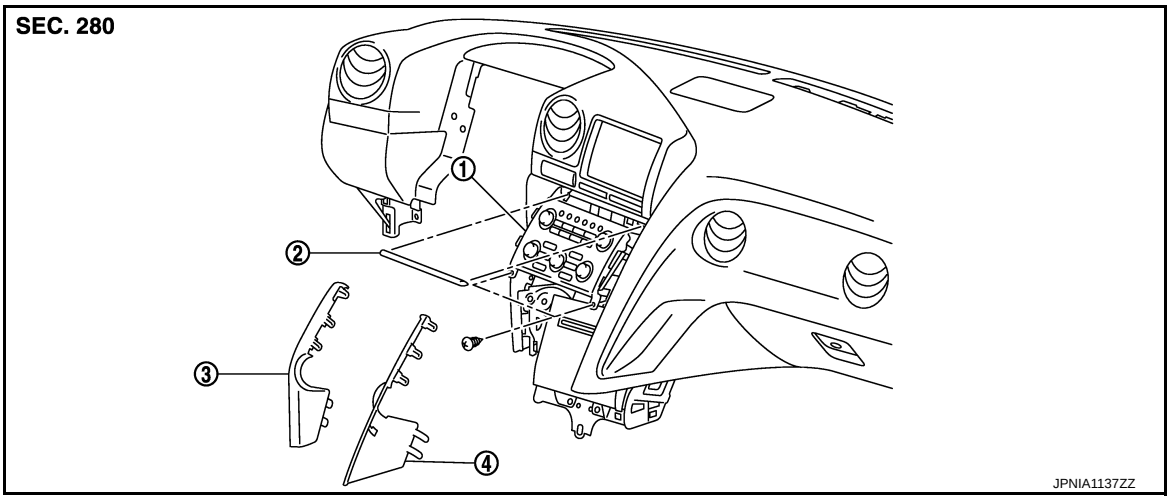
PRESET SWITCH

Exploded View

INFOID:0000000009163312

REMOVAL

Refer to IP-12, "Exploded View".



1. Preset switch
2. Instrument panel garnish (upper)
3. Instrument panel garnish LH
4. Instrument panel garnish RH

Removal and Installation

INFOID:0000000009163313

REMOVAL

1. Remove the instrument panel garnish (upper) and the instrument panel garnish LH/RH. Refer to IP-13, "Removal and Installation".
2. Remove the screws and disconnect the connector, and then remove the preset switch.

INSTALLATION

Install in the reverse order of removal.

DISK EJECT SWITCH

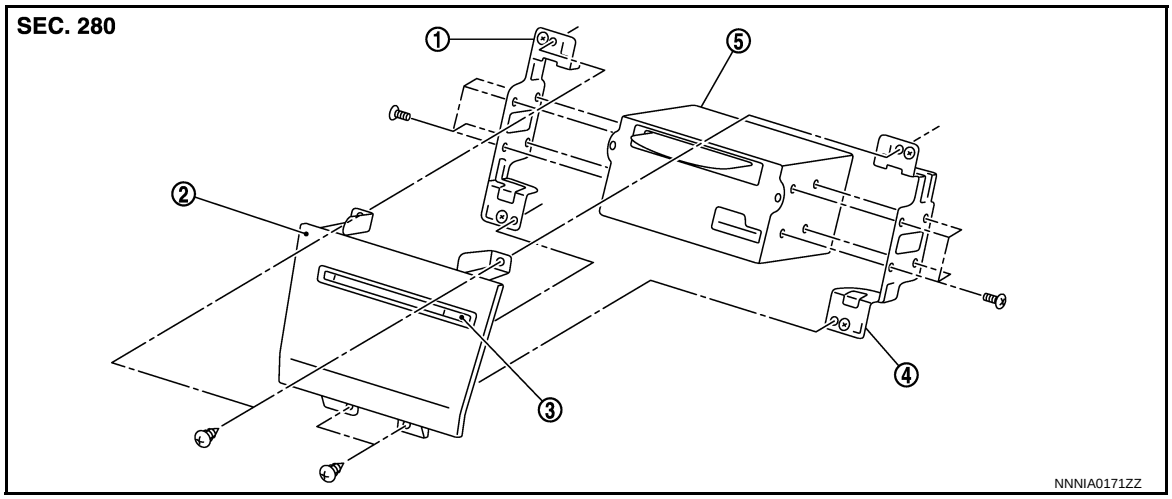
Exploded View

INFOID:0000000009163314

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



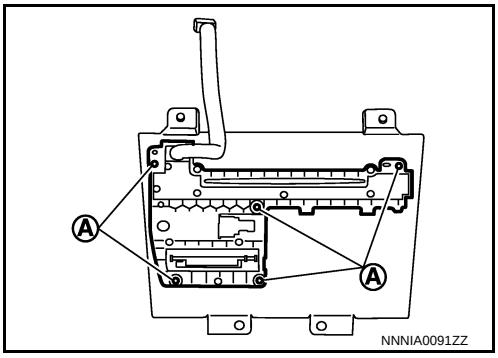
1. Bracket LH
2. Cluster lid C (lower)
3. Disk eject switch
4. Bracket RH
5. AV control unit

Removal and Installation

INFOID:0000000009163315

REMOVAL

1. Remove the cluster lid C (lower). Refer to IP-13, "Removal and Installation".
2. Remove the screws (A), and then remove the disk eject switch.



INSTALLATION

Install in the reverse order of removal.

NOTE:

When installing disk eject switch, do not allow the hard wire that connects disk eject switch and preset switch to get caught in between AV control unit and disk eject switch.

STEERING SWITCH

Exploded View

INFOID:0000000009163316

Refer to ST-10, "Exploded View".

Removal and Installation

INFOID:0000000009163317

REMOVAL

Refer to ST-10, "Removal and Installation".

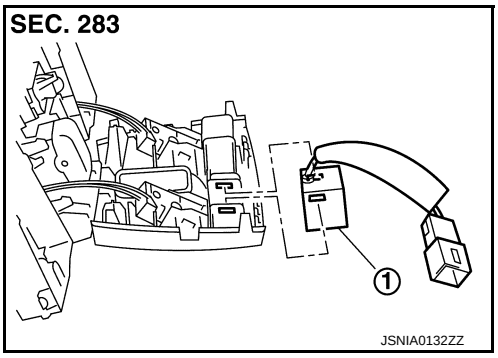
INSTALLATION

Install in the reverse order of removal.

MICROPHONE

Exploded View

INFOID:0000000009163318



1. Microphone

Removal and Installation

INFOID:0000000009163319

REMOVAL

1. Remove map lamp. Refer to INL-18, "Exploded View".
2. Remove the microphone from the map lamp.

INSTALLATION

Install in the reverse order of removal.

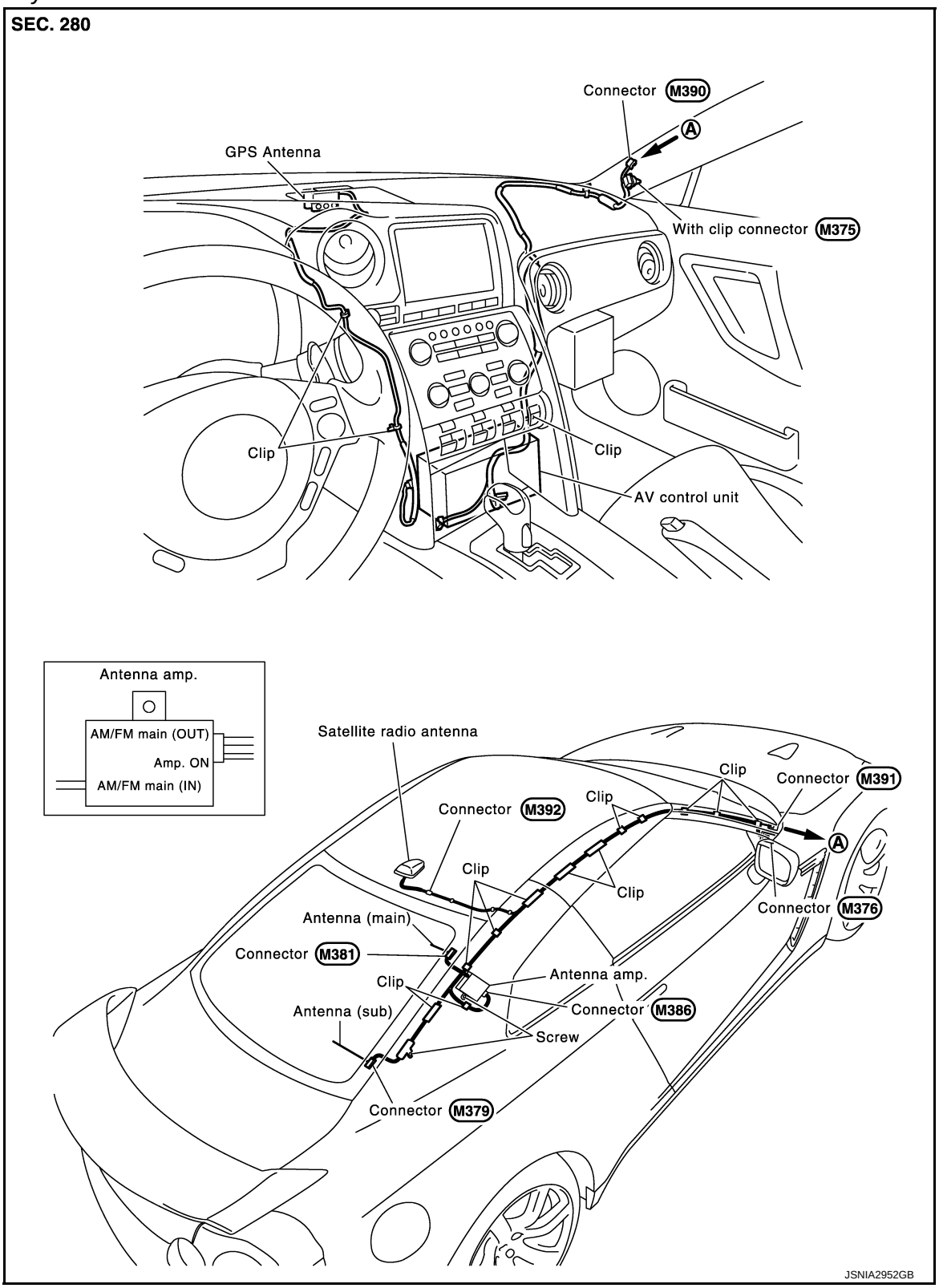
GPS ANTENNA

Exploded View

INFOID:0000000009163320

Feeder layout

SEC. 280

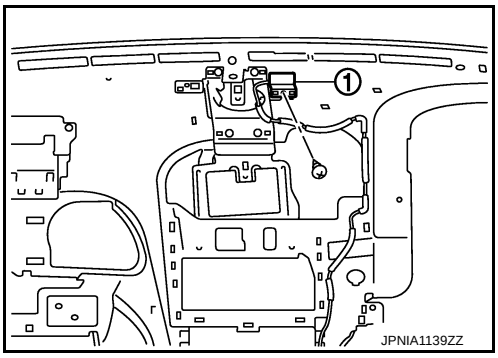


Removal and Installation

INFOID:0000000009163321

REMOVAL

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



INSTALLATION

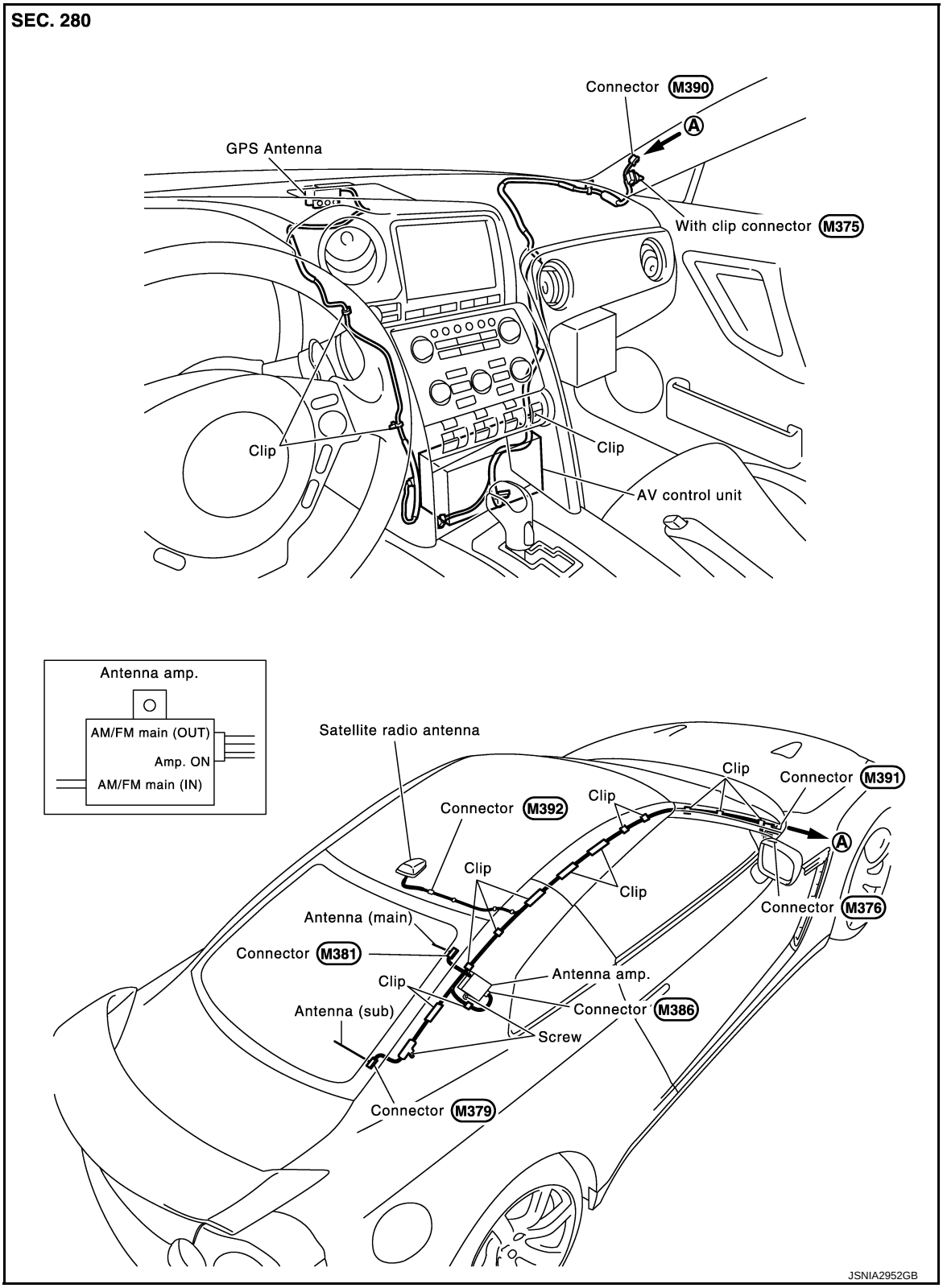
Install in the reverse order of removal.

ANTENNA FEEDER

Feeder layout

INFOID:0000000009163322

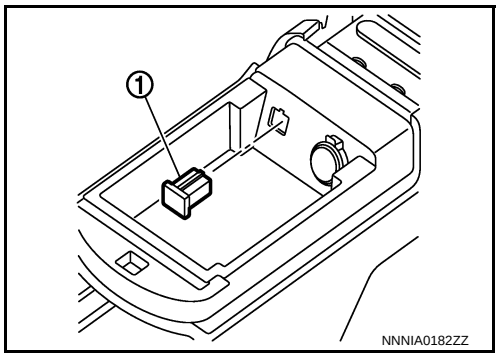
SEC. 280



USB CONNECTOR

Exploded View

INFOID:0000000009163323



1. USB connector

Removal and Installation

INFOID:0000000009163324

REMOVAL

1. Remove center console. Refer to IP-23, "Exploded View".
2. Push the pawl from the back of center console to remove USB connector.

INSTALLATION

Install in the reverse order of removal.

REAR VIEW CAMERA

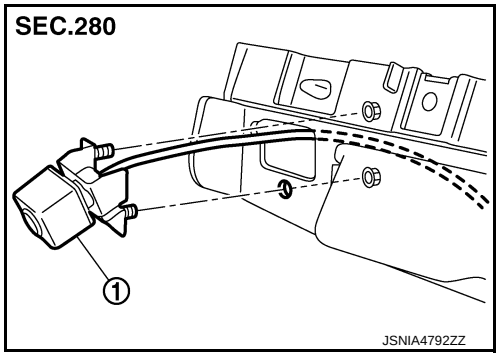
Exploded View

INFOID:0000000009163325

REMOVAL

Refer to EXT-20, "Exploded View".

DISASSEMBLY



1. Rear view camera

Removal and Installation

INFOID:0000000009163326

REMOVAL

1. Remove license lamp bracket. Refer to EXT-21, "Removal and Installation".
2. Remove the mounting nuts of rear view camera.
3. Remove rear view camera from license lamp bracket.

INSTALLATION

Install in the reverse order of removal.

NOTE:

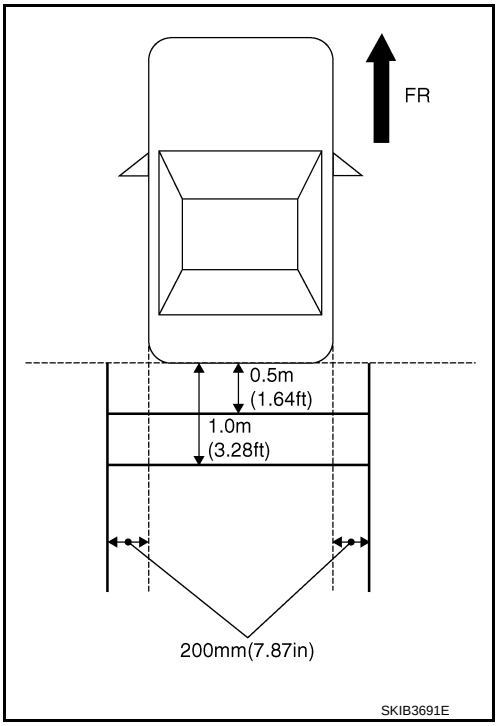
Adjust the guide line position if the guide line position is shifted after installing the rear view camera. Refer to AV-95, "Adjustment".

Adjustment

INFOID:0000000009163327

Adjust the guide line position if the guide line position is shifted after installing the rear view camera.

1. Draw lines on rearward area of the vehicle passing through the following points: 200 mm (7.87 in) from both sides of the vehicle, and 0.5 m (1.64 ft), 1.0 m (3.28 ft) from the rear end of the bumper.
2. Set into “Adjust offset of rear view camera” mode of Confirmation / Adjustment mode.

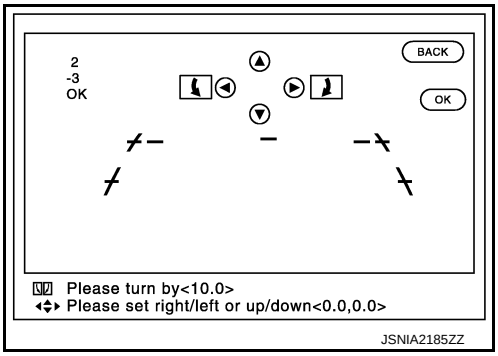


3. Rotate the center dial, and then select the guiding line pattern so that its angle is aligned with the correction line of the rear of the vehicle.

Selected pattern	: –10° to 10°

4. Make fine adjustment to the correction line of the rear of the vehicle with up/down/left/right switches so that its position is aligned with the guiding line. Press “OK” switch and record the adjusted guiding line position to the camera control unit.

Up/Down adjustment range	: –10° to 10°
Left/Right adjustment range	: –10° to 10°



CAUTION:
Never operate other function such as pressing BACK while writing index data.

PRECAUTION

PRECAUTIONS

Precaution for Working Range at a Regular Dealership

INFOID:0000000009188289

CAUTION:
The service items unmentioned on this manual are recommended to be performed by a GT-R certified NISSAN dealer. Because those service items require special equipment and a GT-R certified technical staff who completed special training.

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

INFOID:0000000009163328

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 Battery Service

INFOID:0000000009163329

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

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

INFOID:0000000009163330

CAUTION:
Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.
NOTE:
After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

Precaution for Trouble Diagnosis

INFOID:0000000009163331

AV COMMUNICATION SYSTEM

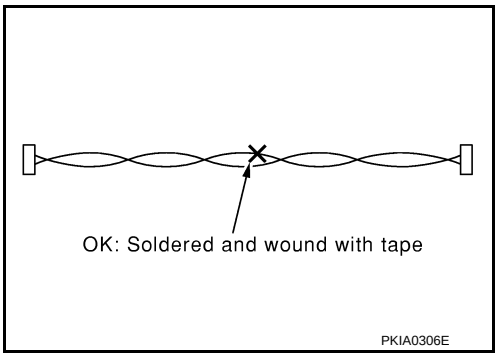
- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

Precaution for Harness Repair

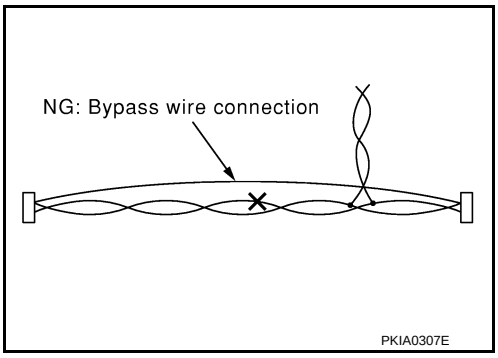
INFOID:0000000009163332

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.)

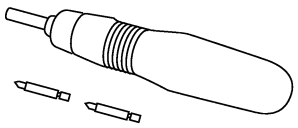


PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000009163333

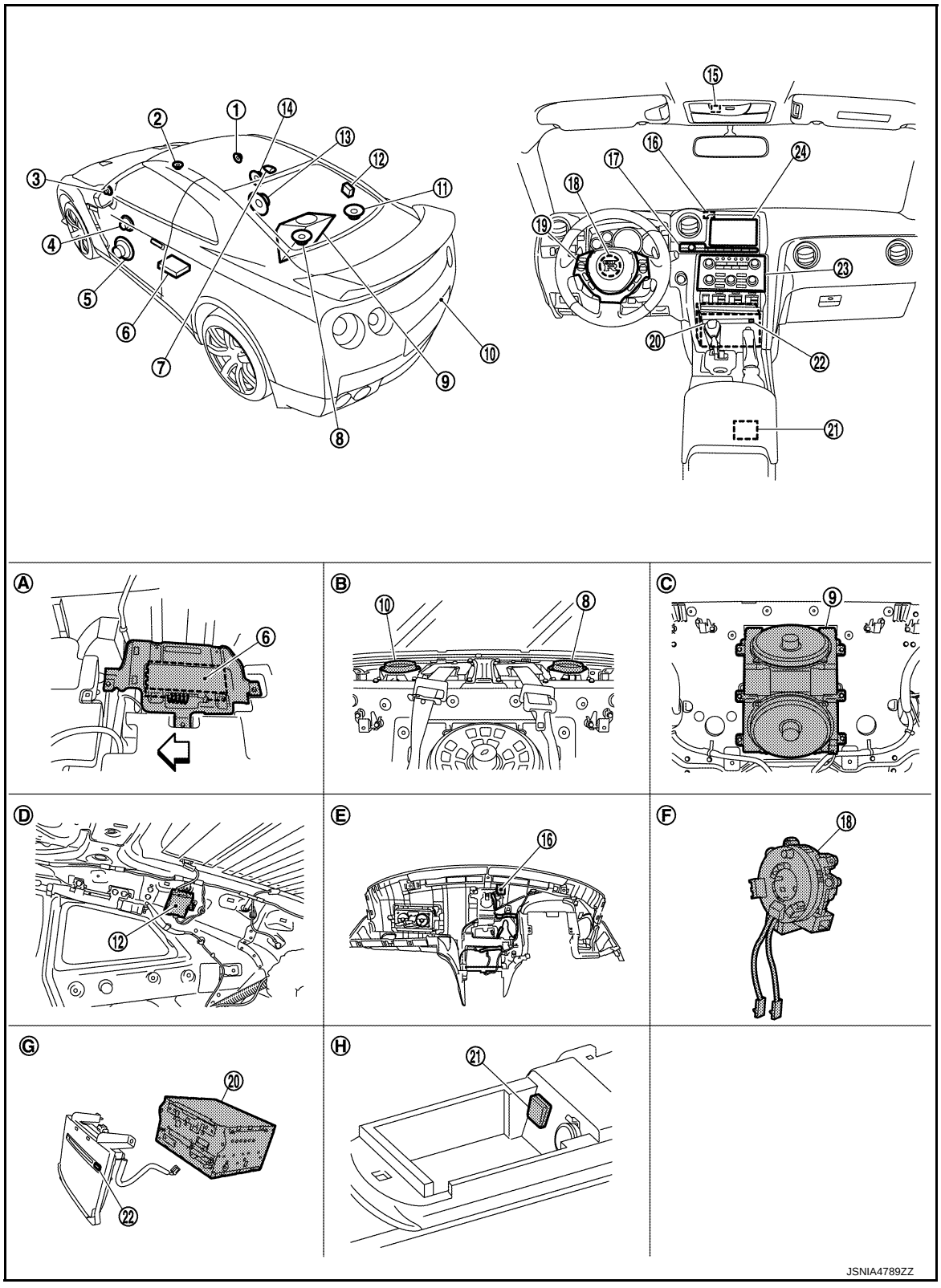
Tool name	Description
Power tool  PBIC0191E	Loosening screws

SYSTEM DESCRIPTION

MULTI AV SYSTEM

Component Parts Location

INFOID:0000000009163334



1. Tweeter RH
2. Center speaker
3. Tweeter LH
4. Front door squawker LH
5. Front door speaker LH
6. BOSE amp.
7. Satellite radio antenna
8. Rear speaker LH
9. Woofer
10. Rear view camera
11. Rear speaker RH
12. Antenna amp.
13. Front door speaker RH
14. Front door squawker RH
15. Microphone
16. GPS antenna
17. Multifunction switch
18. Steering angle sensor
19. Steering switch
20. AV control unit
21. USB connector
22. Disk eject switch
23. Preset switch
24. Display unit
A. Under front LH seat
B. Inside rear parcel
C. Inside rear seat back
D. Inside rear pillar finisher RH
E. Back of instrument panel
F. spiral cable remove condition
G. Bottom side of cluster lid C
H. Inside console box

⇦ : Front of vehicle

Component Description

INFOID:0000000009163335

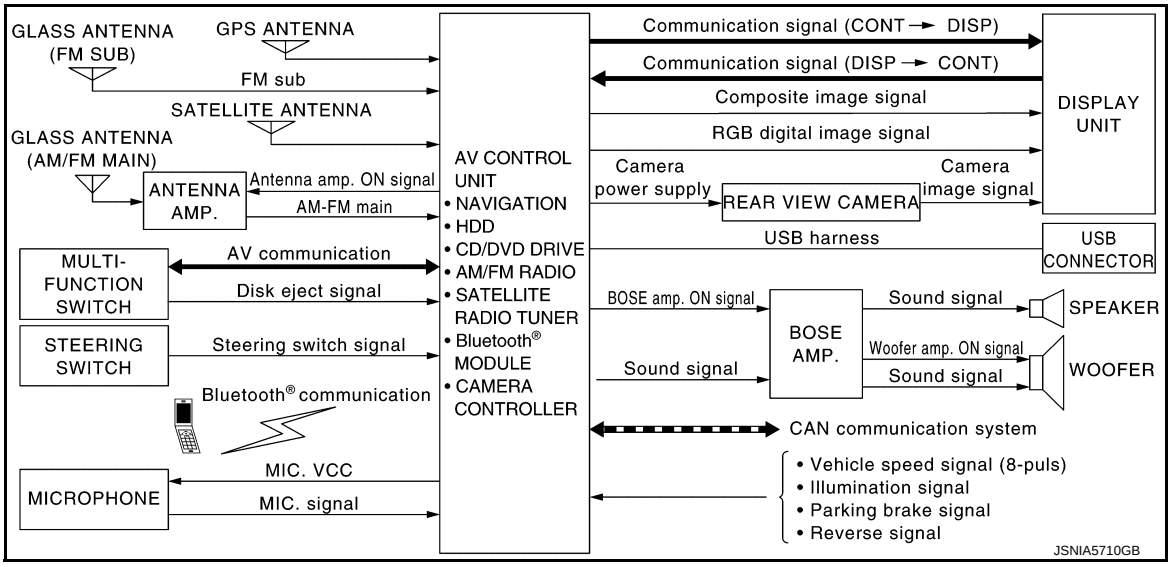
Part name	Description
AV control unit	• Integrates hard disk drive (HDD) allowing map data to be stored. • It is the master unit of the MULTI AV system, and it is connected to each control unit by communication. It operates each system according to communication signals from the AV control unit. • The AV control unit includes the audio, hands-free phone, voice control, navigation, USB connection, DVD play function, multifunction meter function and vehicle information functions. • It is connected to ECM and combination meter via CAN communication to obtain necessary information for the vehicle information function. • It is connected to low tire pressure warning control unit with the CAN communication line to obtain necessary information for the tire pressure status. • It inputs the illumination signals that are required for the display dimming control. • It inputs the signals for driving status recognition (vehicle speed, reverse and parking brake). • Update of map data is performed with the DVD-ROM.
Display unit	• Display image is controlled by the serial communication from AV control unit. • RGB digital image signal is input from AV control unit. • Composite image signal is input from AV control unit. • Touch panel function can be operated for each system by touching a display directly. • Camera image signal is input from rear view camera.
BOSE amp.	It inputs the power supply (BOSE amp. ON signal) and audio signal from the AV control unit and outputs the audio signal to each speaker.
Front door speaker	• Outputs audio signal from BOSE amp. • Outputs high and mid range sound.
Front door squawker	• Outputs audio signal from BOSE amp. • Outputs mid range sound.
Rear speaker	• Outputs audio signal from BOSE amp. • Outputs high and mid range sound.
Tweeter	• Outputs audio signal from BOSE amp. • Outputs high range sound.
Center speaker	• Outputs audio signal from BOSE amp. • Outputs mid range sounds.
Woofer	• Outputs audio signal from BOSE amp. • Outputs low range sound.
Multifunction switch	• It can operate the multifunction meter, etc. • It is connected to the preset switch with hardwire. The operation signal is transmitted to the AV control unit through the preset switch via AV communication.

Part name	Description
Disk eject switch	It is connected to the preset switch with hardwire. The operation signal is transmitted to the AV control unit through the preset switch.
Preset switch	• It is equipped with the switch where audio and air conditioner operations are integrated. • It is connected with the AV control unit via AV communication. The operation signal is transmitted to the AV control unit via AV communication. • The disk ejection operating signal is performed by hardwire.
Steering switch	• Operations for audio, hands-free phone and voice control, etc. are possible. • Steering switch signal (operation signal) is output to AV control unit.
Microphone	• Used for hands-free phone operation and voice recognition. • Microphone signal is transmitted to AV control unit. • Power (Mic. VCC) is supplied from AV control unit.
GPS antenna	GPS signal is received and transmitted to AV control unit.
Antenna amp.	• The radio signal received by glass antenna is amplified and sent to AV control unit. • The power (antenna amp. ON signal) is supplied from the AV control unit.
USB connector	Image signal* and audio signal of USB input is transmitted to AV control unit.
Satellite radio antenna	Satellite radio signal is received and transmitted to AV control unit.
Rear view camera	• Camera power supply is input from AV control unit. • The image of vehicle rear view is transmitted to display unit.

*: Image signal can not be getting from iPod®.

System Diagram

INFOID:0000000009163336



NOTE:
The name MULTIFUNCTION SWITCH indicates the integration of PRESET SWITCH, DISK EJECT SWITCH and MULTIFUNCTION SWITCH virtually.

System Description

INFOID:0000000009163337

Multi AV system means that the following systems are integrated.

FUNCTION NAME
Navigation system function
Audio function
Hands-free phone function
Voice recognition function
Touch panel function

FUNCTION NAME
Rear view monitor function
Vehicle information function
USB connection function
DVD play function
Multifunction meter system function

COMMUNICATION SIGNAL

- AV control unit function by transmitting/receiving data one by one with each unit (slave unit) that configures them completely as a master unit by connecting between units that configure MULTI AV system with two AV communication lines (H, L).
- Two AV communication lines (H, L) adopt a twisted pair line that is resistant to noise.
- The AV control unit is connected with CAN communication line and receives data signals from the ECM, combination meter, TCM, AWD control unit, A/C auto amp., ABS actuator and electric unit (control unit), steering angle sensor and low tire pressure warning control unit. Using the obtained information, it computes values for the display items relating to the fuel consumption information, multifunction meter, and tire pressure information and displays them.
- AV control unit is connected with display and serial communication, and it transmits the required signal of display and display control and receives the response signal from display.
- The AV control unit, which has the vehicle setting function, transmits and receives data on vehicle setting condition via CAN communication with the BCM.

NAVIGATION SYSTEM FUNCTION

Description

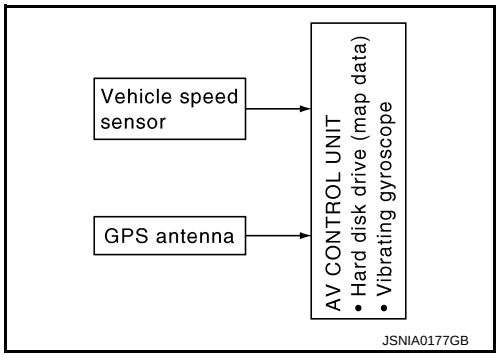
- The AV control unit controls navigation function while GPS tuner has built-in map data, GYRO (angle speed sensor), on the HDD (Hard Disk Drive).
- The AV control unit inputs operation signal with communication signal, through display (touch panel) and multifunction switch and steering switch.
- Guide sound is output to front speaker through BOSE amp. 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 HDD (Hard Disk Drive), and transmits the map image signal (RGB digital image signal) to the display.

Position Detection Principle

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

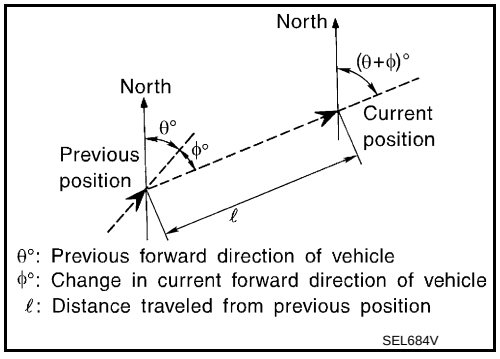
- Travel distance of the vehicle as determined by the vehicle speed sensor
- Vehicle turning angle determined by the gyroscope (angular speed sensor)
- The travel direction of the vehicle determined by the GPS antenna (GPS information)

The current position of the vehicle is then identified by comparing the calculated vehicle position with map data, which is stored in the HDD (Hard Disk Drive) (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.

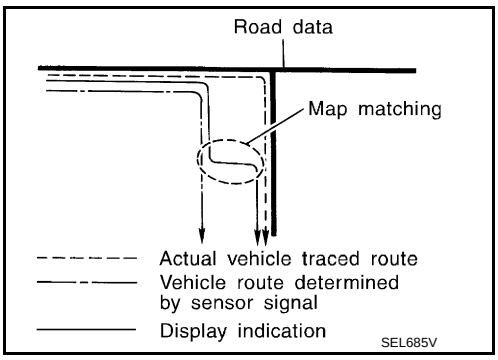


Type	Advantage	Disadvantage
Gyroscope (angular velocity sensor)	The turning angle is precisely detected.	Errors are accumulated when driving a long distance without stopping.
GPS antenna (GPS information)	The travel direction (North/South/East/West) is detected.	The travel direction is not precisely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

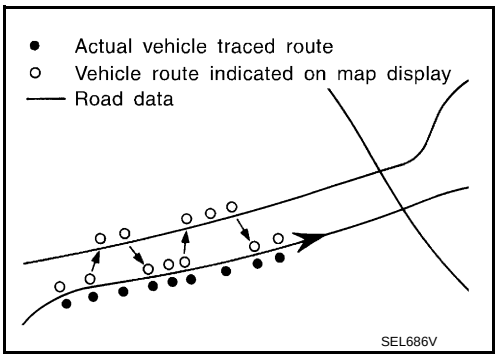
Map-matching

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 HDD (Hard Disk Drive).

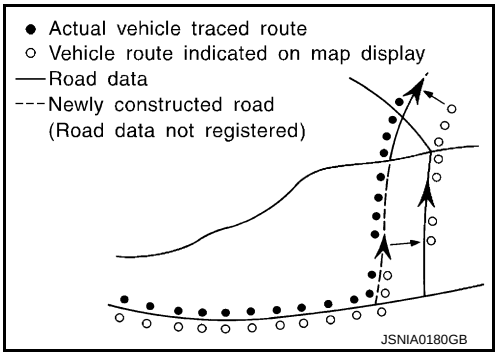


There is a possibility that the vehicle position may not be corrected in the following case, and when vehicle is driven over a certain distance or time in which GPS information is hard to receive. Correct manually the current location mark on the screen.

- 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.

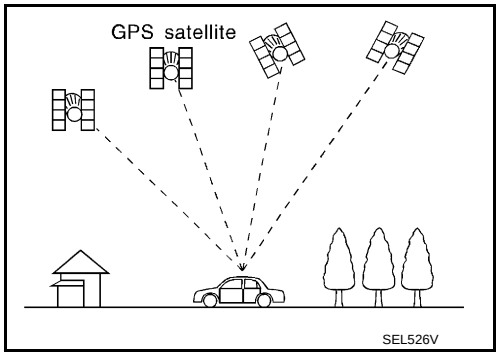


- Map-matching does not function correctly when road on which the vehicle is driving is new, etc. and not recorded in the map data. Also, map-matching does not function correctly when road pattern stored in the map data and the actual road pattern are different due to repair, etc.
  Therefore, the map-matching 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.

AUDIO FUNCTION

The audio system is equipped with the following functions. Each function is operated with multifunction switch, preset switch, touch panel, steering switch or audio recognition. Operation status of audio is indicated at display.

FUNCTION
AM/FM radio
Satellite radio
CD
Bluetooth® audio
USB connection

Operating Signal

Audio system operation can be performed with multifunction switch, preset switch, steering switch, touch panel function or voice recognition function.
- Operating signal is transmitted to AV control unit with AV communication when it is operated by multifunction switch or preset switch. The disk ejection operating signal is performed by hardwire.
- Operating signal is transmitted to AV control unit with steering switch signal when it is operated by steering switch.

Screen Display

Switching of display is performed with serial communication between display unit and AV control unit.

AM/FM Radio Mode

- AM/FM radio tuner is built into AV control unit.
- Audio signal is received by glass antenna, next it is amplified by antenna amp., and finally it is input to AV control unit. Audio signal is input to BOSE amp., and BOSE amp. outputs to woofer and each speakers.

Satellite Radio Mode

- Satellite radio tuner is built into AV control unit.
- Audio wave (satellite radio) is received by satellite radio antenna, and it is input to AV control unit. AV control unit outputs audio signal to BOSE amp. The signal is also outputted from BOSE amp. to woofer and each speaker.

CD Mode
- CD function is built into AV control unit.
- AV control unit outputs audio signal to BOSE amp., and BOSE amp. outputs to woofer and each speakers when CD is inserted to AV control unit.

Bluetooth® Audio
- Bluetooth® audio function is built into AV control unit.
- When the Bluetooth® audio is connected to the portable audio equipped with the Bluetooth® communication compliant profile via Bluetooth® communication, it can be play the music data in the portable audio.
- A maximum of five Bluetooth® devices including the audio devices and cellular phones can be registered in the AV control unit.

HANDS-FREE PHONE FUNCTION
- Hands-free communication can be operated by connecting using Bluetooth® communication with cellular phone.
- Operation is performed by steering switch and multifunction switch, and operating condition is indicated on display.
- Guide sound that is heard during operation is input from AV control unit to BOSE amp., and is output from front door speaker.

When A Call Is Originated
Spoken voice sound output from the microphone (Mic. Signal) is input to AV control unit. AV control unit outputs to cellular phone with Bluetooth® communication as a TEL voice signal. Voice sound is then heard at the other party.

When Receiving A Call
Voice sound is input to own cellular phone from the other party. TEL voice signal is output to front door speaker, and the signal is input to BOSE amp. via AV control unit by establishing Bluetooth® communication from cellular phone.

VOICE RECOGNITION FUNCTION
- Each operation of multi AV system can be performed by inputting sound to microphone.
- Start of voice recognition system can be performed by steering switch.

TOUCH PANEL SYSTEM
Each operation of multi AV system can be performed by directly touching a display.

REAR VIEW MONITOR FUNCTION
- The AV control unit supplies power to the rear view camera when receiving a reverse signal.
- The rear view camera transmits camera images to the display unit when power is supplied from the AV control unit.
- The AV control unit transmits a warning message, fixed guide lines, and predictive course lines to the display unit by RGB digital image signal. Rear view monitor images are displayed by combining the RGB digital image signal and the camera image signals from the rear view camera.
- Predictive course lines are controlled by a steering angle sensor signal received the AV control unit via CAN communication.

VEHICLE INFORMATION FUNCTION
- Status of audio, climate control system, fuel economy, tire pressure and maintenance is displayed.
- AV control unit displays the fuel consumption status while receiving data signal through CAN communication from ECM, combination meter.
- AV control unit displays the tire pressure status while receiving data signal through CAN communication from low tire pressure warning control unit.

USB CONNECTION FUNCTION
- iPod or music files and video data* of USB memory can be played.
- iPod audio signals are transmitted from USB connector to the AV control unit and to each speaker via BOSE amp.
- Video signals are transmitted from USB connector to the display unit via the AV control unit.
- iPod® is recharged when connected to USB connector.

*: Image signal can not be getting from iPod®.

iPod® is a trademark of Apple inc., registered in the U.S. and other countries.

NOTE:

Use the enclosed USB harness when connecting iPod® to USB connector.

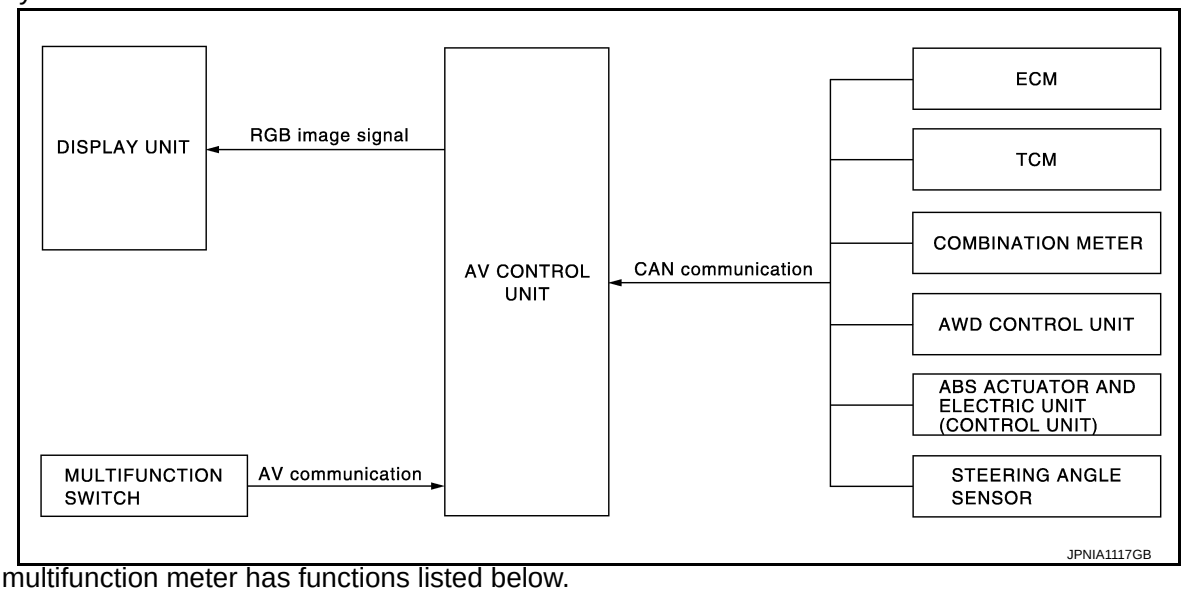
DVD PLAY FUNCTION

- DVD is played by inserting DVD into the AV control unit.
- DVD image signals are transmitted to the display unit and DVD audio signals are transmitted to each speaker via BOSE amp.

MULTIFUNCTION METER SYSTEM

Multi function meter system can be performed with multi function switch.

- To inform the user of the most suitable usage of the high-performance vehicle, the mechanical information display function, driving assist display function, gear and fuel consumption display function, and driving history information display function are adopted.
- The necessary information is transmitted from each unit to the AV control unit via CAN communication to display on the multifunction meter.



- The multifunction meter has functions listed below.

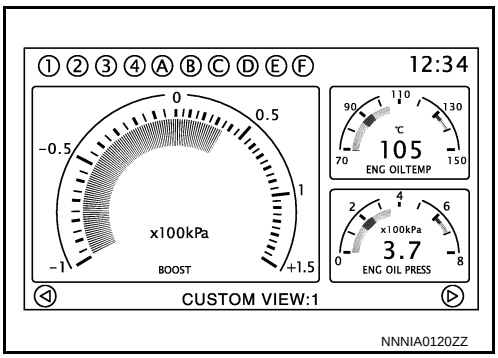
Function	Description	Display
Vehicle information mode	Displays mechanical information to use the vehicle in good condition.	CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4
Driving assist display mode	Displays major elements to improve the driving technique.	ACCELERATION BRAKING STEERING
Gear & fuel consumption display mode	Displays proper gear selection, ECO level and fuel consumption to improve the fuel efficiency.	GEAR POSITION FUEL ECONOMY
Driving history information display mode	Displays the measured TIME results.	STOP WATCH

NOTE:

For further information about the procedure for handling and setting each function, refer to the Operation Manual.

Vehicle Information Mode

To continue to use the vehicle in good condition, it can display the mechanical information if necessary.

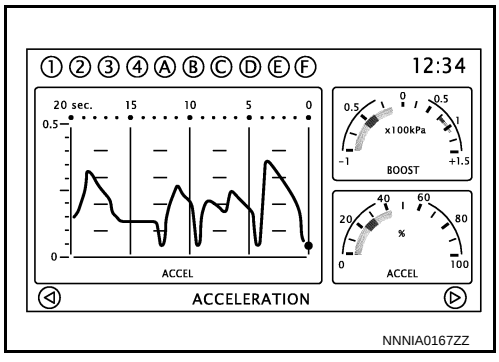


Display	Display Item	Description	Signal route	Display form	Display range	Unit
CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4	COOLANT TEMP	Engine coolant temperature	Coolant temperature sensor → ECM → Combination meter → AV control unit	Gauge	50 - 130	°C
				Value	(–40) - (200)	
				Gauge	120 - 270	°F
				Value	(–40) - (390)	
	ENGINE OIL TEMP	Engine oil temperature	Fluid temperature sensor → ECM → Combination meter → AV control unit	Gauge	70 - 150	°C
				Value	(–50) - (200)	
				Gauge	150 - 300	°F
				Value	(–50) - (390)	
	ENGINE OIL PRES	Engine oil pressure	Oil pressure sensor → Combination meter → AV control unit	Gauge	0 - 8	x100 kPa
						PSI
	TRANS OIL TEMP	Transmission oil temperature	Transmission oil sensor → TCM → Combination meter → AV control unit	Gauge	40 - 160	°C
				Value	(–40) - (200)	
				Gauge	120 - 320	°F
				Value	(–40) - (390)	
	TRANS OIL PRESSURE	Transmission oil pressure	Transmission oil pressure sensor → TCM → Combination meter → AV control unit	Gauge	Lo - Hi	—
	BOOST	Boost pressure	Boost sensor → ECM → Combination meter → AV control unit	Gauge	(–1.0) - (1.5)	x100 kPa
						PSI
	SPEED	Vehicle speed (small display only)	Wheel sensor → ABS actuator and electric unit (control unit) → Combination meter → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	FUEL/RANGE	Fuel level and possible driving distance	Combination meter → AV control unit	Gauge	E - F	—
				Value	0 - 999	km
						mile
	FUEL FLOW	Fuel Flow	ECM → AV control unit	Gauge	—	—

Display	Display Item	Description	Signal route	Display form	Display range	Unit
CUSTOM VIEW 1 CUSTOM VIEW 2 CUSTOM VIEW 3 CUSTOM VIEW 4	FUEL ECON	Interval fuel consumption Small display: Latest fuel consumption during the past minute Large display: Displays the history of an average ECO level per minute (20 minutes data)	ECM/Combination meter → AV control unit	Value	0 - 30	l/100 km
				Graph	0 - 30	
				Value	0 - 60	MPG
				Graph	0 - 30	
	TORQUE SPLIT	Front torque distribution (small display only)	AWD control unit → Combination meter → AV control unit	Gauge	RWD - AWD	—
	ACCEL BRAKING G	Longitudinal G (Accelerator pedal/brake G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	—
	CORNERING G	Transverse G (Cornering G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	—
	TOTAL G	Synthetic G (Absolute G generated on the vehicle synthesized from longitudinal G and transverse G) Small display: Real time display Large display: History display (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
	CLOCK	Clock	GPS antenna → AV control unit	Value	12/24	Time
	ACCEL PEDAL	Accelerator pedal position (small display only)	ECM → AV control unit	Gauge	0 - 100	%
	BRAKE PEDAL	Braking pressure (small display only)	Pressure sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 100	%
	STEERING	Steering angle (small display only)	Steering angle sensor → AV control unit	Gauge	Auto scale	—

Driving Assist Display Mode

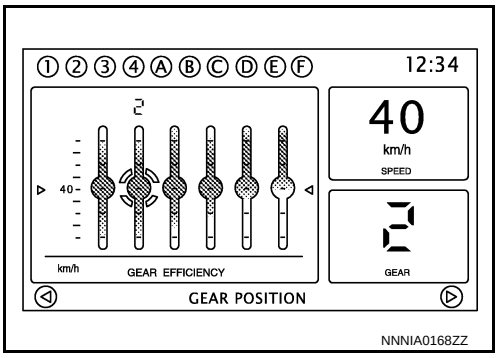
Displays major elements (accelerator, brake and steering operations) to improve the driving technique, and also displays the longitudinal/transverse G history.



Display	Display Item	Description	Signal route	Display form	Display range	Unit
ACCELERATION	ACCEL PEDAL	Accelerator pedal position	ECM → AV control unit	Gauge	0 - 100	%
	BOOST	Boost pressure	Boost sensor → ECM → Combination meter → AV control unit	Gauge	(–1.0) - (1.5)	x100 kPa
						PSI
	ACCEL G	History display of accelerator G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
BRAKING	BRAKE PEDAL	Braking pressure	Pressure sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 100	%
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	BRAKING G	History display of brake G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	0 - 1.5	—
				Graph		
STEERING	STEERING	Steering angle	Steering angle sensor → AV control unit	Gauge	Auto scale	—
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	CORNERING G	History display of cornering G (for 20 seconds)	Yaw rate/side G/longitudinal G sensor → ABS actuator and electric unit (control unit) → AV control unit	Gauge	(–1.5) - (1.5)	—
				Graph	Auto scale	

Gear & Fuel Consumption Display Mode

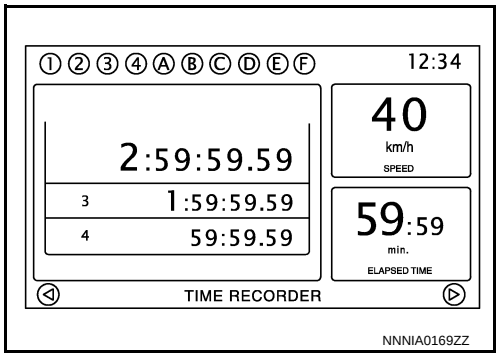
Displays proper gear selection to improve the fuel efficiency, and also displays fuel consumption and ECO driving level.



Display	Display item	Description	Signal route	Display form	Display range	Unit
GEAR POSITION	GEAR	Selected gear position	Position sensor → TCM → Combination meter → AV control unit	Value/ symbol	R, P, N, 1 - 6	—
	SPEED	Vehicle speed	Wheel sensor → ABS actuator and electric unit (control unit) → AV control unit	Value	0 - 340	km/h
					0 - 215	MPH
	GEAR EFFICIENCY	Displays ECO/power band per gear.	TCM → Combination meter → AV control unit	Special display	—	—
FUEL ECONOMY	FUEL EFFICIENCY	Displays the current ECO level.	ECM/TCM/Combination meter → AV control unit	Gauge	10 levels	—
	FUEL ECON	Interval fuel consumption (for 1 minuets)	ECM/Combination meter → AV control unit	Value	0 - 30	l/100 km
				Graph	0 - 30	
				Value	0 - 60	MPG
				Graph	0 - 30	
	FUEL EFFICIENCY	Displays the history of an average ECO level per minute (20 minutes data)	ECM/TCM/Combination meter → AV control unit	Graph	10 levels	—

Driving History Information Display Mode

Displays the sub-functions (driving route history and required time history) indicating the driving history.



Display	Description	Display form
STOP WATCH	Displays the measured TIME results.	Special display
DRIVER'S NOTES	Displays the driving history information	Special display

Fail-Safe

INFOID:0000000009163338

When the ambiance temperature becomes extremely low or extremely high, AV control unit displays the message and limits the AV control unit function.

FAIL-SAFE CONDITIONS

When the ambiance temperature is –20°C (–4°F) or lower, or when it is 70°C (158°F) or higher

Display

The messages displayed on fail-safe conditions are as shown below:

Fail-safe mode	Display (display of the fail-safe condition)
When HDD temperature is low	HDD system is experiencing problems due to extreme low temperature. Normal operation will resume when temperature rises.
When HDD temperature is high	HDD system is experiencing problems due to extreme high temperature. Normal operation will resume when temperature drops.

DESCRIPTION OF CONTROLS

Function		When Fail-safe Function is activated
Air conditioner	Operation	Only multifunction switch (preset switch) can be operated.
	Display	• LED of multifunction switch (preset switch) illuminates. • Aimed temperature, blow angle, and flow rate are displayed in simplified mode.
Audio	Operation	Only ON/OFF and volume control operations by multifunction switch (preset switch) are possible.
	Display	No display (“Fail-safe mode” is displayed)
Camera	Operation	Image tone cannot be controlled.
	Display	Cannot be superimposed. (warning display, tone control display)
Hands-free phone	Operation	Cannot be operated.
Navigation	Operation	Cannot be operated.
Self diagnosis		The display in simplified mode of fail-safe condition
CONSULT diagnosis		Cannot be operated.

Ability Operation Mode
There is an ability operation mode for Fail-safes due to low or high ambiance temperature.
If HDD data can be read, fail-safe is shown, then normal displays are displayed only for functions which can be operated.

RELEASE CONDITIONS OF FAIL-SAFE

Fail-safe is released on following conditions and normal mode is restored.

When The Temperature of HDD Is Low or High
If the ambient temperature becomes out of fail-safe condition range, normal mode is restored.

DIAGNOSIS SYSTEM (AV CONTROL UNIT)

Description

INFOID:0000000009163339

- The AV control unit diagnosis function starts up with multifunction switch operation and the AV control unit performs a diagnosis for each unit in the system during the on board diagnosis.
- Perform a CONSULT diagnosis if the on board diagnosis does not start, e.g., the screen does not display anything, the multifunction switch does not function, etc.

On Board Diagnosis Function

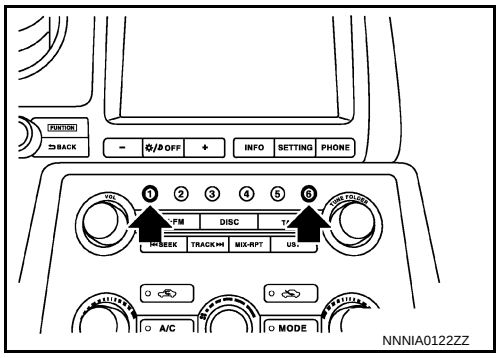
INFOID:0000000009163340

MULTIFUNCTION SWITCH AND PRESET SWITCH SELF-DIAGNOSIS FUNCTION

The ON/OFF operation (continuity) of each switch in the multifunction switch and preset switch can be checked.

Self-diagnosis Mode

- Press both the preset switches “1” and “6” simultaneously within 10 seconds after turning the ignition switch from OFF to ACC and hold them for 3 seconds or more. Then release the switches. The buzzer sounds, all indicators of the centralized and preset switches illuminate, and the self-diagnosis mode starts.
- The continuity of each switch at the ON position can be checked by pressing the switch. The buzzer sounds if the switch is normal.



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Finishing Self-diagnosis Mode

Self-diagnosis mode is canceled when turning the ignition switch OFF.

ON BOARD DIAGNOSIS ITEM

Description

- The trouble diagnosis function has a self-diagnosis mode for conducting trouble diagnosis automatically and a confirmation/adjustment mode for operating manually.
- The self-diagnosis mode performs diagnoses on the AV control unit, connections between system components as well as connections between AV control unit and GPS antenna. Then it displays the diagnosis 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 checking, modifying or adjusting generally require human intervention and judgment (the system cannot make judgment automatically).

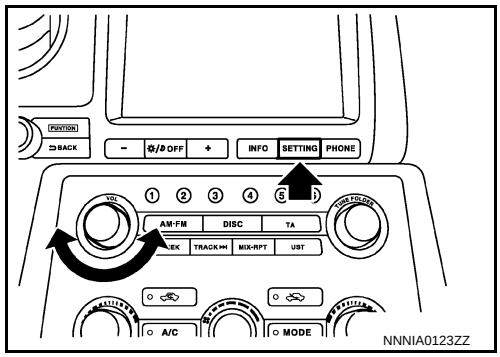
On Board Diagnosis Item

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

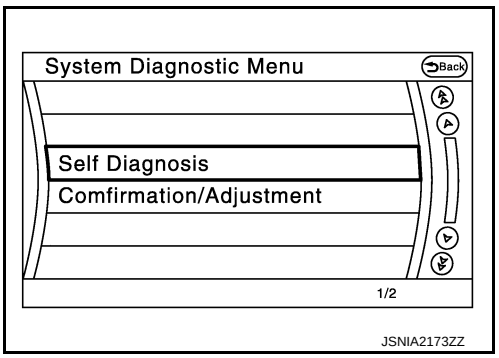
Mode			Description
Confirmation/ Adjustment	Display Diagnosis		The following check functions are available: color tone check by color bar display, light and shade check by gray scale display, touch panel calibration, touch panel response check and color tone check by white display.
	Vehicle Signals		Diagnosis of signals can be performed for vehicle speed, parking brake, lights, ignition, reverse, side view switch and room lamp.
	Speaker Test		The connection of a speaker can be confirmed by test tone.
	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.
		XM SAT Subscription Status	The XM NavTraffic subscription status can be checked.
	Error History		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.
	Synchronizer FES Clock		–
	Vehicle CAN Diagnosis		The transmitting/receiving of CAN communication can be monitored.
	AV COMM Diagnosis		The communication condition of each unit of Multi AV system can be monitored.
	Hands-free Phone		The received volume adjustment of hands-free phone, microphone speaker check, and erase memory can be performed.
	Camera Cont.		The four functions of “Correct Draw Line of Rear view Camera”, “Alter/ Confirm Configuration”, “Reset Configuration” and “Camera Syst Type” are available.
	XM	XM Navi Trffic	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.
		XM NavWeather	
		XM CGS	
		Diag	Not used.
	Delete Unit Connection Log		Erase the connection history of unit and error history.
	Initialize Settings		Initializes the AV control unit memory.
	Version Information		Version information of the AV control unit is displayed.

METHOD OF STARTING

1. Start the engine.
2. Turn the audio system OFF.
3. Turn the “VOL” dial either clockwise or counterclockwise for 40 clicks or more while pressing the “SETTING” button. (Beep sounds when starting the self-diagnosis mode.) Press the “BACK” switch and the initial system screen will be shown.



4. The trouble diagnosis initial screen is displayed, and then the items of “Self Diagnosis” and “Confirmation/Adjustment” can be selected.

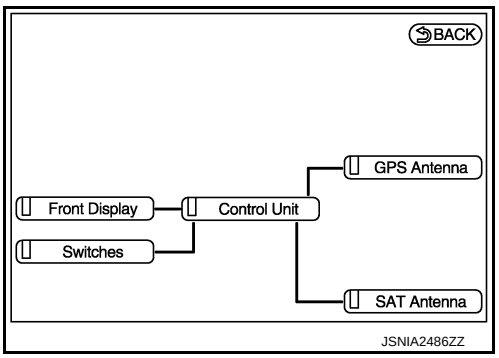


SELF-DIAGNOSIS MODE

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.



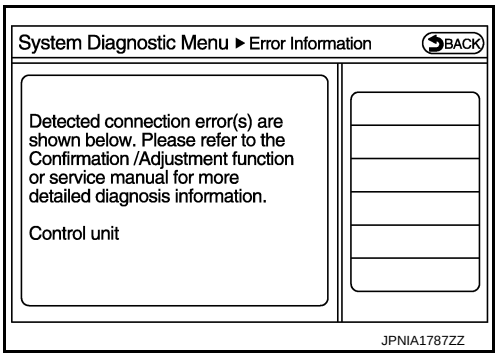
Diagnosis results	Unit	Connection line
Normal	Green	Green
Connection malfunction	Gray	Yellow
Unit malfunction Note	Red	Green

NOTE:

- Only the 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-168, "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.



SELF-DIAGNOSIS RESULTS

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

Only Unit Part Is Displayed In Red.

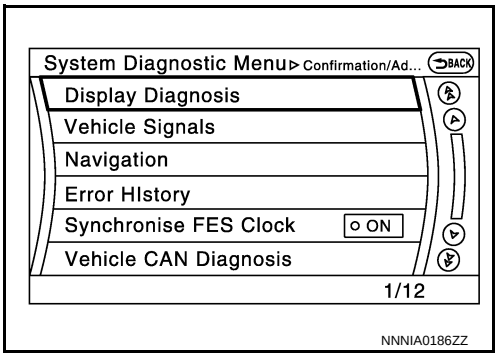
Screen switch	Description	Possible malfunction location / Action to take
Control unit	Malfunction is detected in AV control unit power supply and ground circuits.	Check AV control unit power supply and ground circuits. When detecting no malfunction in those components, replace AV control unit.

A Connecting Cable Between Units Is Displayed In Yellow.

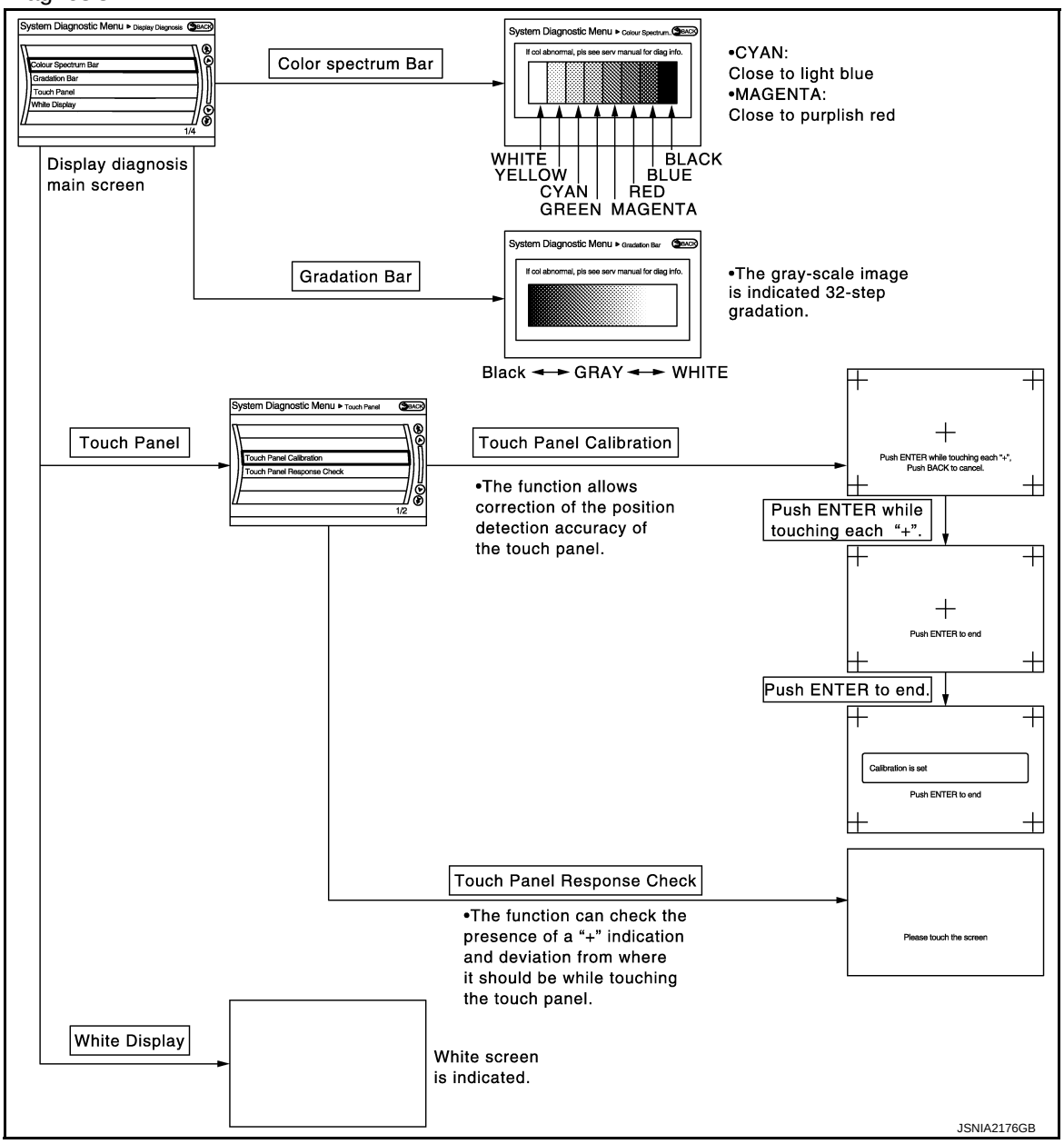
Area with yellow connection lines	Description	Possible malfunction location / Action to take
Control unit ⇔ Front Display	Malfunction is detected in serial communication circuits between AV control unit and display unit.	Serial communication circuits between AV control unit and display unit.
Control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

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.

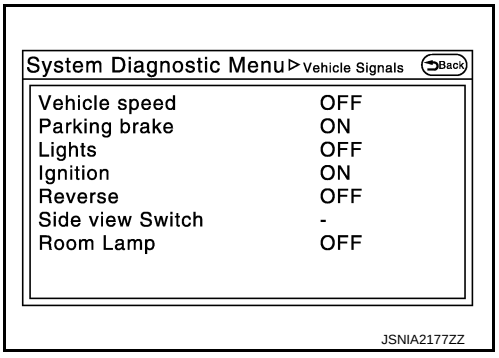


Display Diagnosis



Vehicle Signals

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

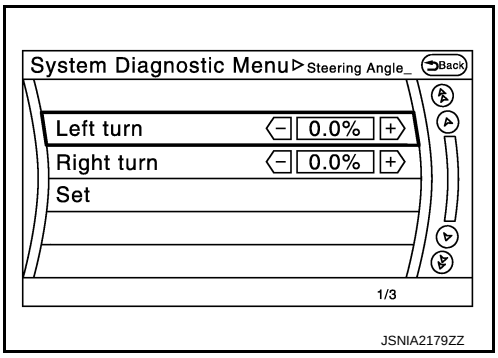


Diagnosis item	Display	Vehicle status	Remarks
Vehicle speed	ON	Vehicle speed > 0 km/h (0 MPH)	Changes in indication may be delayed. This is normal.
	OFF	Vehicle speed = 0 km/h (0 MPH)	
Parking brake	ON	Parking brake is applied	
	OFF	Parking brake is released	
Lights	ON	Light switch ON	—
	OFF	Light switch OFF	
Ignition	ON	Ignition switch ON	—
	OFF	Ignition switch 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	
SIDE VIEW SW	—	—	This item is displayed, but cannot be monitored.
ROOM LAMP	OFF	—	This item is displayed, but not used.

Navigation

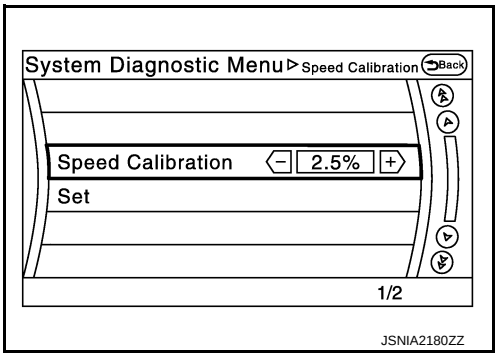
STEERING ANGLE ADJUSTMENT

The steering angle output value detected with the gyroscope is adjusted.



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.



XM SAT SUBSCRIPTION STATUS

The XM NavTraffic subscription status can be checked.

Error History

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.

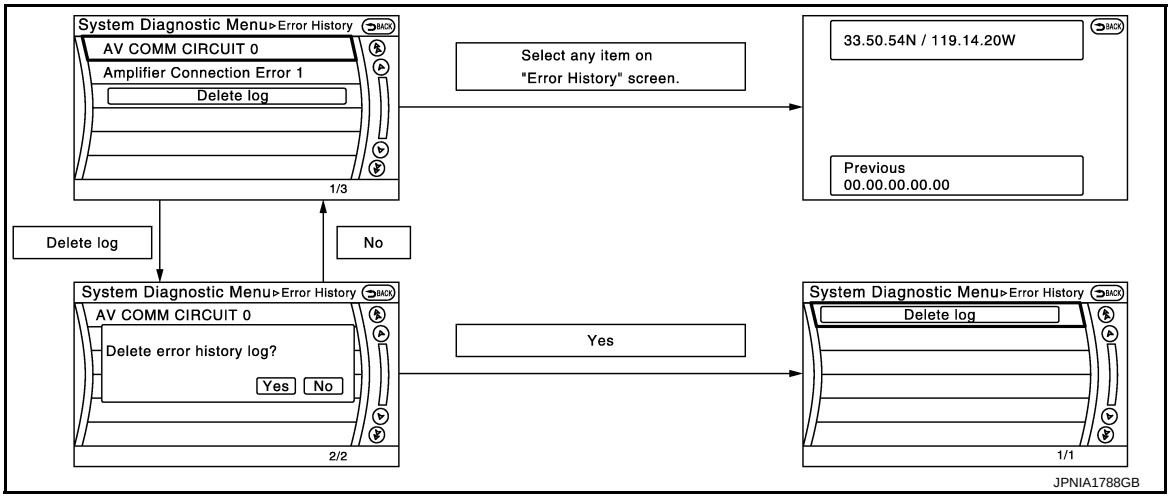
Count up method A

- The counter resets to 0 if an error occurs when IGN switch is turned ON. The counter increases by 1 if the condition is normal at a next IGN 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.

Count up method B

- The counter increases by 1 if an error occurs when IGN switch is ON. The counter will not decrease even if the condition is normal at the next IGN ON cycle.
- The counter upper limit is 50. Any counts exceeding 50 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)
Count up method B	Other than the above



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

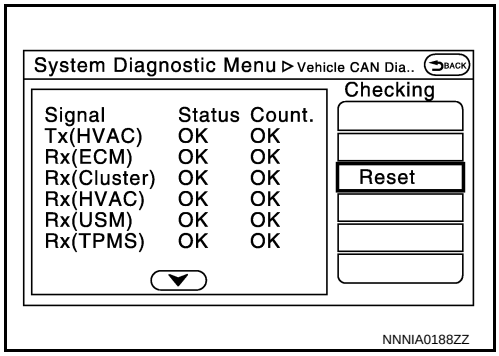
Error item	Description	Possible malfunction factor/Action to take
CAN COMM CIRCUIT	CAN communication malfunction is detected.	This work is recommended to be performed by NHPC.

Error item	Description	Possible malfunction factor/Action to take
CONTROL UNIT (CAN)	CAN initial diagnosis malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly.
CONTROL UNIT (AV)	AV communication circuit initial diagnosis malfunction is detected.	
FLASH-ROM Error Of Control Unit	AV control unit malfunction is detected.	
Connection Of Gyro		
Connection of G Sensor		
CAN Controller Memory Error		
Bluetooth Module Connection Error		
Sub CPU Connection Error		
iPod authentification chip error		
Audio connection error		
DSP Connection Error	AV control unit malfunction is detected.	• If a disc can be played, then there is a possibility of the detection of a temporary malfunction. • Replace the AV control unit if the malfunction occurs constantly.
DSP Communication Error		
HDD Connection Error	AV control unit malfunction is detected.	Replace the AV control unit if the malfunction occurs constantly.
HDD Read Error		
HDD Write Error		
HDD Communication Error		
HDD Access Error		
GPS Communication Error	GPS malfunction is detected.	An intermittent error caused by strong radio interference may be detected unless any symptom (GPS reception error, etc.) occurs. Replace the AV control unit if the malfunction occurs constantly.
GPS ROM Error		
GPS RAM Error		
GPS RTC Error		
Unfinished configuration	The writing of configuration data is incomplete.	Write configuration data with CONSULT.
USB Controller Communication Error	USB connection malfunction is detected.	Check that the connection to the USB connector is normal.
DVD Mechanism Communication Error	AV control unit malfunction is detected.	• If DVD can be played, then there is a possibility of the detection of a temporary malfunction. • Replace the AV control unit if the malfunction occurs constantly.
Front Display Connection Error	• Display unit power supply and ground circuits malfunction is detected. • Malfunction is detected in communication circuits between AV control unit and display unit.	• Display unit power supply and ground circuits. • Communication circuits between AV control unit and display unit.
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 feeder. • Satellite radio antenna.
USB electric current Error	Detection of over current in USB connector.	Check USB harness between the AV control unit and USB connector.
AM/FM antenna amplifier short to ground	Radio antenna amp. ON signal circuit malfunction is detected.	Radio antenna amp. ON signal circuit between AV control unit and antenna amp.
AM/FM antenna amplifier open		

Error item	Description	Possible malfunction factor/Action to take
Ext_Amp_ON output terminal short to ground	BOSE amp. ON signal circuit malfunction is detected.	BOSE amp. ON signal circuit between AV control unit and BOSE amp.
Ext_Amp_ON output terminal :open		
• 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.

Vehicle CAN Diagnosis

- CAN communication status and error counter is displayed.
- 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.

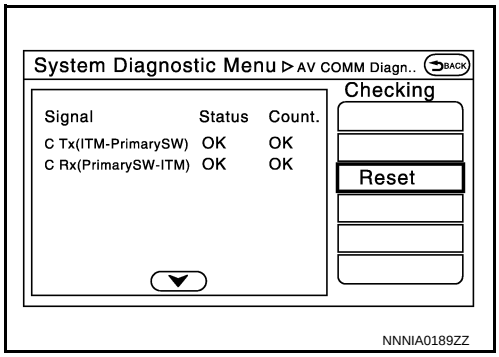


Items	Display (Current)	Malfunction counter (Past)
Tx(HVAC)	OK / ???	OK / 0 – 39
Rx(ECM)	OK / ???	OK / 0 – 39
Rx(Cluster)	OK / ???	OK / 0 – 39
Rx(HVAC)	OK / ???	OK / 0 – 39
Rx(USM)	OK / ???	OK / 0 – 39
Rx (TPMS)	OK / ???	OK / 0 - 39
Rx (VDC)	OK / ???	OK / 0 - 39

NOTE:
“???” indicates UNKWN

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.

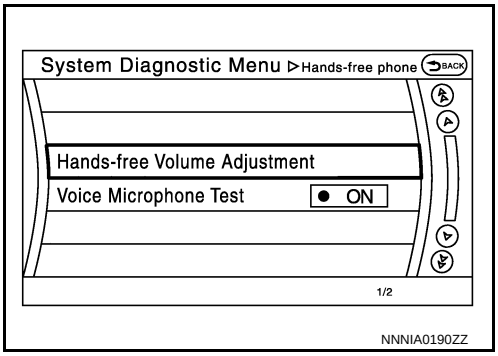


Items	Status (Current)	Counter (Past)
C Tx(ITM–PrimarySW)	OK / ???	OK / 0 – 39
C Rx(PrimarySW–ITM)	OK / ???	OK / 0 – 39

NOTE:
“???” indicates UNKWN

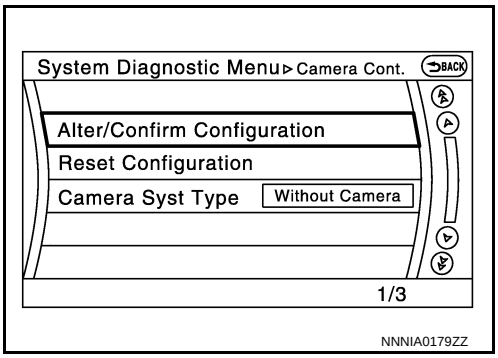
Hands-Free Phone

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



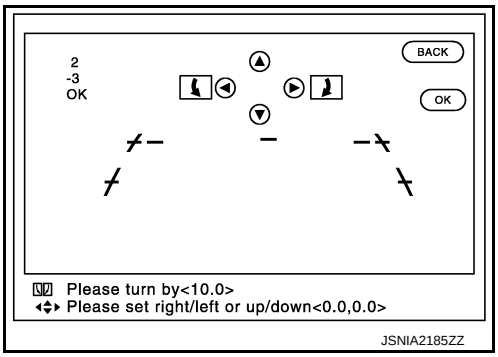
Camera Cont.

The four functions of “Correct Draw Line of Rear view Camera”, “Alter/Confirm Configuration”, “Reset Configuration” and “Camera Syst Type” are 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.



Alter/Confirm Configuration

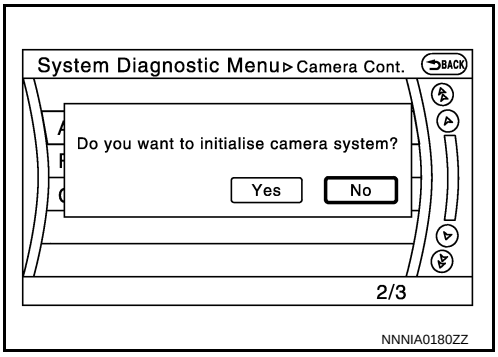
- Configuration stored in the AV control unit can be checked and modified.

Configuration list

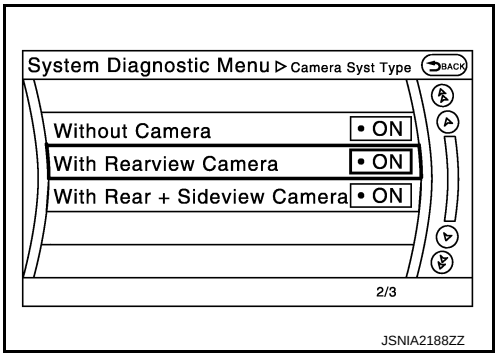
Setting item	Setting	Setting item	Setting
Predi. Course Lines	With	Wheelbase	2.7800000
Rear Coeff. K	–133446.7	Total Length	0.0000000
Rear Coeff. F	0.0016960	Steering Gear Ratio	14.368316
Rear Coeff. P1	0.0000046	Side Coeff. K	0.0000000
Rear Coeff. P2	0.0000056	Side Coeff. F	0.0000000
Rear Coeff. C1	823.00000	Side Coeff. P1	0.0000000
Rear Coeff. C2	480.00000	Side Coeff. P2	0.0000000
Rear Coeff. D1	800.00000	Side Coeff. C1	0.0000000
Rear Coeff. D2	494.00000	Side Coeff. C2	0.0000000
Car Width	1.8950000	Side Coeff. D1	0.0000000
Rear Offset	–0.207930	Side Coeff. D2	0.0000000
Rear Height	0.6846400	Side Offset	0.0000000

Setting item	Setting	Setting item	Setting
Rear L/R Angle	0.0000000	Overall Height	0.0000000
Rear Up/Dn Angle	49.409999	Side L/R Angle	0.0000000
Rear Roll Angle	0.0000000	Side Up/Dn Angle	0.0000000
Bumper Rear Dist.	0.0383800	Side Roll Angle	0.0000000
Bumper Rear Ax Dist	0.9710000	Side Front End Dist	0.0000000
Steer. Max Angle	443.83728	Total Width	0.0000000
Min. Turning Red.	5.7049999	—	—

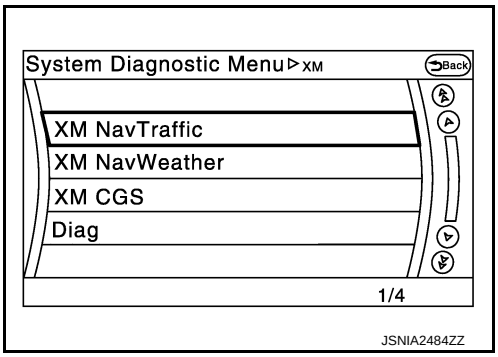
Reset Configuration
- Configuration stored in the AV control unit can be initialized.



Camera Syst Type
- Type of camera system is selectable.

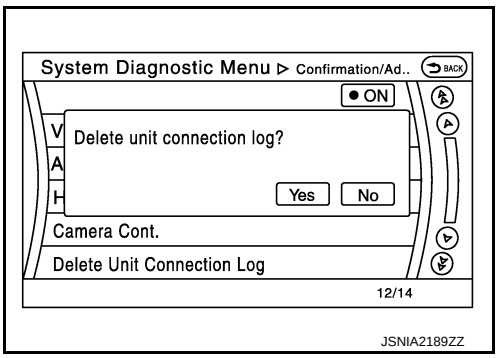


XM
- Change Channel
- Any necessary channels required to receive traffic information from the satellite radio system can be set.
- Change Application ID
- Any application ID'-s required to receive traffic information from the satellite radio system can be set.



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.)



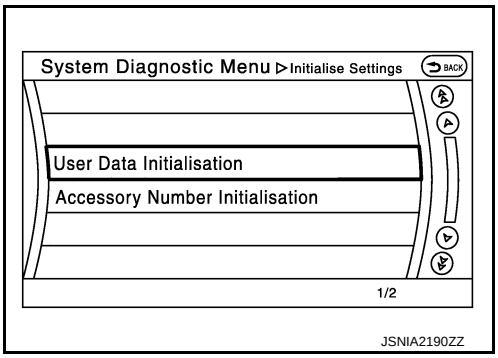
JSNIA2189ZZ

Initialize Settings

"User Data Initialization" and "Accessory Number Initialization" are possible.

CAUTION:

- **Never perform Accessory Number Initialization except when configuration is unsuccessful.**
- **Accessory Number Initialization requires configuration. For details, refer to AV-141, "CONFIGURATION (AV CONTROL UNIT) : Description".**



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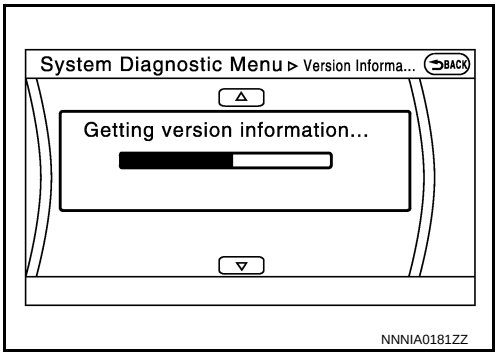
Version Information

Version information of the AV control unit is displayed.



NNNIA0181ZZ

CONSULT Function (MULTI AV)

INFOID:0000000009163341

APPLICATION ITEMS

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

Diagnosis mode	Description
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing AV control unit.

CONFIGURATION

Configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in AV control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the AV control unit.
Manual Configuration		Allows the writing of the vehicle specification into the AV control unit by hand.

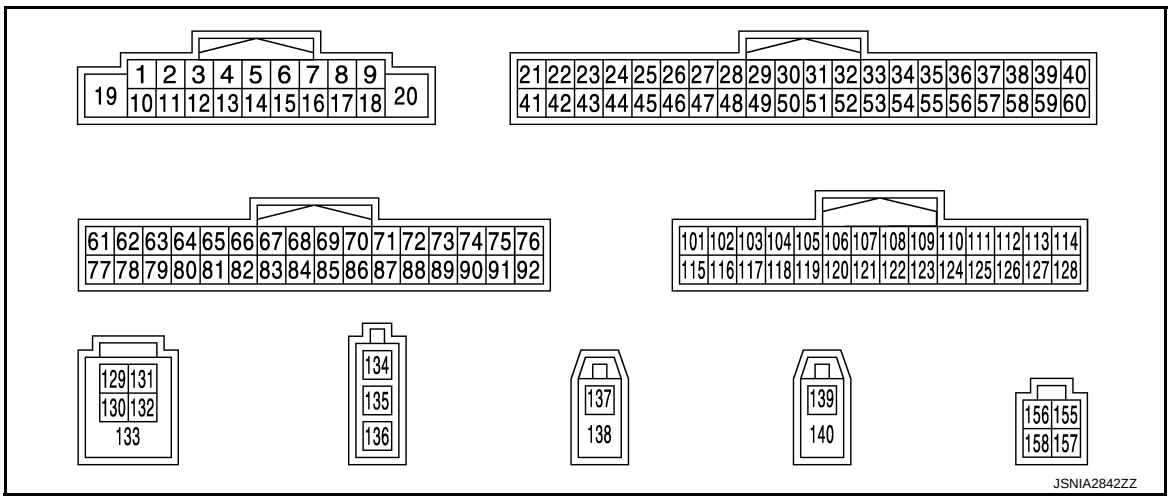
ECU DIAGNOSIS INFORMATION

AV CONTROL UNIT

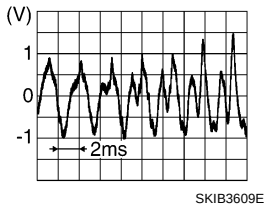
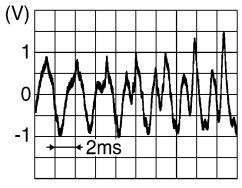
Reference Value

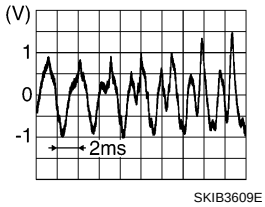
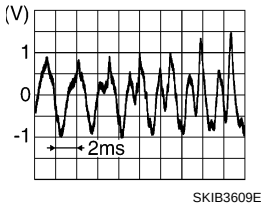
INFOID:0000000009163342

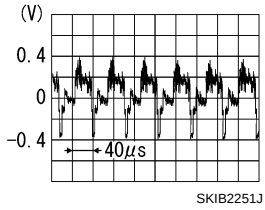
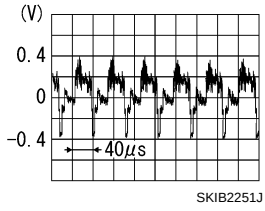
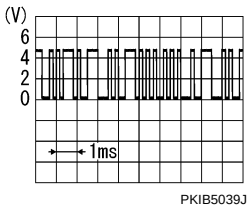
TERMINAL LAYOUT

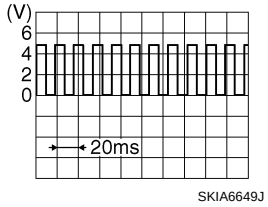
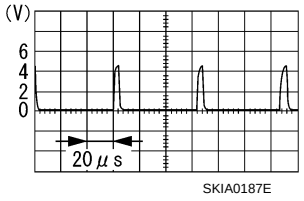
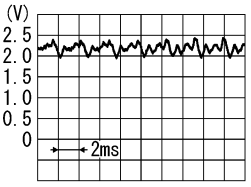
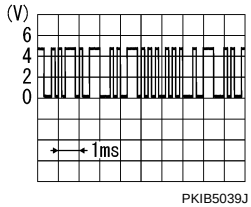


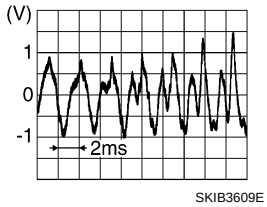
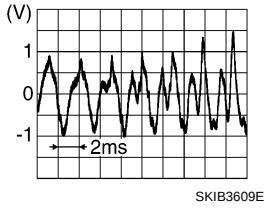
PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
1 (V)	Ground	BOSE amp. ON signal	Output	Ignition switch ON	—	12.0 V
2 (R)	3 (P)	Audio signal front LH	Output	Ignition switch ON	Sound output	 SKIB3609E
4 (V)	5 (W)	Audio signal rear LH	Output	Ignition switch ON	Sound output	 SKIB3609E

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
6 (V)	15 (GR)	Steering switch signal A	Input	Ignition switch ON	Keep pressing SOURCE switch.	0 V
					Keep pressing SEEK switch to △.	1.0 V
					Keep pressing SEEK switch to ▽.	2.0 V
					Keep pressing switch.	3.0 V
					Keep pressing START / STOP switch.	4.0 V
					Except for above.	5.0 V
7 (V)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
10 (B)	—	Shield	—	—	—	—
11 (R)	12 (G)	Audio signal front RH	Output	Ignition switch ON	Sound output	 SKIB3609E
13 (BR)	14 (Y)	Audio signal rear RH	Output	Ignition switch ON	Sound output	 SKIB3609E
16 (SB)	15 (GR)	Steering switch signal B	Input	Ignition switch ON	Keep pressing VOL switch to -.	0 V
					Keep pressing VOL switch to +.	1.0 V
					Keep pressing switch.	2.0 V
					Keep pressing MRK switch.	3.0 V
					Except for above.	5.0 V
19 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
20 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
22 (G)	Ground	Camera power supply	Output	Ignition switch ON	At rear view camera image is displayed.	6.0 V
					Except for above.	0 V

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
26 (G)	Ground	AUX image signal	Input	Ignition switch ON	At AUX image is displayed.	 SKIB2251J
29 (SB)	Ground	Disk eject signal	Input	Ignition switch ON	Pressing the eject switch.	0 V
					Except for above.	5.0 V
42 (R)	Ground	Camera ground	—	Ignition switch ON	—	0 V
46 (R)	Ground	AUX image signal ground	—	Ignition switch ON	—	0 V
47	—	Shield	—	—	—	—
49 (BR)	Ground	Switch ground	—	Ignition switch ON	—	0 V
65 (R)	Ground	Parking brake signal	Input	Ignition switch ON	Parking brake is ON.	4.5 V
					Parking brake is OFF.	0 V
67 (W)	Ground	Composite image ground	—	Ignition switch ON	—	0 V
68 (R)	Ground	Composite image signal	Output	Ignition switch ON	At DVD image is displayed.	 SKIB2251J
72 (L)	Ground	Microphone VCC	Output	Ignition switch ON	—	5.0 V
73 (V)	Ground	Communication signal (CONT→DISP)	Output	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
74 (P)	—	CAN–L	Input/ Output	—	—	—
75 (R)	—	AV communication signal (L)	Input/ Output	—	—	—
76 (R)	—	AV communication signal (L)	Input/ Output	—	—	—

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
79 (R)	Ground	Illumination signal	Input	Ignition switch OFF	Lighting switch is OFF.	0 V
					Lighting switch is ON.	12.0 V
80 (W)	Ground	Ignition signal	Input	Ignition switch ON	—	Battery voltage
81 (O)	Ground	Reverse signal	Input	Ignition switch ON	R position	12.0 V
					Other than R position	0 V
82 (V)	Ground	Vehicle speed signal (8-pulse)	Input	Ignition switch ON	When vehicle speed is approx. 40 km/h (25 MPH)	**NOTE:** Maximum voltage may be 12.0 V due to specifications (connected units).  SKIA6649J
83	—	Shield	—	—	—	—
84 (B)	Ground	Composite synchronizing signal	Output	Ignition switch ON	—	 SKIA0187E
87 (P)	71	Microphone signal	Input	Ignition switch ON	Give a voice	 PKIB5037J
88	—	Shield	—	—	—	—
89 (SB)	Ground	Communication signal (DISP→CONT)	Input	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
90 (L)	—	CAN–H	Input/ Output	—	—	—
91 (G)	—	AV communication signal (H)	Input/ Output	—	—	—
92 (G)	—	AV communication signal (H)	Input/ Output	—	—	—

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
104 (W)	119 (B)	AUX sound signal LH	Input	Ignition switch ON	When AUX mode is selected.	 SKIB3609E
117	—	Shield	—	—	—	—
118 (R)	119 (B)	AUX sound signal RH	Input	Ignition switch ON	When AUX mode is selected.	 SKIB3609E
129 (G)	—	USB ground	—	—	—	—
130 (R)	—	USB D–	—	—	—	—
131 (W)	—	V BUS signal	—	—	—	—
132 (L)	—	USB D+	—	—	—	—
133	—	Shield	—	—	—	—
134	Ground	Antenna amp. ON signal	Output	Ignition switch ON	—	12.0 V
135	—	AM–FM main	Input	—	—	—
136	—	FM sub	Input	—	—	—
137	Ground	GPS antenna signal	Input	Ignition switch ON	Not connected to GPS antenna connector	5.0 V
138	—	Shield	—	—	—	—
139	Ground	Satellite radio antenna signal	Input	Ignition switch ON	Not connected to satellite radio antenna connector.	5.0 V
140	—	Shield	—	—	—	—
157	Ground	RGB digital image signal (+)	Output	Ignition switch ON	Not connected connector.	3.3 V
158	Ground	RGB digital image signal (–)	Output	Ignition switch ON	Not connected connector.	3.3 V

Fail-Safe

INFOID:0000000009163343

When the ambiance temperature becomes extremely low or extremely high, AV control unit displays the message and limits the AV control unit function.

FAIL-SAFE CONDITIONS

When the ambiance temperature is –20°C (–4°F) or lower, or when it is 70°C (158°F) or higher

Display

The messages displayed on fail-safe conditions are as shown below:

Fail-safe mode	Display (display of the fail-safe condition)
When HDD temperature is low	HDD system is experiencing problems due to extreme low temperature. Normal operation will resume when temperature rises.
When HDD temperature is high	HDD system is experiencing problems due to extreme high temperature. Normal operation will resume when temperature drops.

DESCRIPTION OF CONTROLS

Function		When Fail-safe Function is activated
Air conditioner	Operation	Only multifunction switch (preset switch) can be operated.
	Display	• LED of multifunction switch (preset switch) illuminates. • Aimed temperature, blow angle, and flow rate are displayed in simplified mode.
Audio	Operation	Only ON/OFF and volume control operations by multifunction switch (preset switch) are possible.
	Display	No display (“Fail-safe mode” is displayed)
Camera	Operation	Image tone cannot be controlled.
	Display	Cannot be superimposed. (warning display, tone control display)
Hands-free phone	Operation	Cannot be operated.
Navigation	Operation	Cannot be operated.
Self diagnosis		The display in simplified mode of fail-safe condition
CONSULT diagnosis		Cannot be operated.

Ability Operation Mode

There is an ability operation mode for Fail-safes due to low or high ambiance temperature.
If HDD data can be read, fail-safe is shown, then normal displays are displayed only for functions which can be operated.

RELEASE CONDITIONS OF FAIL-SAFE

Fail-safe is released on following conditions and normal mode is restored.

When The Temperature of HDD Is Low or High

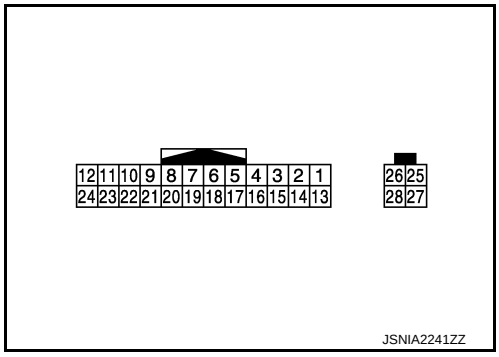
If the ambient temperature becomes out of fail-safe condition range, normal mode is restored.

DISPLAY UNIT

Reference Value

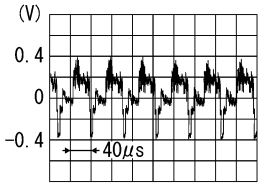
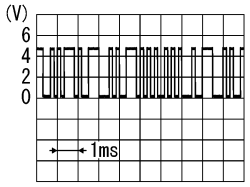
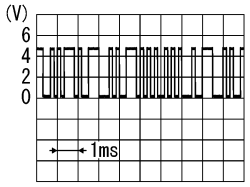
INFOID:0000000009163345

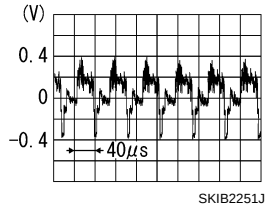
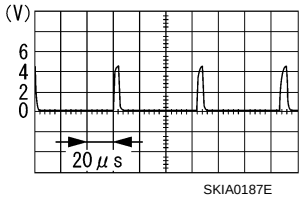
TERMINAL LAYOUT



JSNIA2241ZZ

PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
6	—	Shield	—	—	—	—
7	—	Shield	—	—	—	—
8 (W)	Ground	Camera image signal	Input	Ignition switch ON	At rear view camera image is displayed.	 SKIB2251J
9 (SB)	Ground	Communication signal (DISP→CONT)	Output	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
10 (V)	Ground	Communication signal (CONT→DISP)	Input	Ignition switch ON	When adjusting display brightness.	 PKIB5039J
11 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
12 (B)	Ground	Ground	—	Ignition switch ON	—	0 V

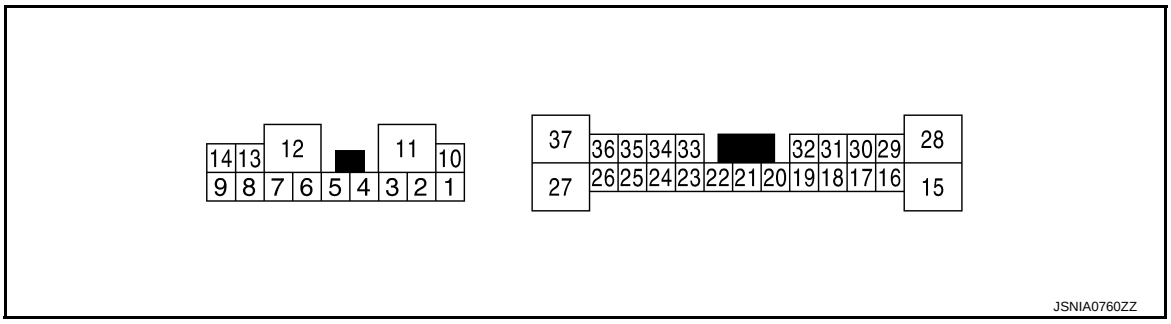
Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
18 (R)	Ground	Composite image signal	Input	Ignition switch ON	At DVD image is displayed.	 SKIB2251J
19 (W)	Ground	Composite image ground	—	Ignition switch ON	—	0 V
20 (B)	Ground	Composite synchronizing signal	Input	Ignition switch ON	—	 SKIA0187E
22	—	Shield	—	—	—	—
23 (P)	Ground	ACC power supply	Input	Ignition switch ACC	—	Battery voltage
27	—	RGB digital image signal (+)	Input	—	—	—
28	—	RGB digital image signal (–)	Input	—	—	—

BOSE AMP.

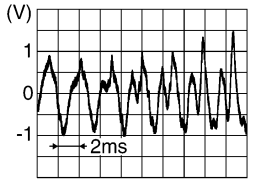
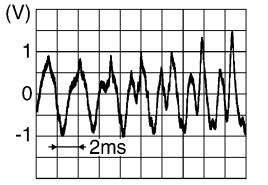
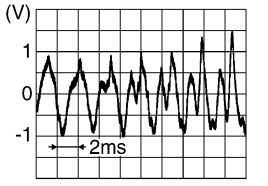
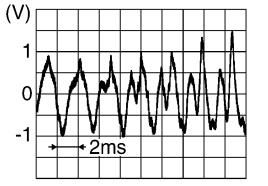
Reference Value

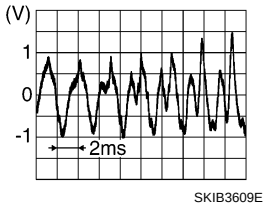
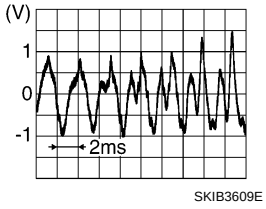
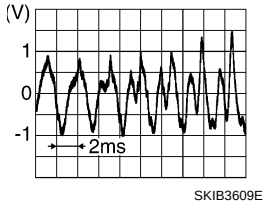
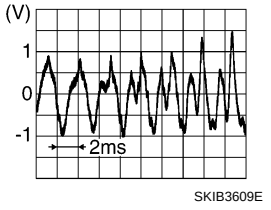
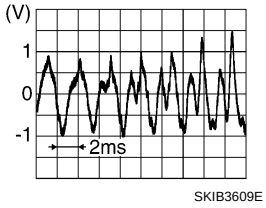
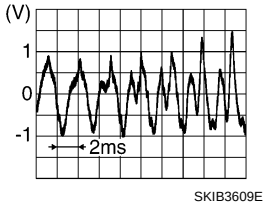
INFOID:0000000009163346

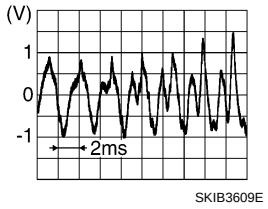
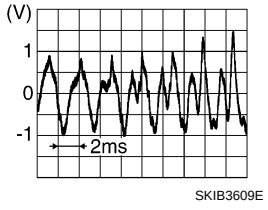
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
1 (R)	10 (G)	Audio signal front door speaker LH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
2 (Y)	3 (LG)	Audio signal front door speaker RH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
4 (O)	5 (GR)	Audio signal front door squawker LH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
6 (V)	7 (LG)	Audio signal rear speaker LH	Output	Ignition switch ON	Audio signal output	 SKIB3609E

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
8 (SB)	13 (BR)	Audio signal front door squawker RH	Output	Ignition switch ON	Audio signal output	 SKIB3609E
9 (P)	14 (SB)	Audio signal woofer	Output	Ignition switch ON	Audio signal output	 SKIB3609E
11 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	—	Battery voltage
12 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
15 (V)	28 (W)	Audio signal center speaker	Output	Ignition switch ON	Audio signal output	 SKIB3609E
18 (L)	32 (P)	Audio signal front LH	Input	Ignition switch ON	Audio signal output	 SKIB3609E
19 (R)	20 (G)	Audio signal front RH	Input	Ignition switch ON	Audio signal output	 SKIB3609E
21 (V)	22 (SB)	Audio signal rear LH	Input	Ignition switch ON	Audio signal output	 SKIB3609E

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
23 (BR)	33 (Y)	Audio signal rear RH	Input	Ignition switch ON	Audio signal output	 SKIB3609E
25 (W)	Ground	Woofer amp. ON signal	Output	Ignition switch ON	—	12.0 V
31 (V)	Ground	BOSE amp. ON signal	Input	Ignition switch ON	—	11.0 V
37 (LG)	27 (O)	Audio signal rear speaker RH	Output	Ignition switch ON	Audio signal output	 SKIB3609E

WIRING DIAGRAM

BOSE AUDIO AND NAVIGATION SYSTEM

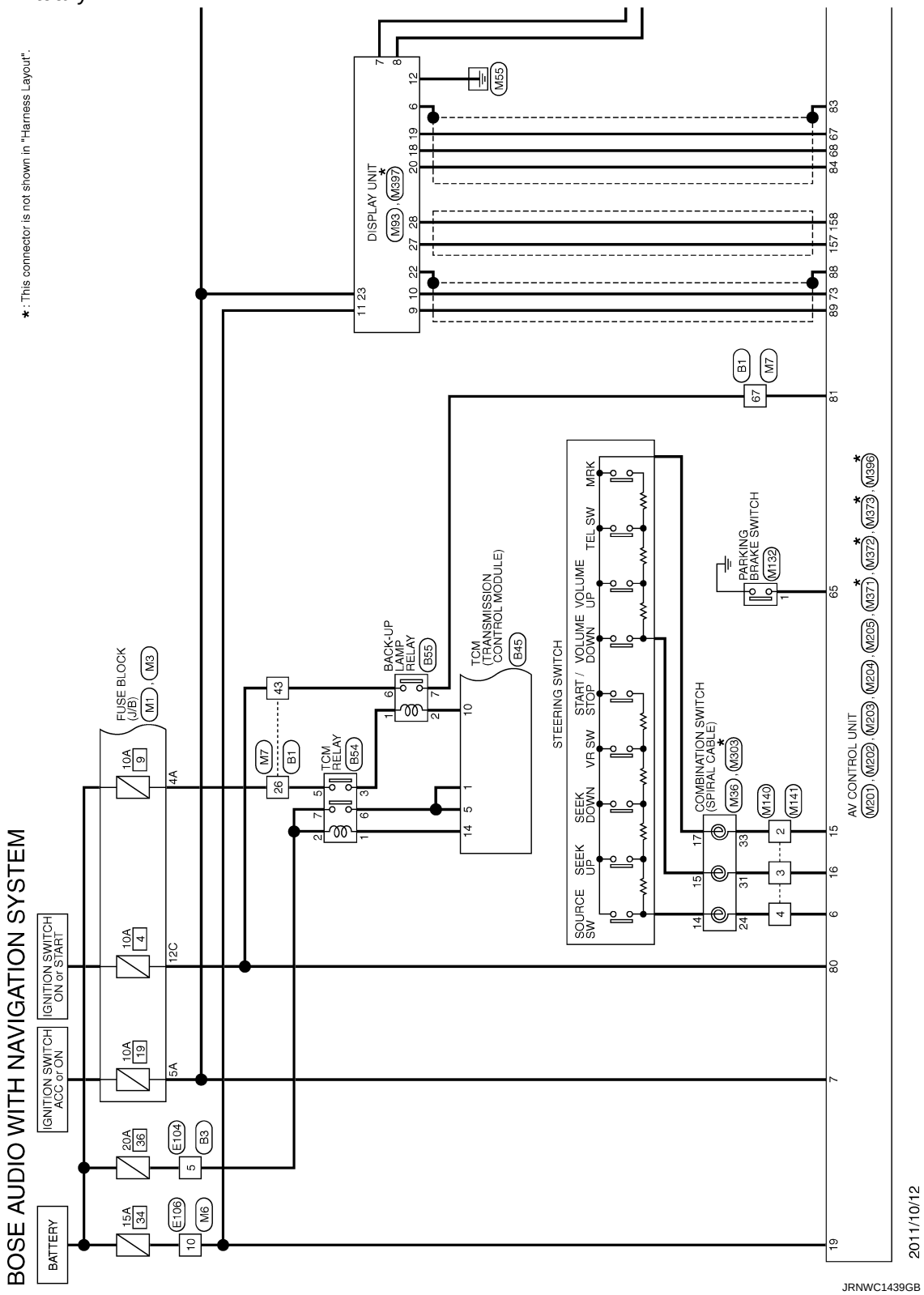
Wiring Diagram

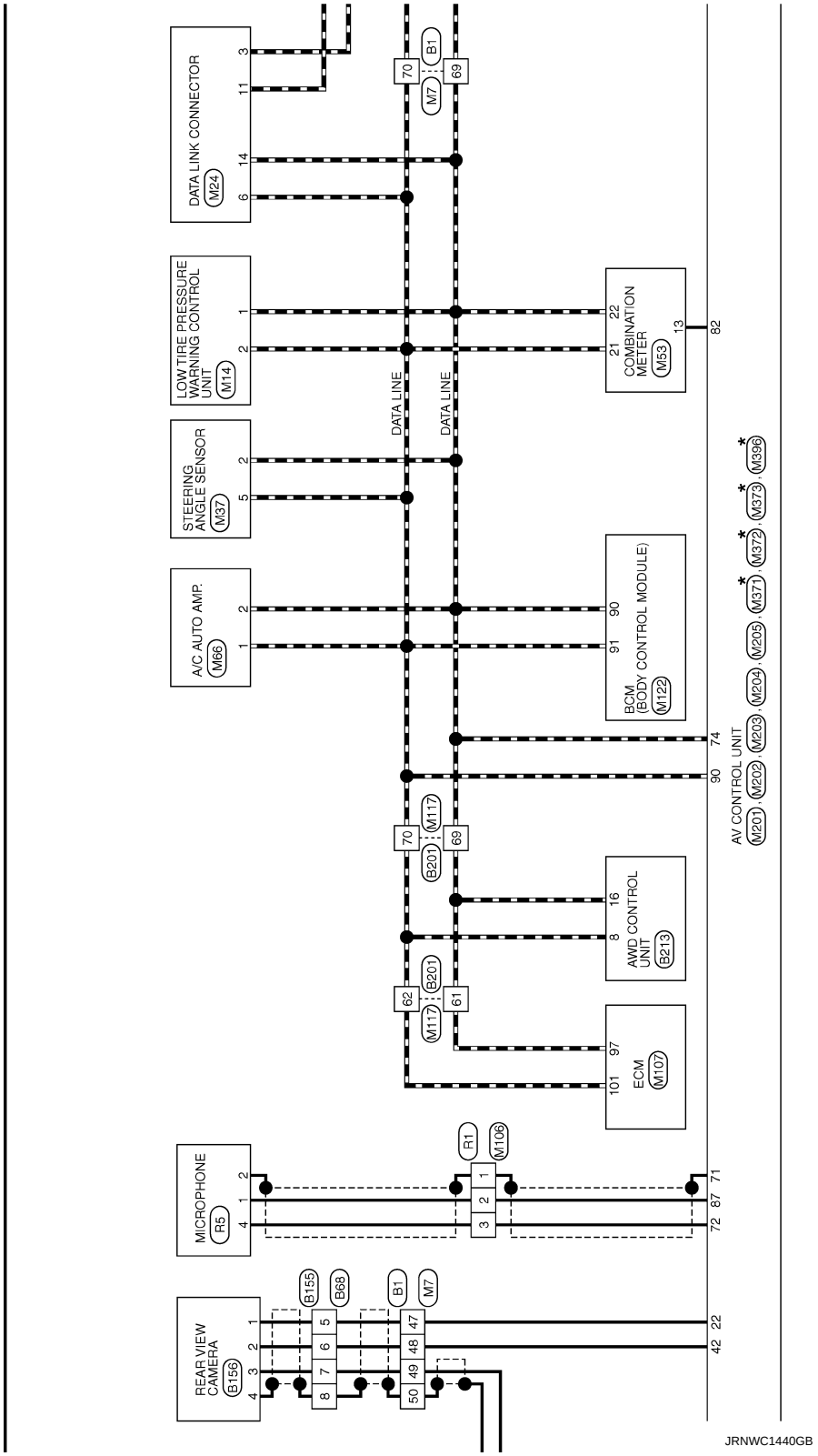
INFOID:0000000009163347

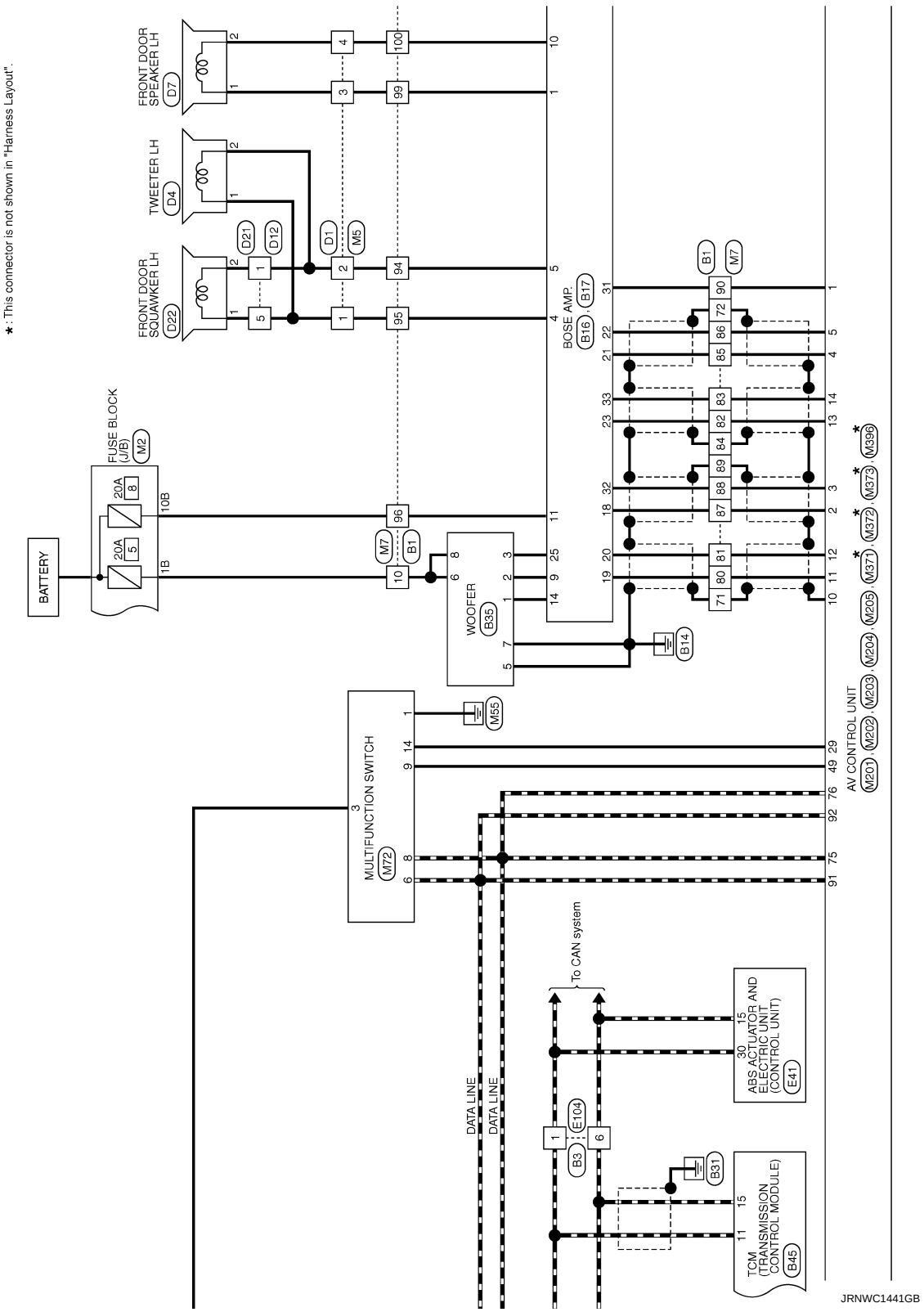
For connector terminal arrangements, harness layouts, and alphabets in a ⬭ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information".

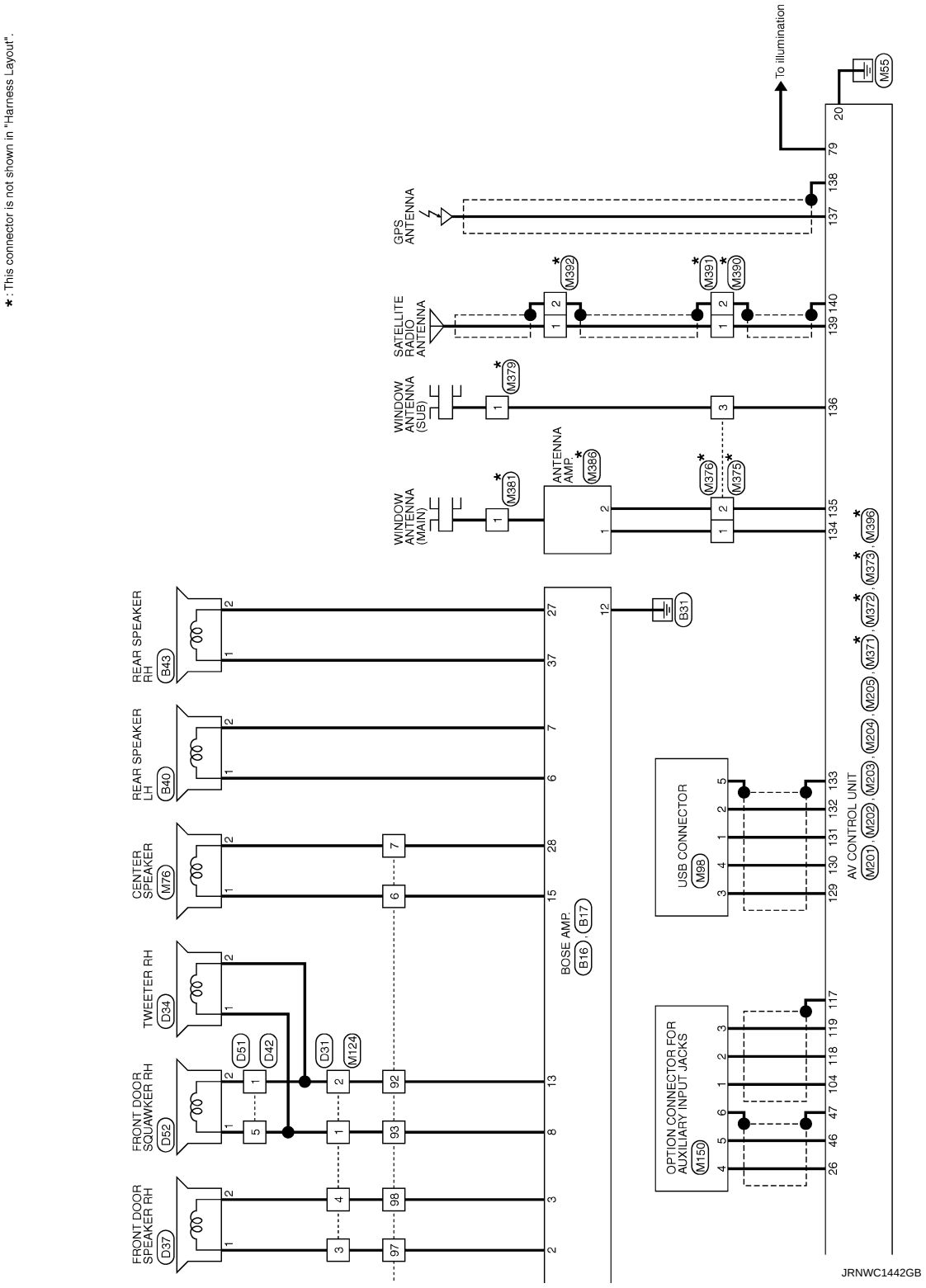
NOTE:

The name MULTIFUNCTION SWITCH indicates the integration of PRESET SWITCH and MULTIFUNCTION SWITCH virtually.




✱: This connector is not shown in "Harness Layout".
DATA LINK CONNECTOR M24
LOW TIRE PRESSURE WARNING CONTROL UNIT M14
STEERING ANGLE SENSOR M37
A/C AUTO AMP. M66
DATA LINE
DATA LINE
COMBINATION METER M53
BCM (BODY CONTROL MODULE) M122
AV CONTROL UNIT M201, M209, M203, M204, M205, ✱ M371, ✱ M372, ✱ M373, ✱ M396
AWD CONTROL UNIT B213
ECM M107
MICROPHONE R5
REAR VIEW CAMERA B156
JRNWC1440GB


★: This connector is not shown in "Harness Layout".
FRONT DOOR SPEAKER LH D7
TWEETER LH D4
FRONT DOOR SQUAWKER LH D22
D21
D12
D1
M5
FUSE BLOCK (J/B) M2
20A 8
20A 5
10B
1B
BATTERY
M7
B1
WOOFER B35
BOSE AMP. B16, B17
B14
M55
MULTIFUNCTION SWITCH 3 M72
AV CONTROL UNIT M201, M202, M203, M204, M205, M371, M372, M373, M396
To CAN system
DATA LINE
DATA LINE
B3, E104
B31
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) E41
TCM (TRANSMISSION CONTROL MODULE) B45
JRNWC1441GB


*: This connector is not shown in "Harness Layout".
To illumination
M55
GPS ANTENNA
SATELLITE RADIO ANTENNA
WINDOW ANTENNA (SUB)
WINDOW ANTENNA (MAIN)
ANTENNA AMP.
M392
M391
M390
M379
M381
M386
M376
M375
REAR SPEAKER RH B43
REAR SPEAKER LH B40
CENTER SPEAKER M76
TWEETER RH D34
FRONT DOOR SQUAWKER RH D52
FRONT DOOR SPEAKER RH D37
D51
D42
D31
M124
BOSE AMP. B16, B17
B31
USB CONNECTOR M98
OPTION CONNECTOR FOR AUXILIARY INPUT JACKS M150
AV CONTROL UNIT M201, M202, M203, M204, M205, M371, M372, M373, M396
JRNWC1442GB

BASIC INSPECTION

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

INFOID:0000000009163349

BEFORE REPLACEMENT

When replacing AV control unit, save or print current vehicle specification with CONSULT configuration before replacement.

AFTER REPLACEMENT

CAUTION:

When replacing AV control unit, you must perform “After Replace ECU” or “Manual Configuration” with CONSULT.

- **Complete the procedure of “After Replace ECU” or “Manual Configuration” in order.**
- **If you set incorrect “After Replace ECU” or “Manual Configuration”, incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:0000000009163350

1.SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “Before Replace ECU” to save or print current vehicle specification. Refer to AV-141, "CONFIGURATION (AV CONTROL UNIT) : Description".

NOTE:

If “Before Replace ECU” can not be used, use the “Manual Configuration”.

>> GO TO 2.

2.REPLACE AV CONTROL UNIT

Replace AV control unit. Refer to AV-168, "Removal and Installation".

>> GO TO 3.

3.WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “After Replace ECU” or “Manual Configuration” to write vehicle specification. Refer to AV-142, "CONFIGURATION (AV CONTROL UNIT) : Special Repair Requirement".

>> GO TO 4.

4.OPERATION CHECK

Check that the operation of the AV control unit and camera images (fixed guide lines and predictive course lines) are normal.

>> WORK END

CONFIGURATION (AV CONTROL UNIT)

CONFIGURATION (AV CONTROL UNIT) : Description

INFOID:0000000009163351

- Since vehicle specifications are not included in the AV control unit after replacement, it is required to write vehicle specifications with CONSULT.
- The AV control unit configuration includes functions as follows.

Function		Description
Read/Write Configuration	Before Replace ECU	Allows the reading of vehicle specification written in AV control unit to store the specification in CONSULT.
	After Replace ECU	Allows the writing of the vehicle information stored in CONSULT into the AV control unit.
Manual Configuration		Allows the writing of the vehicle specification into the AV control unit by hand.

CONFIGURATION (AV CONTROL UNIT) : Special Repair Requirement

INFOID:0000000009163352

1.WRITE VEHICLE SPECIFICATION

CONSULT Configuration
Write vehicle specification into AV control unit.

To write vehicle specification stored in CONSULT into the AV control unit>>GO TO 2.
To write vehicle specification into the AV control unit by hand>>GO TO 3.

2.WRITE STORED DATA

CONSULT Configuration
Select “After Replace ECU” in “Read/Write Configuration”. Write data stored in CONSULT with the “Before Replace ECU” function into the AV control unit.

>> GO TO 4.

3.MANUALLY WRITE VEHICLE SPECIFICATION

CONSULT Configuration
Perform “Manual Configuration”. Refer to AV-142, "CONFIGURATION (AV CONTROL UNIT) : Configuration List".
NOTE:
If selection items are not displayed on the CONSULT screen, touch “NEXT”.

>> GO TO 4.

4.OPERATION CHECK

Check that the operation of the AV control unit and camera images (fixed guide lines and predictive course lines) are normal.

>> WORK END

CONFIGURATION (AV CONTROL UNIT) : Configuration List

INFOID:0000000009163353

CAUTION:
Grasp vehicle specifications precisely. The control of ECU may not function normally if the specifications are misread.
NOTE:
- The items shown in this list depend on vehicle specifications.
- The config list may not be displayed depending on vehicle specifications. This is not a malfunction.

MANUAL SETTING ITEM		Note
Items	Setting value	
STEERING	LHD	—
	RHD	—

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT

AV CONTROL UNIT

AV CONTROL UNIT : Diagnosis Procedure

INFOID:0000000009163404

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	34
Ignition switch ACC or ON	19

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between AV control unit harness connectors and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Value (Approx.)
Battery power supply	M201	19	OFF	Battery voltage
ACC power supply		7	ACC	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between AV control unit and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AV control unit connectors.
3. Check continuity between AV control unit harness connectors and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	M201	20	OFF	Existed

Is the inspection result normal?

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

DISPLAY UNIT

DISPLAY UNIT : Diagnosis Procedure

INFOID:0000000009163405

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	34
Ignition switch ACC or ON	19

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between display unit harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Value (Approx.)
Battery power supply	M93	11	OFF	Battery voltage
ACC power supply		23	ACC	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between Display unit and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector.
3. Check continuity between display unit harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	M93	12	OFF	Existed

Is the inspection result normal?

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

BOSE AMP.

BOSE AMP. : Diagnosis Procedure

INFOID:0000000009163406

1.CHECK FUSE

Check for blown fuses.

Power source	Fuse No.
Battery	8

Is the inspection result normal?

YES >> GO TO 2.
NO >> Be sure to eliminate cause of malfunction before installing new fuse.

2.CHECK POWER SUPPLY CIRCUIT

Check voltage between BOSE amp. harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Voltage (Approx.)
Battery power supply	B16	11	OFF	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check harness between BOSE amp. and fuse.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BOSE amp. connector.
3. Check continuity between BOSE amp. harness connector and ground.

Signal name	Connector No.	Terminal No.	Ignition switch position	Continuity
Ground	B16	12	OFF	Existed

Is the inspection result normal?

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

RGB DIGITAL IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163407

Transmit the image displayed with AV control unit with RGB digital image signal to the display unit.

Diagnosis Procedure

INFOID:0000000009163408

1.CHECK CONTINUITY RGB DIGITAL IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector and AV control unit connector.
3. Check continuity between display unit harness connector and AV control unit harness connector.

Display unit		AV control unit		Continuity
Connector	Terminals	Connector	Terminals	
M397	27	M396	157	Existed
	28		158	

4. Check continuity between display unit harness connector and ground.

Display unit		Ground	Continuity
Connector	Terminals		
M397	27		Not existed
	28		

Is the inspection result normal?

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

2.CHECK RGB DIGITAL IMAGE SIGNAL

1. Connect AV control unit connector.
2. Turn ignition switch ON.
3. Check signal between display unit harness connector and ground.

(+)		(–)	Condition	Voltage (Approx.)
Display unit				
Connector	Terminal			
M397	27	Ground	—	3.3 V
	28			

Is the inspection result normal?

YES >> Replace display unit.
NO >> Replace AV control unit.

COMPOSITE IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163409

AV control unit transmits the playback DVD image signal to the display unit.

Diagnosis Procedure

INFOID:0000000009163410

1.CHECK CONTINUITY COMPOSITE IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AV control unit connector and display unit connector.
3. Check continuity between AV control unit harness connector and display unit harness connector.

AV control unit		Display unit		Continuity
Connector	Terminal	Connector	Terminal	
M203	68	M93	18	Existed

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

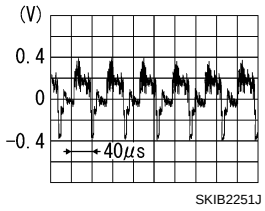
AV control unit		Ground	Continuity
Connector	Terminal		
M203	68		Not existed

Is the inspection result normal?

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

2.CHECK COMPOSITE IMAGE SIGNAL

1. Connect AV control unit connector and display unit connector.
2. Turn ignition switch ON.
3. Check signal between AV control unit harness connector and ground.

(+)		(–)	Condition	Reference value
AV control unit				
Connector	Terminal			
M203	68	Ground	At DVD image is displayed.	

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Is the inspection result normal?

YES >> Replace display unit.
NO >> Replace AV control unit.

DISK EJECT SIGNAL CIRCUIT

Description

INFOID:0000000009163411

The eject signal is output to AV control unit when the eject switch of multifunction switch is pressed.

Diagnosis Procedure

INFOID:0000000009163412

1.CHECK CONTINUITY CD EJECT SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect multifunction switch connector and AV control unit connector.
3. Check continuity between multifunction switch harness connector and AV control unit harness connector.

Multifunction switch		AV control unit		Continuity
Connector	Terminal	Connector	Terminal	
M72	14	M202	29	Existed

4. Check continuity between multifunction switch harness connector and ground.

Multifunction switch		Ground	Continuity
Connector	Terminal		
M72	14		Not existed

Is the inspection result normal?

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

2.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)	Condition	Voltage (Approx.)
AV control unit				
Connector	Terminal			
M202	29	Ground	Pressing the eject switch	0 V
			Except for above	5.0 V

Is the inspection result normal?

YES >> Replace preset switch.
NO >> Replace AV control unit.

MICROPHONE SIGNAL CIRCUIT

Description

INFOID:0000000009163413

Supply power from AV control unit to microphone. The microphone transmits the voice signal to the AV control unit.

Diagnosis Procedure

INFOID:0000000009163414

1.CHECK CONTINUITY BETWEEN AV CONTROL UNIT AND MICROPHONE CIRCUIT

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

AV control unit		Microphone		Continuity
Connector	Terminals	Connector	Terminals	
M203	71	R5	2	Existed
	72		4	
	87		1	

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

AV control unit		Ground	Continuity
Connector	Terminals		
M203	72		Not existed
	87		

Is the inspection result normal?

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

2.CHECK VOLTAGE MICROPHONE VCC

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

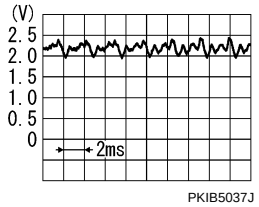
(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M203	72	M203	71	5.0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace AV control unit.

3.CHECK MICROPHONE SIGNAL

1. Connect microphone connector.
2. Check signal between AV control unit harness connector.

(+)		(–)		Condition	Reference value
AV control unit		AV control unit			
Connector	Terminal	Connector	Terminal		
M203	87	M203	71	Give a voice.	

PKIB5037J

Is the inspection result normal?

YES >> Replace AV control unit.
NO >> Replace microphone.

CAMERA IMAGE SIGNAL CIRCUIT

Description

INFOID:0000000009163415

- The AV control unit supplies power to the rear view camera when receiving a reverse signal.
- The rear view camera transmits camera images to the display unit when power is supplied from the AV control unit.

Diagnosis Procedure

INFOID:0000000009163416

1.CHECK CONTINUITY CAMERA POWER SUPPLY CIRCUIT

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

AV control unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M202	22	B156	1	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M202	22		Not existed

Is inspection result normal?

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

2.CHECK VOLTAGE CAMERA POWER SUPPLY

1. Connect AV control unit connector and rear view camera connector.
2. Turn ignition switch ON.
3. Shift the selector lever to “R”.
4. Check voltage between AV control unit harness connector and ground.

(+)		(–)	Condition	Voltage (Approx.)
AV control unit				
Connector	Terminal			
M202	22	Ground	Shift position is “R”.	6.0 V

Is inspection result normal?

YES >> GO TO 3.
NO >> Replace AV control unit. Refer to AV-168, "Removal and Installation".

3.CHECK CONTINUITY CAMERA IMAGE SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect display unit connector and rear view camera connector.
3. Check continuity between display unit harness connector and rear view camera harness connector.

Display unit		Rear view camera		Continuity
Connector	Terminal	Connector	Terminal	
M93	8	B156	3	Existed

4. Check continuity between display unit harness connector and ground.

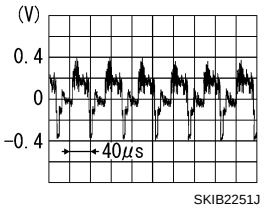
Display unit		Ground	Continuity
Connector	Terminal		
M93	8		Not existed

Is inspection result normal?

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

4. CHECK CAMERA IMAGE SIGNAL

1. Connect display unit connector and rear view camera connector.
2. Turn ignition switch ON.
3. Shift the selector lever to “R”.
4. Check signal between display unit harness connector and ground.

(+)		(–)	Condition	Reference value
Display unit				
Connector	Terminal			
M93	8	Ground	At rear view camera image is displayed.	

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Is inspection result normal?

YES >> Replace display unit. Refer to AV-170, "Removal and Installation".
NO >> Replace rear view camera. Refer to AV-188, "Removal and Installation".

STEERING SWITCH SIGNAL A CIRCUIT

Description

INFOID:0000000009163417

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163418

1.CHECK STEERING SWITCH SIGNAL A CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	6	M36	24	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M201	6		Not existed

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M201	6	M201	15	5.0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-153, "Component Inspection".

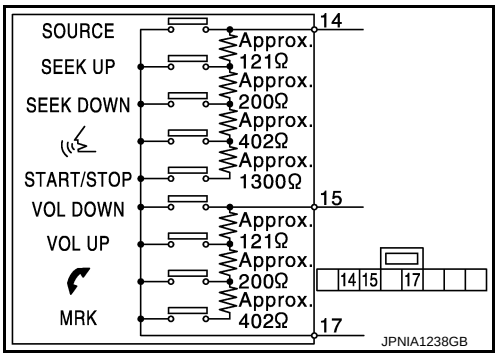
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163419

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

STEERING SWITCH SIGNAL B CIRCUIT

Description

INFOID:0000000009163420

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163421

1.CHECK STEERING SWITCH SIGNAL B CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	16	M36	31	Existed

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

AV control unit		Ground	Continuity
Connector	Terminal		
M201	16		Not existed

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK AV CONTROL UNIT VOLTAGE

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

(+)		(–)		Voltage (Approx.)
AV control unit		AV control unit		
Connector	Terminal	Connector	Terminal	
M201	16	M201	15	5.0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-155, "Component Inspection".

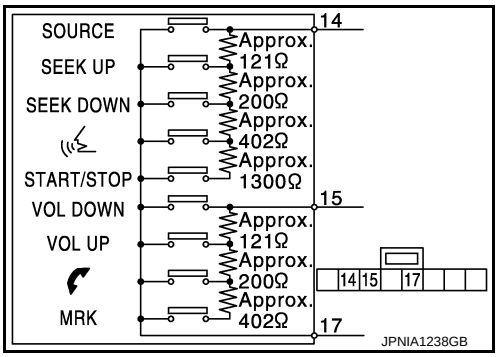
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163422

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

STEERING SWITCH GROUND CIRCUIT

Description

INFOID:0000000009163423

Transmits the steering switch signal to AV control unit.

Diagnosis Procedure

INFOID:0000000009163424

1.CHECK STEERING SWITCH SIGNAL GND CIRCUIT

1. Disconnect AV control unit connector and spiral cable connector.
2. Check continuity between AV control unit harness connector and spiral cable harness connector.

AV control unit		Spiral cable		Continuity
Connector	Terminal	Connector	Terminal	
M201	15	M36	33	Existed

3. Connect AV control unit connector.

Is the inspection result normal?

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

2.CHECK SPIRAL CABLE

Check spiral cable.

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT

1. Connect AV control unit connector.
2. Check continuity between AV control unit harness connector and ground.

AV control unit		Ground	Continuity
Connector	Terminal		
M201	15		Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace AV control unit.

4.CHECK STEERING SWITCH

1. Turn ignition switch OFF.
2. Check steering switch. Refer to AV-157, "Component Inspection".

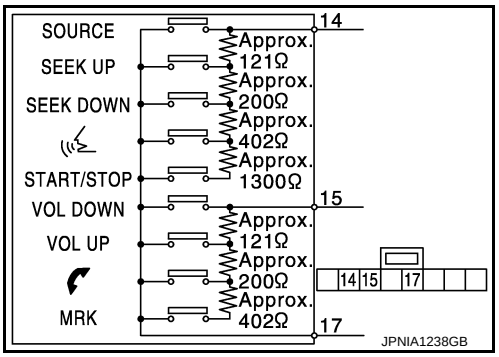
Is the inspection result normal?

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

Component Inspection

INFOID:0000000009163425

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



Standard

Steering switch			Condition	Resistance Ω
Connector	Terminals			
M303	14	17	START / STOP switch ON	1982 – 2063
			switch ON	708 – 737
			SEEK DOWN switch ON	314 – 327
			SEEK UP switch ON	118 – 123
			SOURCE switch ON	1Ω or less
	15		MRK switch ON	708 – 737
			switch ON	314 – 327
			VOL UP switch ON	118 – 123
			VOL DOWN switch ON	1Ω or less

SYMPTOM DIAGNOSIS

MULTI AV SYSTEM SYMPTOMS

Symptom Table

INFOID:0000000009163426

RELATED TO HANDS-FREE PHONE

- Before performing diagnosis, confirm that the cellular phone being used by the customer is compatible with the vehicle.
- It is possible that a malfunction is occurring due to a version change of the phone even though the phone is a compatible type. This can be confirmed by changing the cellular phone to another compatible type, and checking that it operates normally. It is important to determine whether the cause of the malfunction is the vehicle or the cellular phone.

Check Compatibility

1. Make sure the customer's Bluetooth® related concern is understood.
2. Verify the customer's concern.
   NOTE:
   The customer's phone may be required, depending upon their concern.
3. Write down the customer's phone brand, model, and service provider.
   NOTE:
   It is necessary to know the service provider. On occasion, a given phone may be on the approved list with one provider, but may not be on the approved list with other providers.
4. Go to “www.nissanusa.com/bluetooth/”.

a. Using the website's search engine, find out if the customer's phone is on the approved list.

b. If the customer's phone is NOT on the approved list:
   Stop diagnosis here. The customer needs to obtain a Bluetooth® phone that is on the approved list before any further action.

c. If the feature related to the customer's concern shows as “N” (not compatible):
   Stop diagnosis here. If the customer still wants the feature to function, they will need to get an approved phone showing the feature as “Y” (compatible) in the “Basic Features” list.

d. If the feature related to the customer's concern shows as “Y” (compatible):
   Perform diagnosis as per the following table.

Symptoms	Check items	Probable malfunction location
Does not recognize cellular phone connection. (no connection is displayed on the display at the guide.)	Repeat the registration of cellular phone.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "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, voice between each other cannot be heard during the conversation.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "Removal and Installation".
The other party's voice cannot be heard by hands-free phone.	Check the “microphone speaker” in Inspection & Adjustment Mode if sound is heard.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "Removal and Installation".
Originating sound is not heard by the other party with hands-free phone communication.	Sound operation function is normal.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "Removal and Installation".
	Sound operation function does not work.	Microphone signal circuit malfunction. Refer to AV-148, "Diagnosis Procedure".

Symptoms	Check items	Probable malfunction location
The system cannot be operated.	• The retractable hard top is fully closed. • The voice recognition can be controlled. • Steering switch's “MRK”, “VOL UP”, “VOL DOWN” switches works, but “ ” it does not work.	Steering switch malfunction.
	• The retractable hard top is fully closed. • The voice recognition can be controlled. • Steering switch's “MRK”, “VOL UP”, “VOL DOWN”, “ ” switches do not work.	Steering switch signal B circuit malfunction. Refer to AV-154, "Diagnosis Procedure".
	All steering switches do not work.	Steering switch ground circuit malfunction. Refer to AV-156, "Diagnosis Procedure".

RELATED TO RGB IMAGE

Symptoms	Check items	Probable malfunction location
RGB image is not shown.	—	RGB digital image signal circuit malfunction. Refer to AV-145, "Diagnosis Procedure".

RELATED TO VOICE CONTROL

Symptoms	Check items	Probable malfunction location
The voice cannot be controlled even if the voice control screen is displayed.	Voice sounds at “Voice Microphone Test” of Confirmation/Adjustment mode.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "Removal and Installation".
	Voice does not sound at “Voice Microphone Test” of Confirmation/Adjustment mode.	Microphone circuit malfunction. Refer to AV-148, "Diagnosis Procedure".
The voice cannot be controlled (Voice control screen is not displayed).	Steering switch's “SOURCE”, “SEEK UP”, “SEEK DOWN”, “ ”, “START / STOP”switches do not work.	Steering switch signal A circuit malfunction. Refer to AV-152, "Diagnosis Procedure".
	All steering switches do not work.	Steering switch ground circuit malfunction. Refer to AV-156, "Diagnosis Procedure".

RELATED TO AUDIO

Symptoms	Check items	Probable malfunction location
The disk cannot be removed.	—	Disk eject signal circuit malfunction. Refer to AV-147, "Diagnosis Procedure".
No sound comes out or the level of the sound is low.	No sound from all speakers.	• BOSE amp. ON signal circuit malfunction. • BOSE amp. power supply and ground circuits malfunction. Refer to AV-143, "AV CONTROL UNIT : Diagnosis Procedure".
	Sound is not heard from woofer.	• Woofer power supply and ground circuit malfunction. • Sound signal (woofer) circuit malfunction. • Woofer amp. ON signal circuit malfunction.
	Only a certain speaker (front right, front left, rear right, or rear left, etc.) does not output sound.	• Poor connector connection of speaker. • Sound signal circuit malfunction between AV control unit and BOSE amp. • Sound signal circuit malfunction between BOSE amp. and speaker. • Malfunction in speaker. • Malfunction in AV control unit. • Malfunction in BOSE amp.

Symptoms	Check items	Probable malfunction location
Noise is mixed with audio.	Noise comes out from all speakers.	• Malfunction in AV control unit. • Malfunction in BOSE amp.
	Noise comes out only from a certain speaker (front right, front left, rear right, or rear left, etc.).	• Poor connector connection of speaker. • Sound signal circuit malfunction between AV control unit and BOSE amp. • Sound signal circuit malfunction between BOSE amp. and speaker. • Malfunction in speaker. • Poor installation of speaker (e.g. backlash and looseness) • Malfunction in AV control unit. • Malfunction in BOSE amp.
	Noise is mixed with radio only (when the car hits a bump or while driving over bad roads).	Poor connector connection of antenna or antenna feeder.
Radio is not received or poor reception.	• Other audio sounds are normal. • Any radio cannot be received or poor reception is caused even after moving to a service area with good reception (e.g. a place with clear view and no obstacles generating external noises).	• Antenna amp. ON signal circuit malfunction. • Poor connector connection of antenna or antenna feeder.

RELATED TO USB

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

Symptoms	Check items	Possible malfunction location / Action to take
iPod® or USB memory can not be recognized.	—	• USB harness malfunction. • USB connector malfunction.

iPod® is a trademark of Apple inc., registered in the U.S. and other countries.

RELATED TO DVD MODE

Symptoms	Check items	Probable malfunction location
The disk cannot be removed.	—	Disk eject signal circuit malfunction. Refer to AV-147, "Diagnosis Procedure".
DVD sound is not heard.	No sound from all speakers.	• BOSE amp. ON signal circuit. • BOSE amp. power supply and ground circuit. Refer to AV-144, "BOSE AMP. : Diagnosis Procedure".
	Sound is heard only from specific places (RH front, RH rear, LH front and LH rear).	Audio signal circuit of suspect system.

RELATED TO CAMERA

Symptoms	Check items	Probable malfunction location
Camera image is not shown. (Vehicle width and predictive course line are displayed.)	—	• Camera image signal circuit. • Camera power supply and ground circuits. Refer to AV-150, "Diagnosis Procedure".
Camera image does not switch.	Select “Camera Cont.” of Confirmation/ Adjustment mode, Reverse Sensor is not turned ON at “Connection Confirmation”.	Reverse signal circuit malfunction.
	Select “Camera Cont.” of Confirmation/ Adjustment mode, Reverse Sensor is turned ON at “Connection Confirmation”.	AV control unit malfunction. Replace AV control unit. Refer to AV-168, "Removal and Installation".

RELATED TO STEERING SWITCH

Symptoms	Probable malfunction location
None of the steering switch operations work.	Steering switch ground circuit malfunction. Refer to AV-156, "Diagnosis Procedure".
Only specified switch cannot be operated.	Steering switch malfunction.
Steering switch's “SOURCE”, “SEEK UP”, “SEEK DOWN”, “ ”, “START / STOP” switches do not work.	Steering switch signal A circuit malfunction. Refer to AV-152, "Diagnosis Procedure".
Steering switch's “MRK”, “VOL UP”, “VOL DOWN”, “ ” switches do not work.	Steering switch signal B circuit malfunction. Refer to AV-154, "Diagnosis Procedure".

NORMAL OPERATING CONDITION

Description

INFOID:0000000009163427

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 systems in the video mode.	Press “DISC-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.
Screen not clear.	Contrast setting is not appropriate.	Adjust the contrast of the display.
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”.
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.
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.

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 recognize your command. or The system recognizes your command incorrectly	The interior of the vehicle is too noisy.	Close the windows or have other occupants quiet.
	The volume of your voice is too low.	Speak louder.
	The volume if your voice is too loud.	Speak softer.
	Your pronunciation is unclear.	Speak clearly.
	You are speaking before the voice recognition is ready	Press and release “  ” switch on the steering switch, and speak a command after the tone sounds.
	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.
	Only a limited range of voice commands is usable for each screen.	Use a correct voice command appropriate for the current screen.
	The fan of the air conditioner is too loud.	Lower the fan speed as necessary as voice commands can be recognized more easily.
The system cannot be operated.	The retractable hard top is open.	• Close the retractable hard top. • Open and close the retractable hard top before operating the system.

Related to Item Choice

The system should respond correctly to all voice commands without difficulty. If problems are encountered, follow the solutions given in this guide for the appropriate error.

Where the solutions are listed by number, try each solution in turn, starting with number one, until the problem is resolved.

Symptom/ error message	Solution
Displays “COMMAND NOT RECOGNIZED” or the system fails to interpret the command correctly.	1. Ensure that the command format is valid.
	2. Speak clearly without pausing between words and at a level appropriate to the ambient noise level.
	3. Ensure that the ambient noise level is not excessive, for example, windows open or defrost on. **NOTE:** If it is too noisy to use the phone, it is likely that voice commands will not be recognized.
	4. If optional words of the command have been omitted, then command should be tried with these in place.
The system consistently selects the wrong voicetag	1. Ensure that the voicetag requested matches what was originally stored. This can be confirmed by giving the “Addressbook” Directory or Phone Directory command.
	2. Replace one of the voicetags being confused with a different voicetag.

Related to Telephone

The system should respond correctly to all voice commands without difficulty. If problems are encountered, try the following solutions.

Where the solutions are listed by number, try each solution in turn, starting with number 1, until the problem is resolved.

Symptom	Solution
System fails to interpret the command correctly.	1. Ensure that the command is valid.
	2. Ensure that the command is spoken after the tone.
	3. Speak clearly without pausing between words and at level appropriate to the ambient noise level in the vehicle.
	4. Ensure that the ambient noise level is not excessive (for example, windows open or defroster on). **NOTE:** If it is too noisy to use the phone, it is likely that the voice commands will not be recognized.
	5. If more than one command was said at a time, try saying the commands separately.
	6. If the system consistently fails to recognize commands, the voice training procedure should be carried out to improve the recognition response for the speaker. See “Speaker adaptation (SA) mode” earlier in this section. Refer to “OWNER’S MANUAL”.
The system consistently selects the wrong voicetag	1. Ensure that the phone book entry name requested matches what was originally stored. This can be confirmed by using the “List Names” command.
	2. Replace one of the names being confused with a new name.

RELATED TO AUDIO

- The majority of the audio malfunctions are the result of outside causes (bad CD/cassette, 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) 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.

Symptom	Cause and Counter measure
Cannot play	Check if the CD was inserted correctly.
	Check if the CD is scratched or dirty.
	Check if there is condensation inside the player, and if there is, wait until the condensation is gone (about 1 hour) before using the player.
	If there is a temperature increase error, the player will play correctly after it returns to the normal temperature.
	If there is a mixture of music CD files (CD-DA data) and MP3/WMA/AAC files on a CD, only the music CD files (CD-DA data) will be played.
	Files with extensions other than “.MP3”, “.WMA”, “.AAC”, “.mp3”, “.wma”, or “.aac” cannot be played. In addition, the character codes and number of characters for folder names and file names should be in compliance 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 writing applications or other text editing applications.
	Check if the finalization process, such as session close and disc close, is done for the disc.
	Check if the CD is protected by copyright.
	Disks recorded in live file system format are not supported. (For Microsoft Windows Vista, check the settings.)
Poor sound quality	Check if the CD is scratched or dirty.
It takes a relatively long time before the music starts playing.	If there are many folder or file levels on the MP3/WMA/AAC CD, or if it is a multisession disc, some time may be required before the music starts playing.
Music cuts off or skips	The writing software and hardware combination might not match, or the writing speed, writing depth, writing width might not match the specifications. Try using the slowest writing speed.
Skipping with high bit rate files	Skipping may occur with large quantities if data such as for high bit rate data.
Move immediately to the next song when playing	When a non-MP3/WMA/AAC file has been given an extension of “.MP3”, “.WMA”, “.AAC” “.mp3”, “.wma”, or “.aac” or when play is prohibited by copyright protection, the player will skip to the next song.
The songs do not play back in the desired order.	The playback order is the order in which the files were written by the software, so the files might not play in the desired order.
Poor reception only from a certain radio broadcast station.	Check incoming radio wave signal strength of applicable broadcast station.
Buzz/rattle sound from speaker	The majority of rattle sounds are not indicative of an issue with the speaker, usually something nearby the speaker is causing the rattle.

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 DVD

Symptom	Possible cause	Possible solution
Not working as operated	Some operations may be rejected or may not function as intended because of the manufacturer's intent, depending on DVD.	This is not a malfunction.
Operation not accepted	If a requested operation is prohibited, then a message is displayed on the screen. (Message display depends on DVD.)	This is not a malfunction.

Symptom	Possible cause	Possible solution
DVD can not be played	Check that the DVD is inserted in the right place.	Upturn the DVD (facing the title upward).
	Check if there is condensation inside the player.	wait until the condensation is gone (about 1 hour) before using the player.
	DVD menu is displayed.	Select item to touch “ENTER”
	Insertion of a DVD with a different region code.	DVDs with a different region code can not be played. Check DVD.
	Some DVD softwares may not be played because not all DVD softwares fully comply in the standard.	This is not a malfunction.
Interruption during playback or flicker in the display	Check that the DVD has no scratches and dirt.	Errors may not be corrected depending on the size of scratches.
Low sound quality		Wipe and clean the dirt on the disc.
Distortion in picture	In the process of fast-forward or fast-reverse.	This is not a malfunction.
Subtitles not shown	Subtitle setting is OFF.	Set subtitle.
	Subtitle is not included in the software.	Check DVD.
Not played in set language	If a language is not included in the DVD, then the DVD is played in a recommended language.	Check DVD.
Not played with set subtitle	If a set subtitle is not included in the DVD, then the DVD is played with a recommended subtitle.	Check DVD.
Subtitle and language not selectable (not played with set subtitle or in set language)	The DVD is not multilanguage-capable.	The inclusion of the number of languages depends on DVD. Languages may be selectable on the Menu screen. Check DVD.
	The DVD has a priority language or setting.	If the DVD has a priority language or settings, then settings changed with this device are not reflected.
Angle unchangeable	Plural angles are not recorded in the software.	Check if the DVD is multi-angle-capable.
Unusual screen display	Display mode to the output aspect ratio for the DVD software is inappropriate.	Switch to the appropriate display mode.
Playback time is indicated, but no sound comes out.	Playback of Mix mode Truck 1. (Mix mode: Format including Truck 1 with data other than music and Trucks from Truck 2 with music data.)	Play music data included in trucks from Truck 2.

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 <Day/Night> when you turn on the headlights.

Symptom	Possible cause	Possible solution
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”.
The location of the vehicle icon is misaligned from the actual position.	When using tire chains or replacing the tires, speed calculations based on the speed sensor may be incorrect.	Drive the vehicle for a while [at approximately 30 km/h (19 MPH) for about 30 minutes] to automatically correct the vehicle icon position. If this does not correct the vehicle icon position, contact an INFINITI dealer.
	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.	If you want to go to that waypoint again, you need to 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.
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.
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 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 HANDS-FREE PHONE

Symptom	Cause and Counter measure
Does not recognize cellular phone connection. (No connection is displayed on the display at the guide.)	Some Bluetooth® enabled cellular phones may not be recognized by the in-vehicle phone module. Refer to “RELATED TO HANDS-FREE PHONE (Check Compatibility)” of MULTI AV SYSTEM SYMPTOM.
Cannot use hands-free phone	Customer will not be able to use a hands-free phone under the following conditions. • The vehicle is outside of the telephone service area. • The vehicle is in an area where it is difficult to receive radio waves; such as in a tunnel, in an underground parking garage, near a tall building or in a mountainous area. • The cellular phone is locked to prevent it from being dialed. **NOTE:** While a cellular phone is connected through the Bluetooth® wireless connection, the battery power of the cellular phone may discharge quicker than usual. The Bluetooth® Hands-Free Phone System cannot charge cellular phones.
The other party's voice cannot be heard by hands-free phone.	When the radio wave condition is not ideal or ambient sound is too loud, it may be difficult to hear the other person's voice during a call.
Poor sound quality	Do not place the cellular phone in an area surrounded by metal or far away from the in-vehicle phone module to prevent tone quality degradation and wireless connection disruption.

REMOVAL AND INSTALLATION

AV CONTROL UNIT

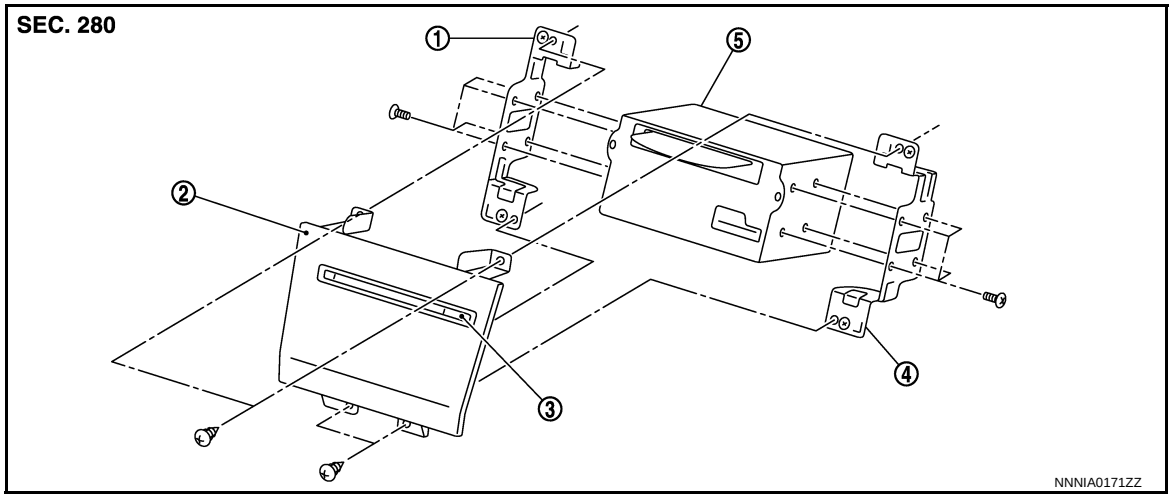
Exploded View

INFOID:0000000009163428

CAUTION:
Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.
NOTE:
After the ignition switch is turned OFF, the AV control unit continues operating for approximately 30 seconds. Therefore, data corruption may occur if battery voltage is cut off within 30 seconds.

REMOVAL
Refer to IP-12, "Exploded View".

DISASSEMBLY



1. Bracket LH
2. Cluster lid C (lower)
3. Disk eject switch
4. Bracket RH
5. AV control unit

Removal and Installation

INFOID:0000000009163429

CAUTION:
Be careful of the following items at removal and installation of A/T shift selector. Refer to TM-16, "Removal and Installation" for details.
- **For electro-medical apparatus user, keep the range sensor away from the device.**
- **Keep the range sensor away from magnetic objects during work.**
- **Remove battery terminal and AV control unit after a lapse of 30 seconds or more after turning the ignition switch OFF.**

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

REMOVAL
NOTE:
When replacing AV control unit, save or print current vehicle specification with CONSULT configuration before replacement. Refer to AV-141, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

1. Remove the cluster lid C (lower). Refer to IP-13, "Removal and Installation".
2. Disconnect the connector, and then remove the AV control unit together with the bracket from the vehicle.
3. Remove the bracket from the AV control unit.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

When replacing AV control unit, you must perform “Read/Write Configuration” with CONSULT. Refer to AV-141, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

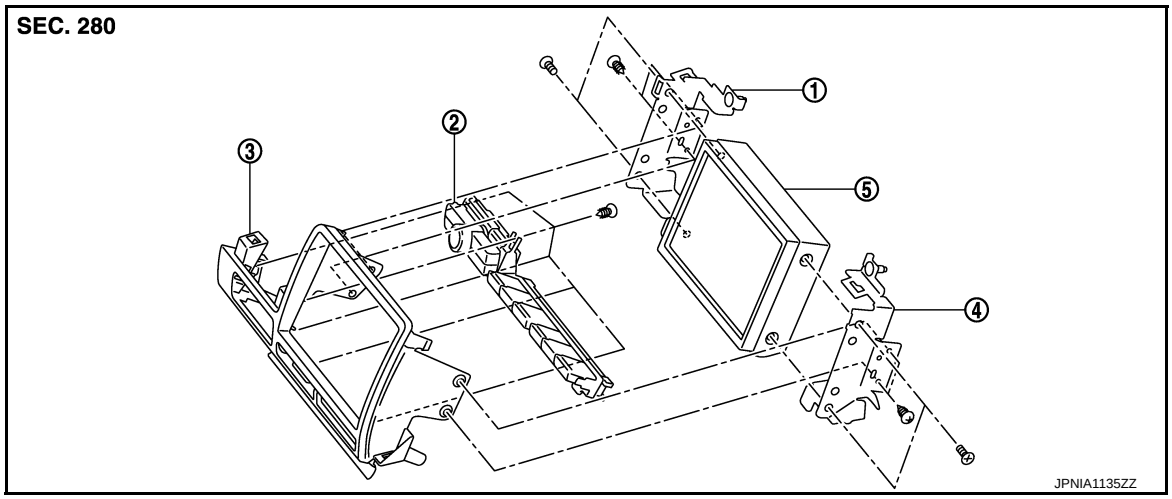
DISPLAY UNIT

Exploded View

INFOID:0000000009163430

REMOVAL
Refer to IP-12, "Exploded View".

DISASSEMBLY



1. Bracket (LH)
2. Multifunction switch
3 Cluster lid C (upper)
4. Bracket (RH)
5. Display unit

Removal and Installation

INFOID:0000000009163431

REMOVAL

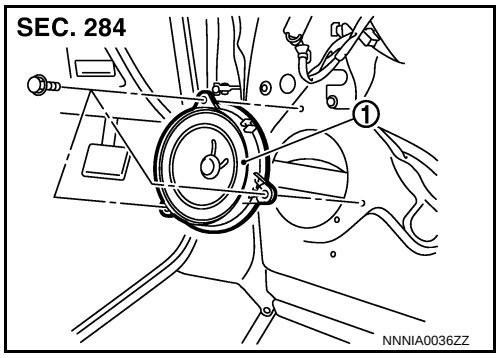
1. Remove the instrument panel pad A. Refer to IP-13, "Removal and Installation".
2. Disconnect the connector, and then remove the display together with the bracket and the cluster lid C (upper).
3. Remove the display together with the bracket from the cluster lid C (upper).
4. Remove the bracket from the display.

INSTALLATION
Install in the reverse order of removal.

FRONT DOOR SPEAKER

Exploded View

INFOID:0000000009163432



1. Front door speaker

Removal and Installation

INFOID:0000000009163433

REMOVAL

1. Remove the front door finisher. Refer to INT-12, "Exploded View".
2. Disconnect the connector and remove the screws, and remove the front door speaker.

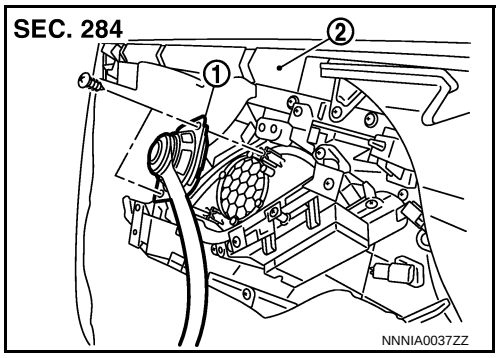
INSTALLATION

Install in the reverse order of removal.

FRONT DOOR SQUAWKER

Exploded View

INFOID:0000000009163434



1. Front door squawker
2. Front door finisher

Removal and Installation

INFOID:0000000009163435

REMOVAL

1. Remove the front door finisher. Refer to INT-12, "Exploded View".
2. Remove the screws, and then remove the front door squawker from the front door finisher.

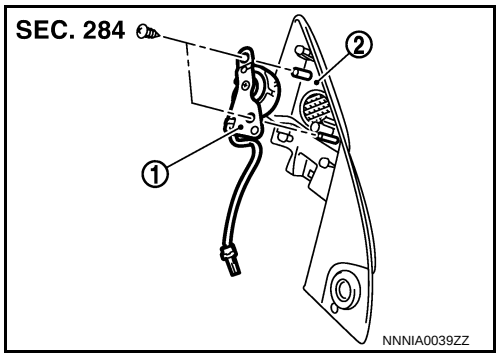
INSTALLATION

Install in the reverse order of removal.

TWEETER

Exploded View

INFOID:0000000009163436



1. Tweeter
2. Door corner cover

Removal and Installation

INFOID:0000000009163437

REMOVAL

1. Remove the door corner cover. Refer to MIR-16, "DOOR MIRROR ASSEMBLY : Exploded View".
2. Remove the screws, and remove the tweeter from the door corner cover.

INSTALLATION

Install in the reverse order of removal.

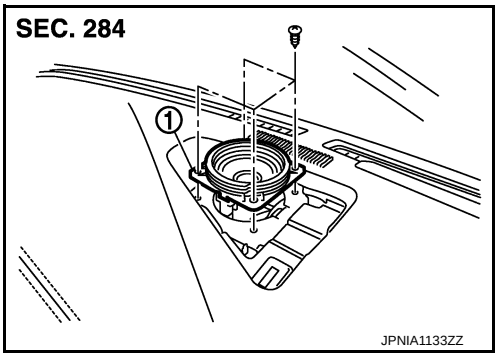
CENTER SPEAKER

Exploded View

INFOID:0000000009163438

REMOVAL

Refer to IP-12, "Exploded View".



1. Center speaker

Removal and Installation

INFOID:0000000009163439

REMOVAL

1. Remove the center speaker grille. Refer to IP-13, "Removal and Installation".
2. Remove the screws and disconnect the connector, and then remove the center speaker.

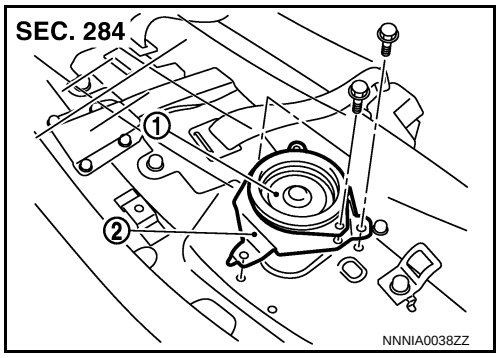
INSTALLATION

Installation is the reverse order of removal.

REAR SPEAKER

Exploded View

INFOID:0000000009163440



1. Rear speaker
2. Speaker bracket

Removal and Installation

INFOID:0000000009163441

REMOVAL

1. Remove the rear parcel shelf finisher. Refer to INT-19, "Exploded View".
2. Remove the rear speaker bracket mounting screws and disconnect the connector, and then remove the rear speaker together with the speaker bracket.
3. Remove the speaker from the speaker bracket.

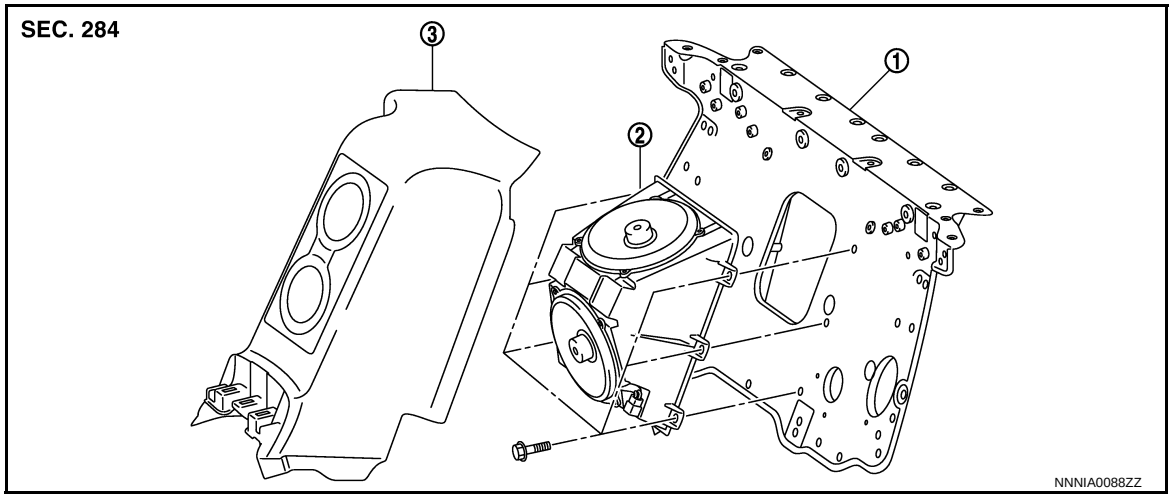
INSTALLATION

Install in the reverse order of removal.

WOOFER

Exploded View

INFOID:0000000009163442



1. Rear seatback support
2. Woofer
3. Rear seat center finisher

Removal and Installation

INFOID:0000000009163443

REMOVAL

1. Remove the rear seat center finisher. Refer to INT-19, "Exploded View".
2. Remove the mounting screws and disconnect the connector, and then remove the woofer.

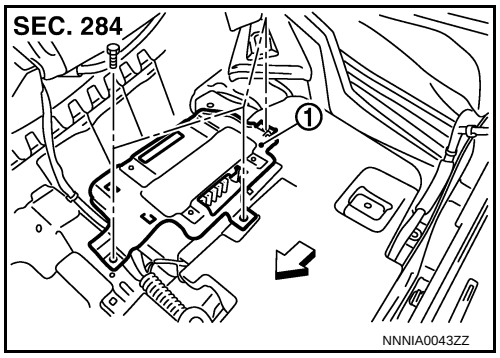
INSTALLATION

Install in the reverse order of removal.

BOSE AMP.

Exploded View

INFOID:0000000009163444



1. BOSE amp.

⇦: Front of vehicle

Removal and Installation

INFOID:0000000009163445

REMOVAL

1. Remove the driver seat. Refer to SE-49, "Removal and Installation".
2. Turn over the floor carpet (refer to INT-22, "Exploded View"), remove the screws and disconnect the connector, and then remove the BOSE amp.

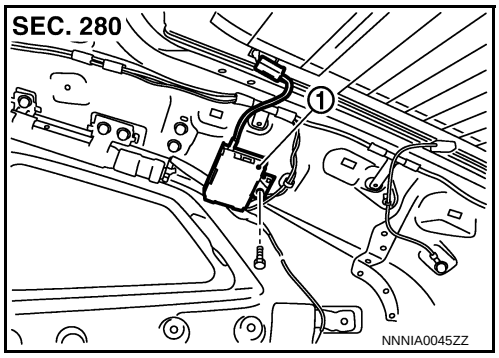
INSTALLATION

Installation is the reverse order of removal.

ANTENNA AMP.

Exploded View

INFOID:0000000009163446



1. Antenna amp.

Removal and Installation

INFOID:0000000009163447

REMOVAL

1. Remove the rear pillar finisher (RH). Refer to INT-15, "Exploded View".
2. Remove the screw and disconnect the connector, and then remove the radio antenna amplifier from the vehicle.

INSTALLATION

Install in the reverse order of removal.

MULTIFUNCTION SWITCH

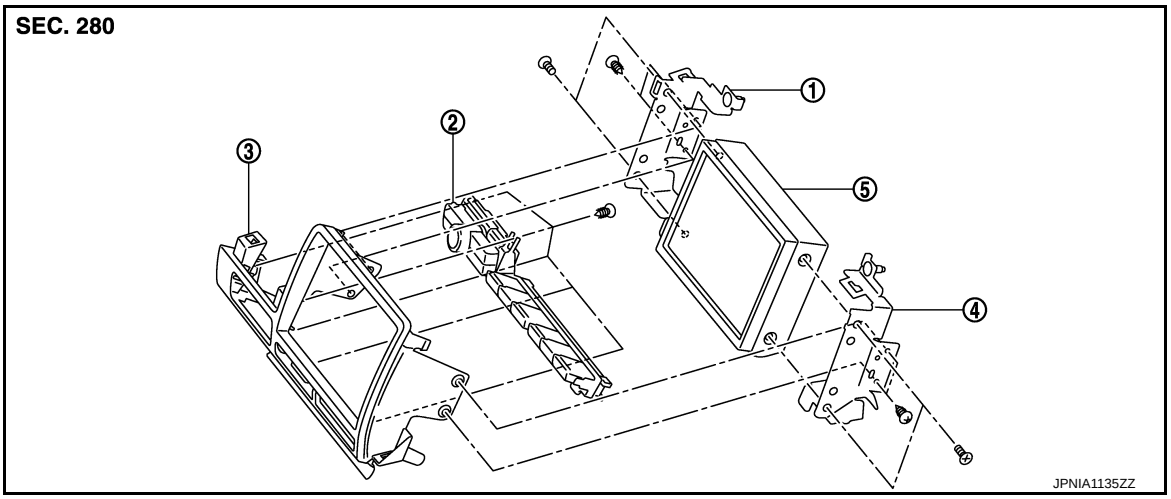
Exploded View

INFOID:0000000009163448

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



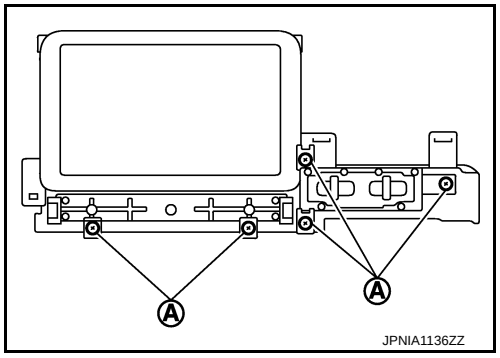
1. Bracket (LH)
2. Multifunction switch
3. Cluster lid C (upper)
4. Bracket (RH)
5. Display unit

Removal and Installation

INFOID:0000000009163449

REMOVAL

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



INSTALLATION

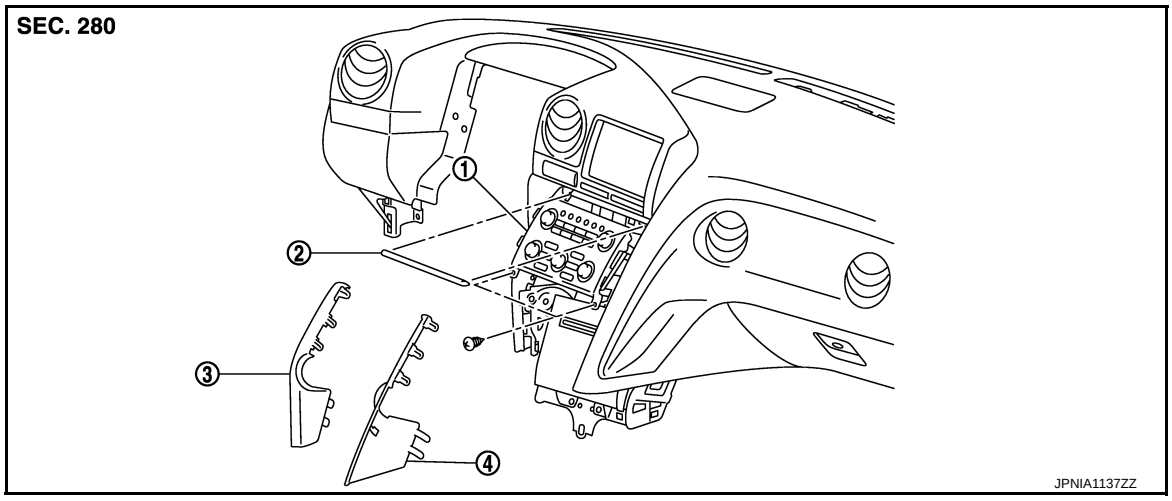
Installation is the reverse order of removal.

PRESET SWITCH

Exploded View

INFOID:0000000009163450

REMOVAL
Refer to IP-12, "Exploded View".



1. Preset switch
2. Instrument panel garnish (upper)
3. Instrument panel garnish LH
4. Instrument panel garnish RH

Removal and Installation

INFOID:0000000009163451

REMOVAL

1. Remove the instrument panel garnish (upper) and the instrument panel garnish LH/RH. Refer to IP-13, "Removal and Installation".
2. Remove the screws and disconnect the connector, and then remove the preset switch.

INSTALLATION
Install in the reverse order of removal.

DISK EJECT SWITCH

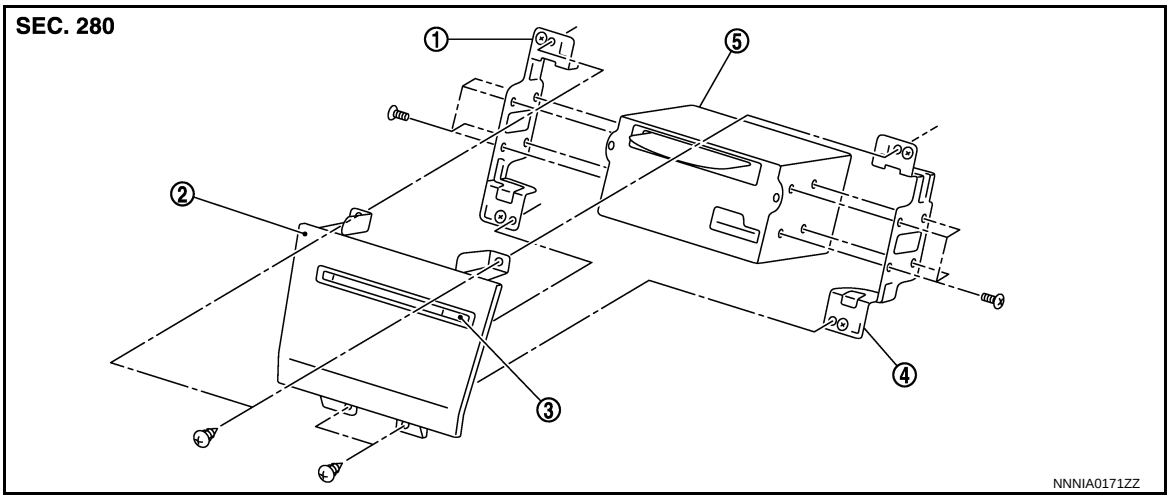
Exploded View

INFOID:0000000009163452

REMOVAL

Refer to IP-12, "Exploded View".

DISASSEMBLY



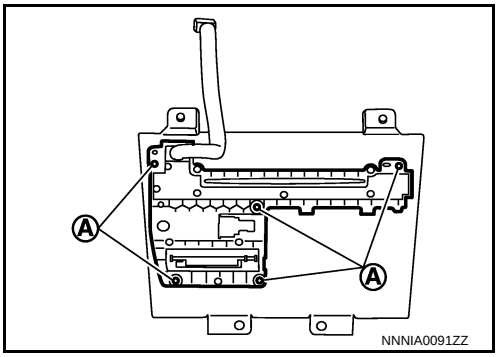
1. Bracket LH
2. Cluster lid C (lower)
3. Disk eject switch
4. Bracket RH
5. AV control unit

Removal and Installation

INFOID:0000000009163453

REMOVAL

1. Remove the cluster lid C (lower). Refer to IP-13, "Removal and Installation".
2. Remove the screws (A), and then remove the disk eject switch.



INSTALLATION

Install in the reverse order of removal.

NOTE:

When installing disk eject switch, do not allow the hard wire that connects disk eject switch and preset switch to get caught in between AV control unit and disk eject switch.

STEERING SWITCH

Exploded View

INFOID:0000000009163454

Refer to ST-10, "Exploded View".

Removal and Installation

INFOID:0000000009163455

REMOVAL

Refer to ST-10, "Removal and Installation".

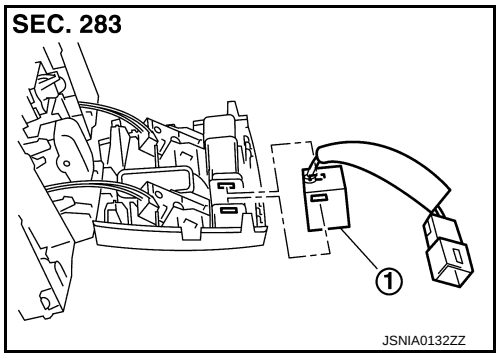
INSTALLATION

Install in the reverse order of removal.

MICROPHONE

Exploded View

INFOID:0000000009163456



1. Microphone

Removal and Installation

INFOID:0000000009163457

REMOVAL

1. Remove map lamp. Refer to INL-18, "Exploded View".
2. Remove the microphone from the map lamp.

INSTALLATION

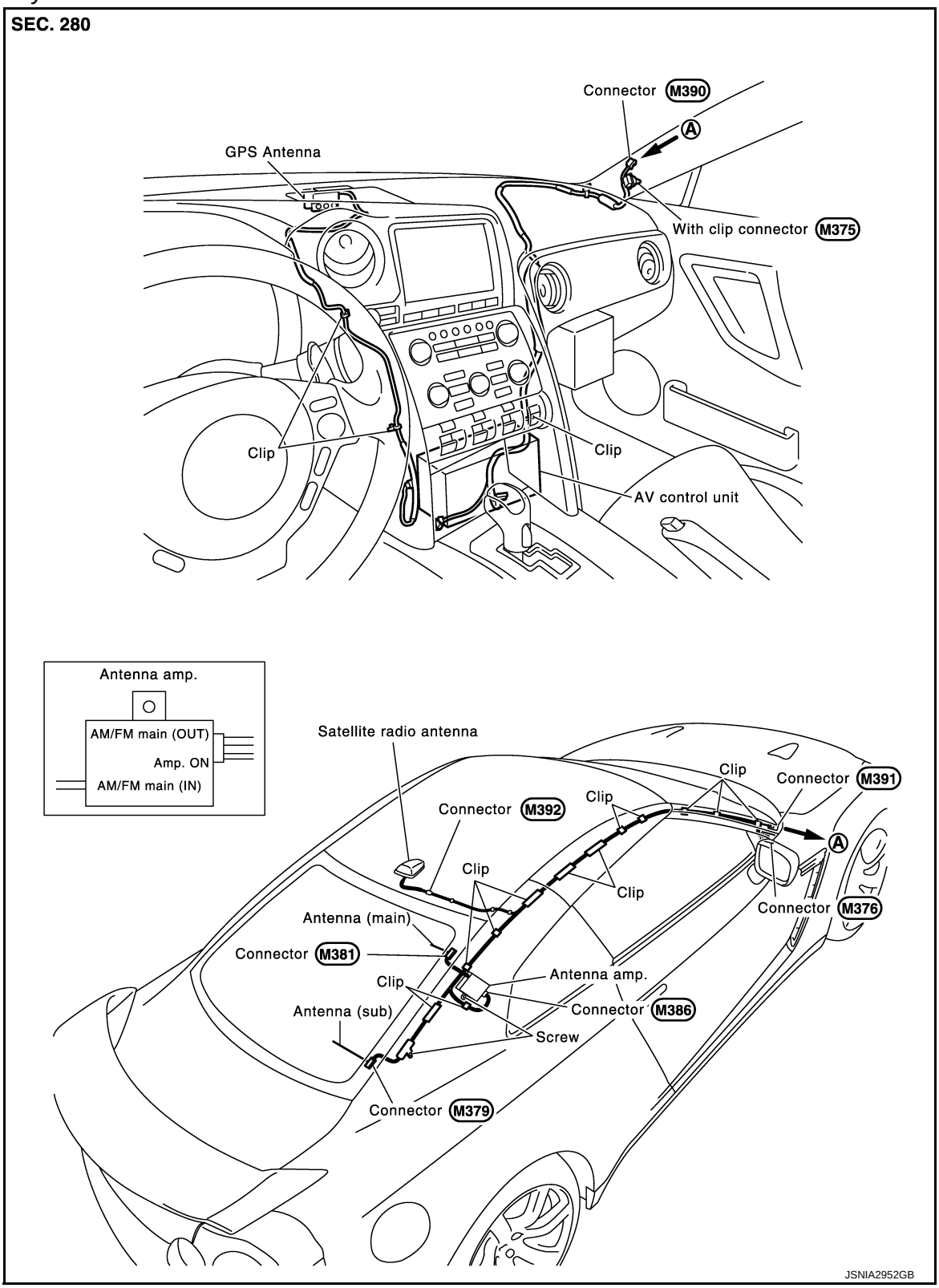
Install in the reverse order of removal.

GPS ANTENNA

Exploded View

INFOID:0000000009163458

Feeder layout

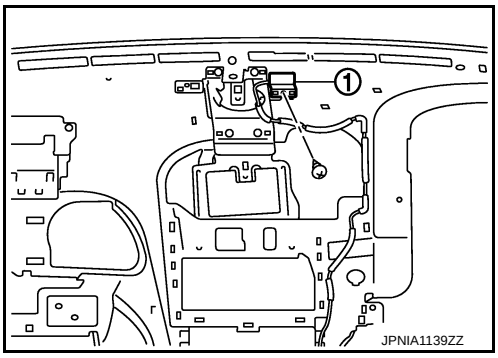


Removal and Installation

INFOID:0000000009163459

REMOVAL

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



INSTALLATION

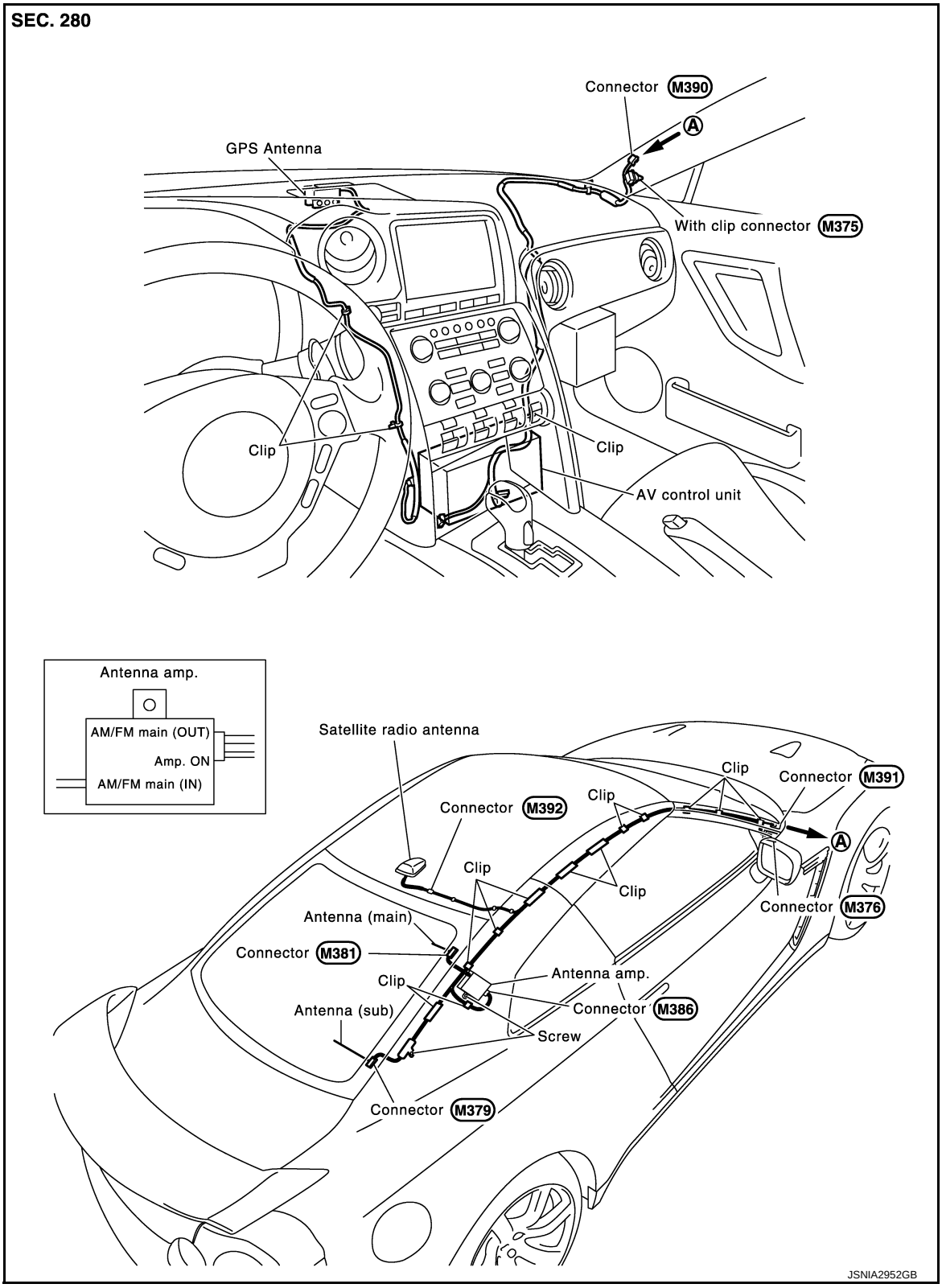
Install in the reverse order of removal.

ANTENNA FEEDER

Feeder layout

INFOID:0000000009163460

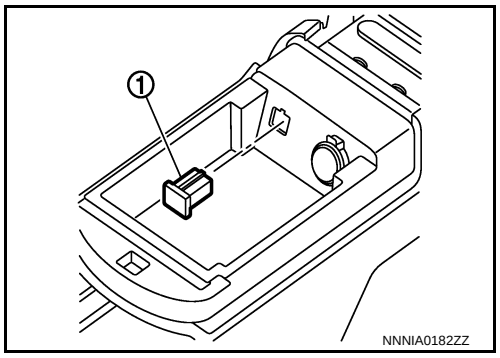
SEC. 280



USB CONNECTOR

Exploded View

INFOID:0000000009163461



1. USB connector

Removal and Installation

INFOID:0000000009163462

REMOVAL

1. Remove center console. Refer to IP-23, "Exploded View".
2. Push the pawl from the back of center console to remove USB connector.

INSTALLATION

Install in the reverse order of removal.

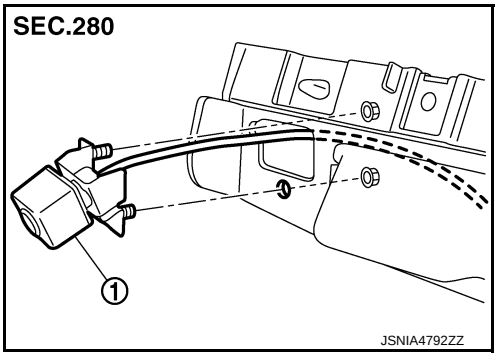
REAR VIEW CAMERA

Exploded View

INFOID:0000000009163463

REMOVAL
Refer to EXT-20, "Exploded View".

DISASSEMBLY



1. Rear view camera

Removal and Installation

INFOID:0000000009163464

REMOVAL

1. Remove license lamp bracket. Refer to EXT-21, "Removal and Installation".
2. Remove the mounting nuts of rear view camera.
3. Remove rear view camera from license lamp bracket.

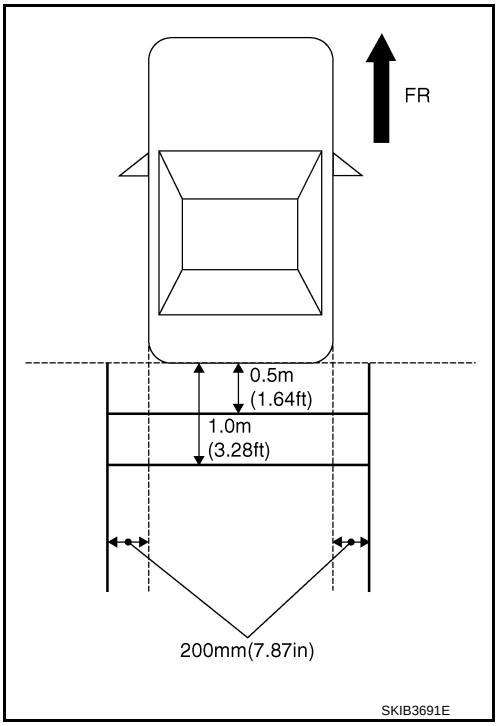
INSTALLATION
Install in the reverse order of removal.
NOTE:
Adjust the guide line position if the guide line position is shifted after installing the rear view camera. Refer to AV-188, "Adjustment".

Adjustment

INFOID:0000000009163465

Adjust the guide line position if the guide line position is shifted after installing the rear view camera.

1. Draw lines on rearward area of the vehicle passing through the following points: 200 mm (7.87 in) from both sides of the vehicle, and 0.5 m (1.64 ft), 1.0 m (3.28 ft) from the rear end of the bumper.
2. Set into “Adjust offset of rear view camera” mode of Confirmation / Adjustment mode.

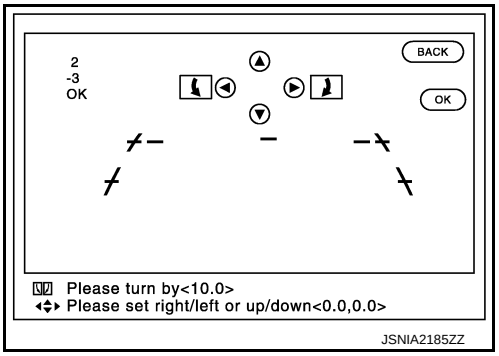


3. Rotate the center dial, and then select the guiding line pattern so that its angle is aligned with the correction line of the rear of the vehicle.

Selected pattern	: –10° to 10°

4. Make fine adjustment to the correction line of the rear of the vehicle with up/down/left/right switches so that its position is aligned with the guiding line. Press “OK” switch and record the adjusted guiding line position to the camera control unit.

Up/Down adjustment range	: –10° to 10°
Left/Right adjustment range	: –10° to 10°



CAUTION:
Never operate other function such as pressing BACK while writing index data.