SECTION DAS
DRIVER ASSISTANCE SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000013583256

Risk of injury

There is a risk of injury caused by parts becoming projectiles if uncontrolled deployment of air bag or seat belt pre-tensioner occurs, or by storing air bag with the deployment side facing downwards. When scrapping air bag or seat belt pre-tensioner by means of controlled deployment, there is also a danger present if a sufficiently safe distance is not maintained, or if opening using cutting torches or other cutting tools, or due to smelting or if parts that are not yet triggered are exposed to a blaze or a smoldering fire at landfills.

Safety instructions/precautions

- Removed air bag must always be stored with deployment side facing up.
- Acquisition, transportation, storage, testing and assembly work should only be performed or supervised by properly trained personnel.
- Install air bag or seat belt pre-tensioner immediately following retrieval from storage.
- Air bag and seat belt pre-tensioner must be protected from flying sparks, open fires and temperature exceeding 100°C (212°F).
- Never transport air bag and seat belt pre-tensioner in the passenger compartment. Store them securely in the luggage room of the vehicle in their original replacement part packaging and secure them so that they cannot slip around.
- Never allow air bag and seat belt pre-tensioner to come into contact with grease, oil, or cleaning agents.
- Perform system tests using approved testing equipment only, and only when the units are properly installed and the vehicle is unoccupied.
- Before the initial hookup of the battery or an external power supply, the ignition must be switched on and the vehicle unoccupied.
- Air bag and seat belt pre-tensioner that fall from a height of more than 0.5 m must be replaced.
- When scrapping by means of controlled deployment of air bag and seat belt pre-tensioner, a safe distance of at least 10 m must be maintained.
- Before starting work on air bag and seat belt pre-tensioner and work on components that are connected to air bag and seat belt pre-tensioner or require and intervention in their electric circuit (e.g. when removing the steering wheel):
- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery
- Before starting bodywork in combination with welding or retrofitting, during which work is performed on uninsulated, current-carrying lines or require an intervention in their electric circuit (e.g. when removing the steering wheel):
- Disconnect any external power sources (e.g. charger).
- Disconnect and insulate ground line of battery.
- During welding, disconnect plug connection and from control unit of air bag.
- When the air bag deploys, the pyrofuse activates and the power source from the battery is disconnected. This prevents possible fires caused by electric leakage after an accident occurs.

Precautions for Removing Battery Terminal

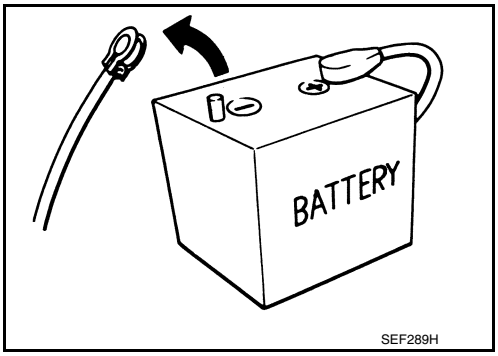
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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

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

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

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

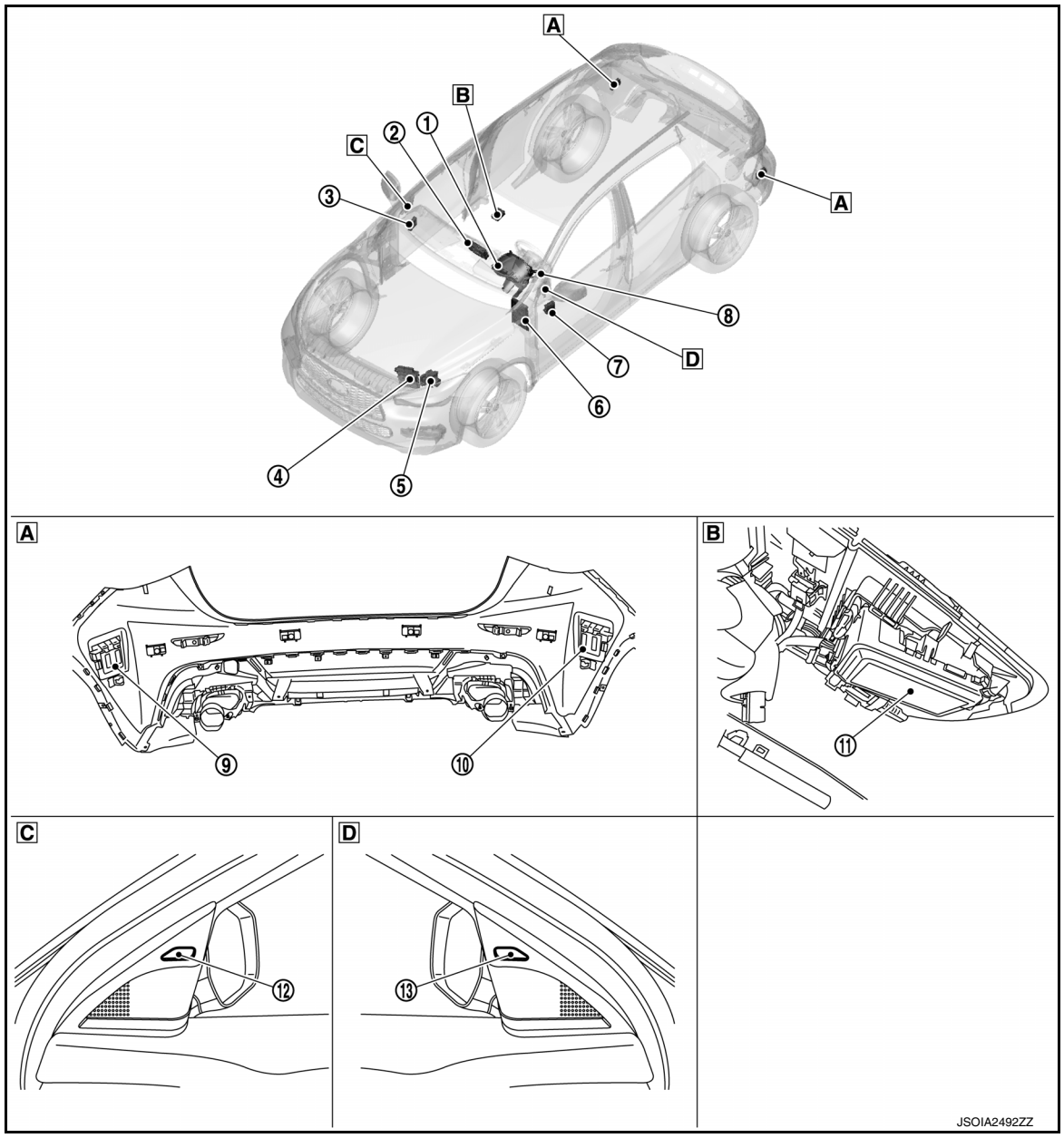
NOTE:
The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000013583258



A Behind of rear bumper
B Upper side of windshield glass
C Front door (Passenger side)
D Front door (Driver side)

No.	Component	Description
①	Combination meter	• Transmits LDW status signal and vehicle speed signal to front camera unit • Transmits BSW status signal to side radar • For details of the installation position, refer to MWI-7, "METER SYSTEM : Component Parts Location"
②	Display control unit	• Transmits operation signal to front camera unit • For details of the installation position, refer to AV-14, "WITH BOSE SYSTEM : Component Parts Location"

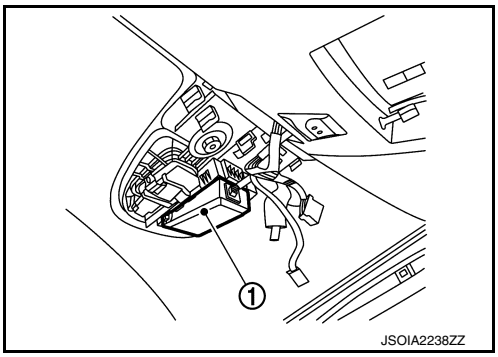
No.	Component	Description
③	Right front door control unit	• Operates BSW indicator RH • For details of the installation position, refer to DLK-10, "DOOR LOCK SYSTEM : Component Parts Location"
④	ECM	• Transmits accelerator pedal position signal to front camera unit • Transmits drivetrain operation signal to side radar • For details of the installation position, refer to the following. - Gasoline engine models: EC-27, "Component Parts Location"
⑤	Electronic stability program control unit	• Transmits mainly the following signals to front camera unit - Brake pedal status signal - Body acceleration sensor signal - Wheel speed signal • Transmits mainly the following signals to side radar - Wheel speed signal - Wheel rotation direction signal • For details of the installation position, refer to BRC-29, "Component Parts Location"
⑥	BCM	• Transmits mainly the following signals to front camera unit - Interior lamp automatic function switch status signal - Reading lamp switch status signal • For details of the installation position, refer to BCS-8, "BODY CONTROL SYSTEM : Component Parts Location"
⑦	Left front door control unit	• Transmits driver side switch signal to front camera unit • Operates BSW indicator LH • For details of the installation position, refer to DLK-10, "DOOR LOCK SYSTEM : Component Parts Location"
⑧	Steering column control module	• Transmits mainly the following signals to front camera unit - Combination switch signal - Steering wheel angle signal - Cruise control lever signal - Steering switch signal • Operates steering vibration motor • For details of the installation position, refer to BCS-8, "BODY CONTROL SYSTEM : Component Parts Location"
⑨	Side radar RH	DAS-11, "Side Radar LH/RH"
⑩	Side radar LH	DAS-11, "Side Radar LH/RH"
⑪	Front camera unit	DAS-10, "Front Camera Unit"
⑫	BSW indicator RH	DAS-12, "BSW Indicator LH/RH"
⑬	BSW indicator LH	DAS-12, "BSW Indicator LH/RH"

Front Camera Unit

INFOID:0000000013583259

LOCATION

The front camera unit ① is under a cover at the top center of the windshield.



TASK

The front camera unit records pictures of the area in front of the vehicle. These pictures are processed and prepared by the integrated control unit and then used in camera-based driving assistance systems.
The front camera unit has the following tasks:

- Reception of input factors
- Evaluation of input factors
- Controlling functions
- Transmission of initial parameters

RECEPTION OF INPUT FACTORS

The input factors are received over the CAN communication.
The functions that use these signals are described in the individual function descriptions.

EVALUATION OF INPUT FACTORS

The input factors are evaluated by the microprocessor and the corresponding components are actuated.

CONTROLLING FUNCTIONS

The front camera unit controls the following functions:
- Lane Departure Warning (LDW)
- High beam assist

TRANSMISSION OF INITIAL PARAMETERS

The initial parameters are sent by the front camera unit over the CAN communication. The functions that use these signals are described in the individual function descriptions.
NOTE:
To avoid any fogging in the front camera unit's field of view, the windshield is heated in this area by the auxiliary heater heating element which is actuated directly by the front camera unit.

BODY

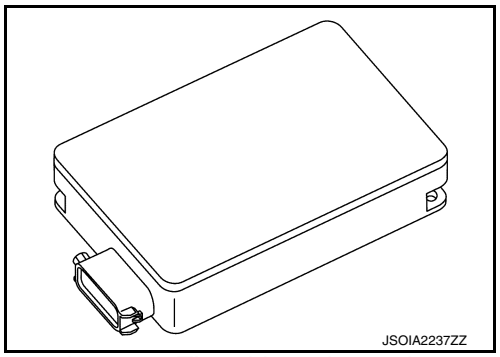
The front camera unit consists of the following main components:
- Camera
- Control unit
- Auxiliary heater heating element

NOTE:
After replacement of a front camera unit or the windshield the front camera unit has to be re-calibrated.

Side Radar LH/RH

INFOID:0000000013583260

LOCATION


JSOIA2237ZZ

The side radar at the rear left is mounted on the left inner side of the rear bumper. The side radar at the rear right is mounted on the right inner side of the rear bumper.

TASK

The side radars detect vehicles in the blind spot over the integrated vehicles radar sensor system. The side radars are ultra wideband radar sensor with the following properties:
- Detection range: 0.18 to 30 m (resolution 0.04 m)
- Detection angle of 60° with angle measurement and 130° with detection only
- Carrier frequency: 25 GHz
- Operating principle: Short-pulse method with 1.4 GHz bandwidth

NOTE:
The side radars operate according to the master or slave principle. The master or slave function can be determined by means of the connector coding. The master function is defined for the side radar RH. That means the side radar LH transmits its requests for output of warnings via CAN communication at the side radar RH, which evaluates the information from both side radars and transmits a respective request for output of warnings via the CAN communication to the respective control units.
The side radar also have the following tasks:
- Reception of input factors
- Evaluation of input factors
- Transmission of initial parameters

RECEPTION OF INPUT FACTORS

The following information is receives via the CAN communication:
- Terminal status of terminal 15
- Engine running or drivetrain operational
- Status of function Blind Spot Warning (from the combination meter)
- Wheel speeds and wheel rotation direction
- Switch position of combination switch
- Status of trailer recognition

The functions that use these signals are described in the individual function descriptions.

EVALUATION OF INPUT FACTORS

The input factors are evaluated by the integrated microprocessors and sending takes place of respective initial parameters.

TRANSMISSION OF INITIAL PARAMETERS

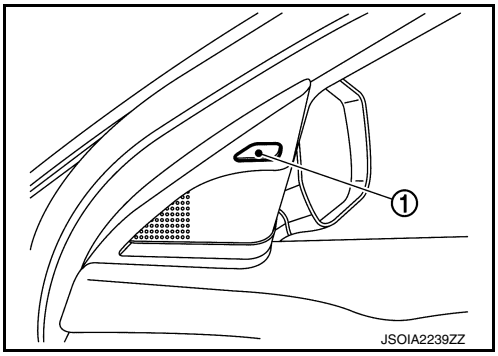
The side radar RH transmits the following initial parameters via CAN communication:
- Request output of an acoustic warning over the warning buzzer
- Request display message in information display
- Request to BSW indicator LH and BSW indicator RH

The side radar LH transmits recorded data or status information via the CAN communication to the side radar RH which uses this to generate the requests for emitting a warning.

BSW Indicator LH/RH

INFOID:0000000013583261

- Installed on the front door corner cover, the BSW indicator ① warns the driver by lighting/blinking.
- Receives a BSW indicator operation signal from the left front door control unit and right front door control unit and blinks or turns ON/OFF the BSW indicator.



SYSTEM

Driver Assistance System

INFOID:0000000013583262

DRIVER ASSISTANCE SYSTEMS, GENERAL

The driver assistance systems support the driver in various situations either actively or passively depending on the configuration of the systems.
In both cases, the driver assistance systems contribute to driving safety. This helps to reduce the frequency of accidents and their consequences. Ride comfort is also enhanced.
The following driver assistance systems are available and are described in separate documents:

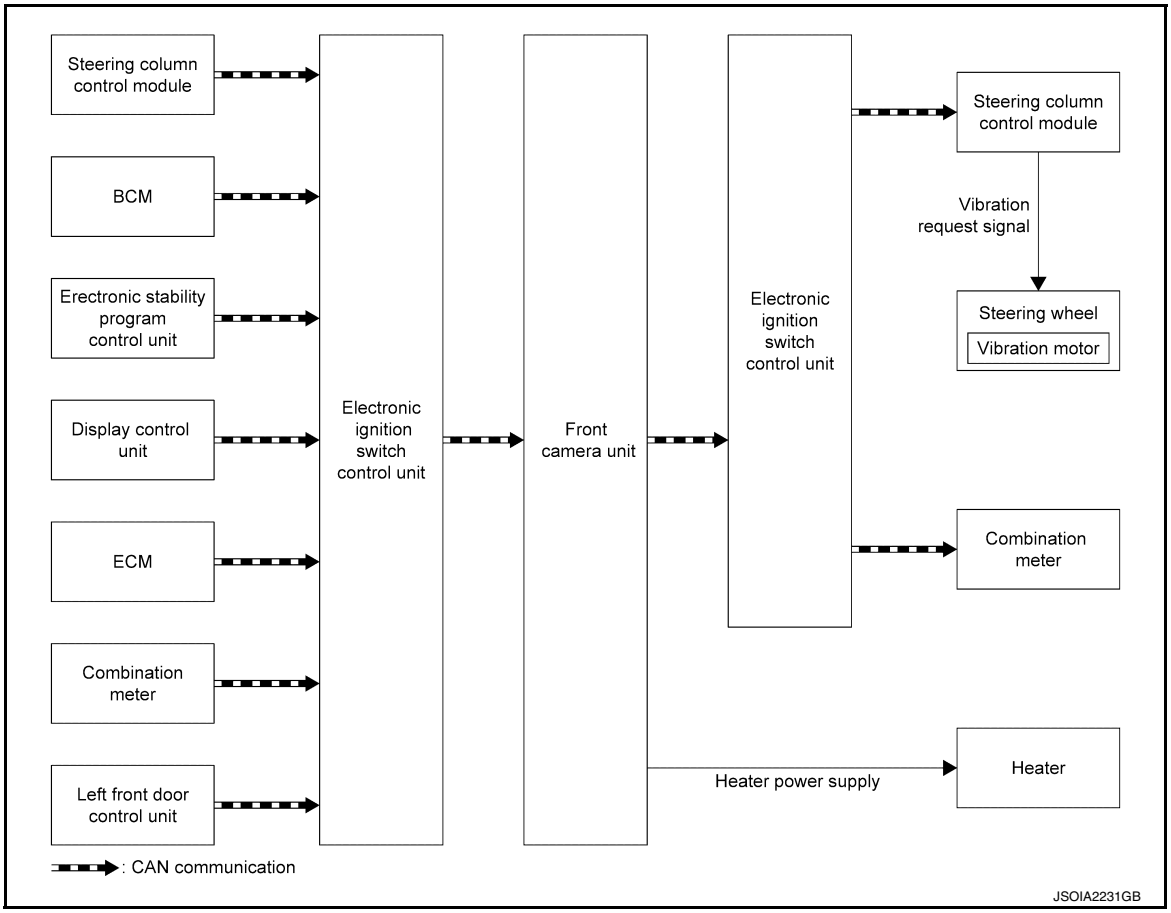
- Lane Departure Warning (LDW): DAS-13, "LDW : System Description"
- Blind Spot Warning (BSW): DAS-18, "BSW : System Description"

LDW

LDW : System Description

INFOID:0000000013583263

SYSTEM DIAGRAM



FRONT CAMERA UNIT INPUT/OUTPUT SIGNAL ITEM

Input Signal Item

Transmit unit	Signal name		Description
Combination meter	CAN communication	LDW status signal	Receives LDW status
		Vehicle speed signal	Receives vehicle speed
Display control unit	CAN communication	Operation signal	Receives operation signal

Transmit unit	Signal name		Description
Left front door control unit	CAN communication	Driver side switch signal	Receives driver side switch status
ECM	CAN communication	Accelerator pedal position signal	Receives accelerator pedal position status
Electronic stability program control unit	CAN communication	Brake pedal status signal	Receives brake pedal status
		Body acceleration sensor signal	Receives body acceleration sensor status
		Wheel speed signal	Receives wheel speed
BCM	CAN communication	Interior lamp automatic function switch status signal	Receives interior lamp automatic function switch status
		Reading lamp switch status signal	Receives reading lamp switch status
Steering column control module	CAN communication	Combination switch signal	Receives combination switch status
		Steering wheel angle signal	Receives steering wheel angle status
		Cruise control lever signal	Receives cruise control lever status
		Steering switch signal	Receives steering switch status
Electronic ignition switch control unit	CAN communication	Circuit 15 status signal	Receives circuit 15 status

Output Signal Item

Reception unit	Signal name		Description
Combination meter	CAN communication	Automatic lane detection status signal	Transmits automatic lane detection status
Steering column control module	CAN communication	Steering wheel vibration motor request signal	Transmits steering wheel vibration motor request signal
Heater	Hard wire	Heater actuation signal	Operates heater of front camera unit

FUNCTION REQUIREMENTS, GENERAL

- Circuit 15 ON
- Function enabled via the combination meter
- Vehicle speed: 60 km/h (37.2 MPH) up to maximum speed
- Recognizable lane markings present (i.e. sufficient contrast because no construction site markings (yellow/ white), no snow, not covered up, etc.)
- Radius of curve 150 m (492 ft)
- Track width 2.5 up to 4.6 m (8.2 up to 15 ft)

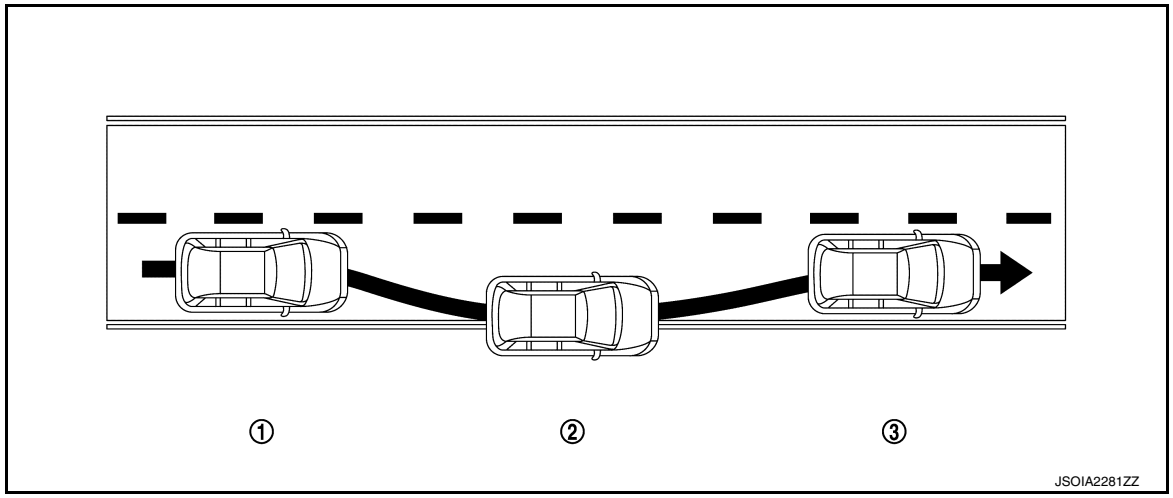
NOTE:
The electronic ignition lock control unit sends the status of circuit 15 over CAN communication to the front camera unit.
The combination meter transmits the status of the LDW to the front camera unit via the CAN communication.

LANE DEPARTURE WARNING, GENERAL

The LDW detects any unintentional driving across lane markings and issues a haptic warning to the driver in certain situations by initiating vibrations on the steering wheel. Crossing over lane markings is optically recorded and processed by the front camera unit. The haptic warning is generated by the steering wheel vibration motor. The LDW takes the driver′s behavior into consideration and decides the point at which a warning is to be issued. An option is available here to the driver to configure the sensitivity of the LDW in the combination meter's “Assist.” menu.
The following operating modes are available for selection:

- Standard:
- Sensitivity increased (warnings issued earlier and more frequently)
- Adaptive:
- Sensitivity reduced (warnings issued later and less often)

Under the following conditions any driving over lane markings is detected, but a warning is not issued:
- For driver activities through evaluation of steering-wheel movement, brake requests and the accelerator pedal position
- For sporty cornering (cutting corners)
- When turn signaling
- For active control intervention functions by the brake assist system



① Vehicle in the lane

② Vehicle crosses over outer lane marking because driver distracted. Driver is then warned by means of steering-wheel vibration

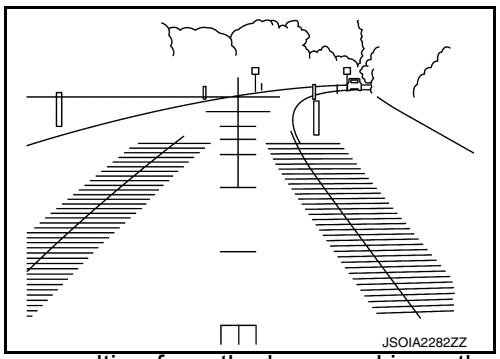
③ The vehicle is steered by the driver back into the lane

Lane Departure Warning (LDW) operation is speed-dependent. The vehicle speed is calculated from the wheel speed. The electronic stability program control unit sends this over the CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit and over the CAN communication to the combination meter.
The front camera unit calculates the vehicle speed based on the wheel speeds.
The combination meter calculates the vehicle speed to be displayed and also sends this over CAN communication to the front camera unit.
The LDW consists of the following sub-functions:
- Function sequence for lane recognition
- Function sequence for recognition of driver activity
- Function sequence for recognition of control interventions
- Function sequence for issuing warning

Function Sequence For Lane Recognition

The front camera unit, which is mounted at the top center on the front window, visually records the road space in front of the vehicle. For this purpose, the front camera unit records pictures of the lane at a fixed scanning rate and makes these pictures available to the integrated control unit. The front camera unit measures the lane based on the lane markings.

Schematic of lane recognition by front camera unit



Based on the recorded picture sequences and the measurement values resulting from the lane markings, the front camera unit calculates each lane. This calculation is based on a corresponding algorithm.

On the basis of this data, the front camera unit determines the relative position of the vehicle in the lane. The LDW measures are all derived from this position. No lane information can be issued in cases where there are no lane markings or if they are not visible (e.g. owing to dirt or snow), where there is a low contrast between the road surface and the lane markings or where there is a high level of glare.

NOTE:

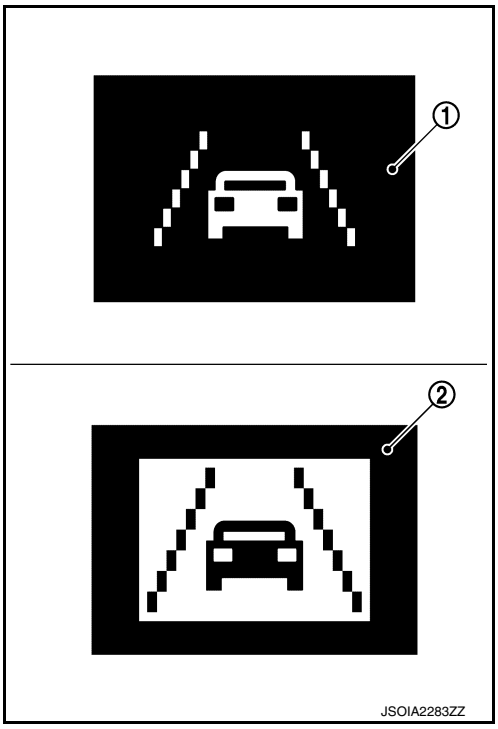
For multiple markings on the traffic lane, the inner marking is always taken as the reference point.

In construction site areas, the LDW may be unable to issue warnings due to multiple markings. The current status of the LDW, especially the warning readiness, is indicated continuously in the multifunction display of the combination meter.

The front camera unit sends this status information over CAN communication to the combination meter.

Possible displays:

- Function status
  - Symbol off: LDW deactivated
  - Icon yellow ①: LDW activated but not ready to issue warnings (e.g. more than 60 km/h (37.2 MPH)
- Warning readiness
  - Icon green ②: LDW activated and ready to issue warnings
- Message for function errors in multifunction display



Function Sequence For Recognition Of Driver Activity

The following situations suggest driver activity and result in suppression of any pending warning:

- Turn signals
- Accelerate
- Turn rate, lateral acceleration and longitudinal acceleration
- Steering intervention

Turn signaling:

The steering column control module reads in the switch position of the combination switch directly and sends this over the CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit.

Acceleration:

ECM sends information on the accelerator pedal position over CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit.

Brakes:

The electronic stability program control unit sends the status of the brake pedal over the CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit.

Turn rate, lateral acceleration and longitudinal acceleration:

The acceleration/yaw rate is recorded by the body acceleration sensor integrated into the electronic stability program control unit.

The electronic stability program control unit transmits the signals over the CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit.

Steering intervention:

Steering movements are recorded by the steering wheel angle sensor.

NOTE:

If the front camera unit detects active corner cutting by the driver, crossing over the lane markings at an angle of less than 3° or a lateral acceleration of more than 4 m/s^2, a pending warning or intervention by the brake system is also suppressed.

Function Sequence For Recognition Of Control Interventions

All controls in the driver's immediate vicinity are monitored. If a control intervention is registered, the LDW deems the driver to be distracted. As soon as the vehicle drives over the lane marking, an active warning is output.

Control interventions are evaluated by the front camera unit. The warning threshold is adapted to the frequency with which the controls are actuated, i.e. the LDW provides warnings sooner and more frequently if necessary.

The following controls are monitored:

- Audio system controls:
- Display control unit
- Comfort function controls:
- Cruise control lever
- Driver-side power window and outside mirror adjustment switch group (only the outside mirror adjustment is monitored)
- Steering switch
- Interior illumination controls:
- Interior lamp automatic function switch
- Left front reading lamp switch
- Right front reading lamp switch

Control interventions on audio system:

The display unit sends the control interventions on the audio equipment buttons over the CAN communication, electronic ignition lock control unit and the CAN communication to the front camera unit.

Control interventions on comfort functions:

The steering column control module reads in the control interventions on the cruise control lever and to the steering switch and sends them over the CAN communication, the electronic ignition lock control unit and the CAN communication to the front camera unit.

NOTE:

The steering wheel electronics read in the control interventions on the steering switch directly and transmit them to the steering column control module over the steering LIN.

The left front door control unit reads in the control interventions on the switch group for the power window and the outside mirror adjustment, driver side over the left front door LIN and sends this over the CAN communication, electronic ignition lock control unit and the CAN communication to the front camera unit.

Interior illumination control interventions:

The overhead control panel control unit reads in the status of the interior lamp automatic function switch and the front reading lamp switch directly and sends this over the roof LIN, BCM, CAN communication, electronic ignition lock control unit and the CAN communication to the front camera unit.

Function Sequence For Issuing Warning

The warning is issued haptically by the steering wheel vibration motor, which is integrated into the multifunction steering wheel. The front camera unit sends the request to actuate the steering wheel vibration motor over the CAN communication, the electronic ignition lock control unit and the CAN communication to the steering column control module.

The steering column control module forwards the request over the steering LIN to the steering wheel electronics which directly actuate the steering wheel vibration motor. The steering wheel vibration motor is actuated for a duration of 1.5 s.

The intensity of the haptic warning is adapted to the vehicle speed, to cover for perceptible influences from the suspension at high speeds.

NOTE:

The warning is terminated when the triggering conditions are no longer given or when driver activity is detected (braking, accelerating and braking or turn signaling).

The warning is also terminated if, during a warning, a driver response is detected (e.g. steering back into the lane or turn signaling).

The following situations will result in suppression of a warning output, because it is assumed that the driver activity is intentional:

- Status changes of steering wheel, brake or accelerator pedal
- Recognized corner cutting (by means of lane recognition and the current vehicle position the front camera unit recognizes a road with bends and concludes corner cutting). Warnings about corner cutting are not issued until a defined lateral acceleration is reached.

- Active flashing function (corresponding turn signaling)
- Active or passive safety functions active

Following suppression, the next warning can be issued in Standard mode only after approx. 3 s, in Adaptive mode only after approx. 5 s and following turn signaling only after 10 s.

NOTE:

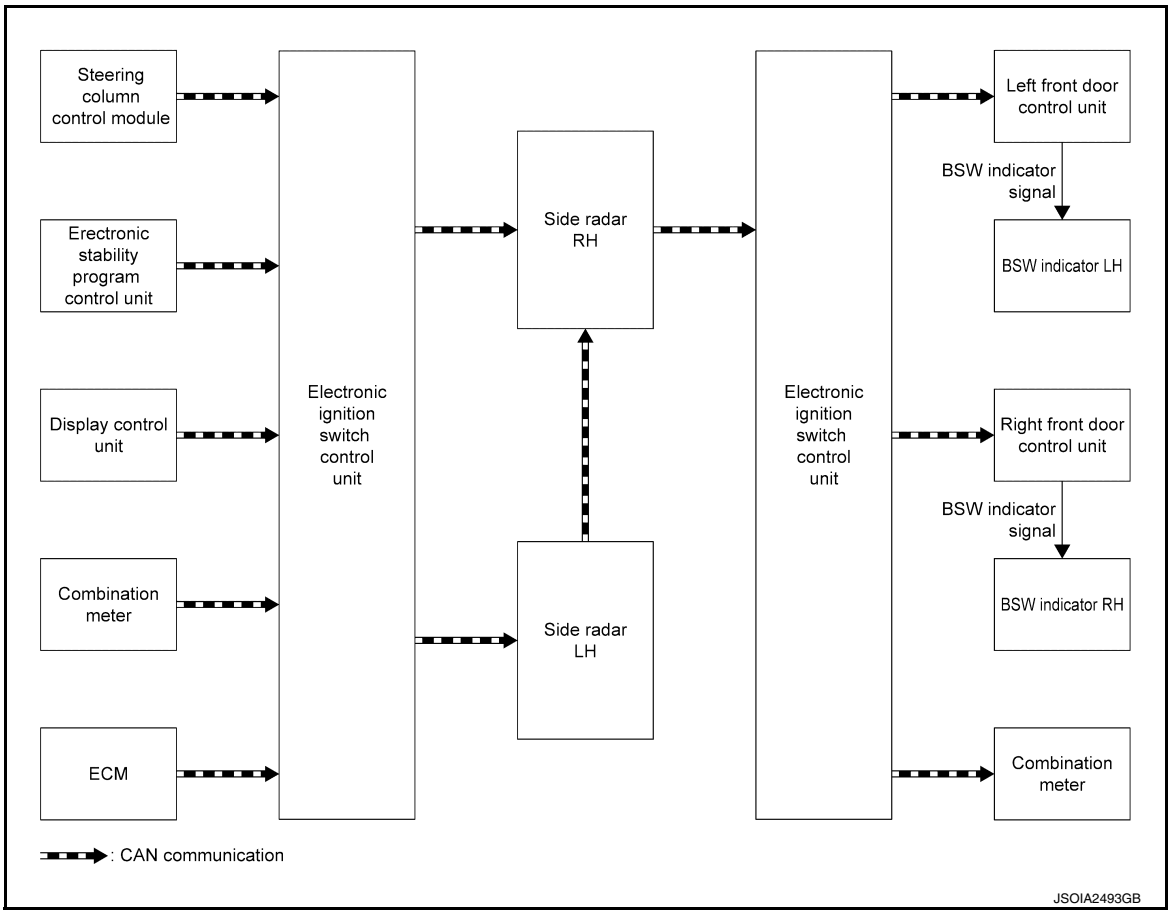
The corresponding information on suppressing the warning is received by the front camera unit over the CAN communication. If corner cutting is detected, the warning is delayed until a defined threshold (lateral acceleration depending on ground speed) is reached. Only then is a warning issued.

BSW

BSW : System Description

INFOID:0000000013583264

SYSTEM DIAGRAM



SIDE RADAR INPUT/OUTPUT SIGNAL ITEM

Input Signal Item

Transmit unit	Signal name		Description
Combination meter	CAN communication	Vehicle speed signal	Receives vehicle speed
ECM	CAN communication	Drivetrain operation signal	Receives drivetrain operation status
Electronic stability program control unit	CAN communication	Wheel speed signal	Receives wheel speed
		Wheel rotation direction signal	Receives wheel rotation direction status

Transmit unit	Signal name		Description
Steering column control module	CAN communication	Combination switch signal	Receives combination switch status
Electronic ignition switch control unit	CAN communication	Circuit 15 status signal	Receives circuit 15 status

Output Signal Item

Reception unit	Signal name		Description
Combination meter	CAN communication	Warning buzzer signal	Transmits warning buzzer request
		Meter display signal	Transmits meter display request
Right front door control unit	CAN communication	BSW indicator signal	Transmits BSW indicator request
Left front door control unit	CAN communication	BSW indicator signal	Transmits BSW indicator request

FUNCTION REQUIREMENTS, GENERAL

- No under voltage or over voltage
- Function “Blind Spot Warning” in “Assist.” menu activated in combination meter
- Engine running or drive train operational
- Vehicle moving forward
- Vehicle speed 30 km/h (18.6 MPH) or more
- No trailer operation

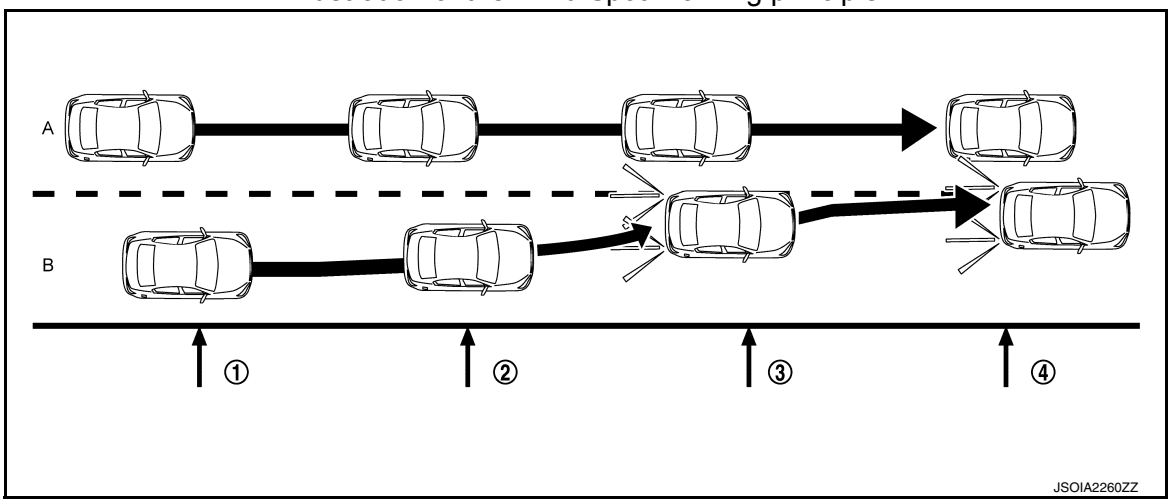
BLIND SPOT WARNING, GENERAL

The Blind Spot Warning (BSW) monitors the rear and side areas of the vehicle using short range radar and, if necessary, informs the driver that an intentional lane change (turn signal active) is not recommended at this time. In the broader sense, the BSW system acts as an extension of the rear-view mirrors. It does not release the driver of his/her obligation to perform lane changes safely on his/her own responsibility.
In the respective outside mirror, a visual indicator indicates the status of the BSW and warns of critical situations during a lane change (i.e. a vehicle is in the blind spot). In addition, an acoustic warning can also be given.
The visual warning is issued via the BSW readiness and warning indicator in the respective outside mirror.
The acoustic warning is output via the warning buzzer in the combination meter.
The area which cannot be observed via the outside mirror and inside rear-view mirror is monitored by the following components:

- Side radar LH
- Side radar RH

All relevant data are evaluated by the side radars, whereby the side radar RH requests the warning output.
NOTE:
The side radars operate according to the “master-slave” principle. The master or slave function can be determined via the connector coding. The master function is defined for the right rear bumper radar sensor. In other words, the left rear bumper radar sensor sends its requests to issue warning and operational messages over the CAN communication to the right rear bumper radar sensor. This evaluates the information from both side radars and sends corresponding requests over the CAN communication, the electronic ignition lock control unit and the CAN communication to the corresponding front door control unit and over the CAN communication, the electronic ignition lock control unit and the CAN communication to the combination meter.

Illustration of the Blind Spot Warning principle



① Overtaking vehicle reaches blind spot of vehicle with BSW
② Vehicle recognized in blind spot
③ Issue of acoustic and visual warnings
④ Driver reaction in vehicle with BSW
A. Lane with vehicle in blind spot during passing maneuver
B. Lane with vehicle with BSW

BLIND SPOT WARNING

The following information is evaluated by the side radars:
- Circuit 15 status
- Status of BSW function
- Engine running or drive train operational
- Vehicle moving forward
- Vehicle speed

Status of Circuit 15:
he electronic ignition lock control unit sends the circuit 15 status over the CAN communication to the side radars.

Status of BSW Function:
The combination meter sends the status of the BSW function over the CAN communication, the electronic ignition lock control unit and the CAN communication to the side radars.

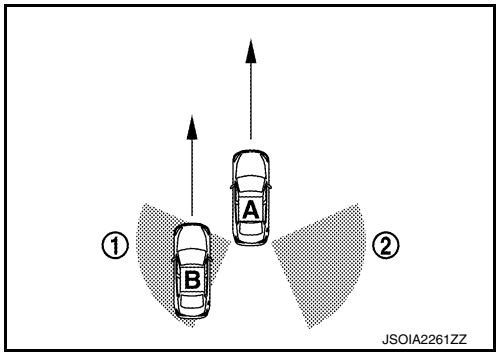
Engine Running or Drive Train Operational:
ECM sends the engine running or drive train operational signal over CAN communication to the side radars.

Vehicle In Forward Movement/Vehicle Speed:
Forward movement is defined via the wheel rotation direction. The vehicle speed is calculated from the wheel speed.
The electronic stability program control unit sends corresponding information about the wheel speed over CAN communication to the side radars
From this information, the radar sensors calculate the vehicle speed and define the direction of travel.
The BSW function consists of the following sub functions:
- Measuring procedure function sequence
- Function sequence for displaying warning and messages

Measuring Procedure Function Sequence
Objects (vehicles in blind spot) are detected based on the radar measuring procedure.
The side radars emit bundled electromagnetic waves as primary signals.
If these waves hit an object, they are reflected by it and are received again by the corresponding rear bumper radar sensor as a secondary signal.
These signals are used to calculate the distance and the speed of the detected object as well as its angle relative to the vehicle.
The side radars are designed as ultra-wide band radar sensors and have the following properties:
- Acquisition range 0.18 to 30 m (0.6 to 98.4 ft)

- Detection angle of 60° with angle measurement and 130° with detection only
- Carrier frequency: 25 GHz
- Operating principle: Short-pulse method with 1,4 GHz bandwidth

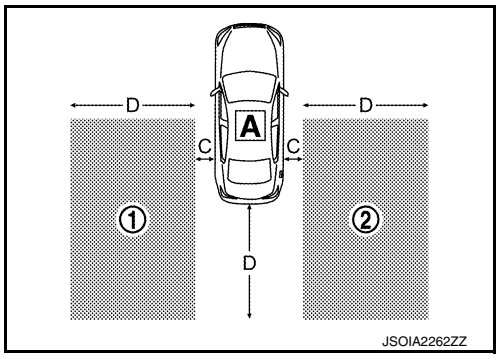
Detection Area Of The Radar Sensor System



① Left rear detection range
② Right rear detection range
A Vehicle with BSW
B Vehicle in blind spot

NOTE:
The detection range of the side radars is based on the angle of reflection of the radar waves. These are extrapolated by the respective rear bumper radar sensor to produce the actual monitoring ranges.

Illustration Showing Actual Rear Monitoring Range

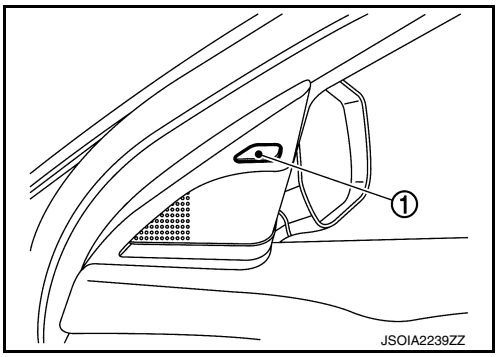


① Left rear monitoring range
② Right rear monitoring range
A Vehicle with BSW
c. 0.5 m (1.64 ft)
D. 3.0 m (9.84 ft)

Function Sequence For Displaying Warning And Messages
When circuit 15 is switched on, the BSW indicators are switched on for 1.5 s turning yellow.
If a system error is determined, a corresponding message is shown on the multifunction display.
The BSW indicators are actuated by the corresponding front door control unit.
The side radars communicate with each other over the CAN communication. The side radar RH (master function) sends the requests to display system readiness and to issue warning and malfunction messages over the CAN communication, the electronic ignition lock control unit and the CAN communication to the corresponding front door control unit, and over the CAN communication, the electronic ignition lock control unit and CAN communication to the combination meter.
If, at a speed of 30 km/h (18.6 MPH) or more, a vehicle is located in the radar sensor system sensing range, the driver is notified of it by the BSW readiness and warning indicator turning read in the outside mirror on the side of the vehicle on which the vehicle is in the blind spot.
When vehicles are passing, they are recognized and a warning is issued regardless of their relative speed to the vehicle with BSW. Due to the short reaction time when the difference in speed is high, the warning message output sometimes does not have any added value.

If the driver attempts to change lane despite the lighting up of the warning indicator for BSW, and signals this intention by operating the combination switch (activating turn signal), the warning buzzer emits two warning tones.
The BSW indicator flashes ON and OFF.
If the vehicle leaves the radar sensor system′s sensing range, the flashing BSW indicator is switched off.
The steering column control module reads in the position of the combination switch directly and sends it via CAN communication to the side radars.

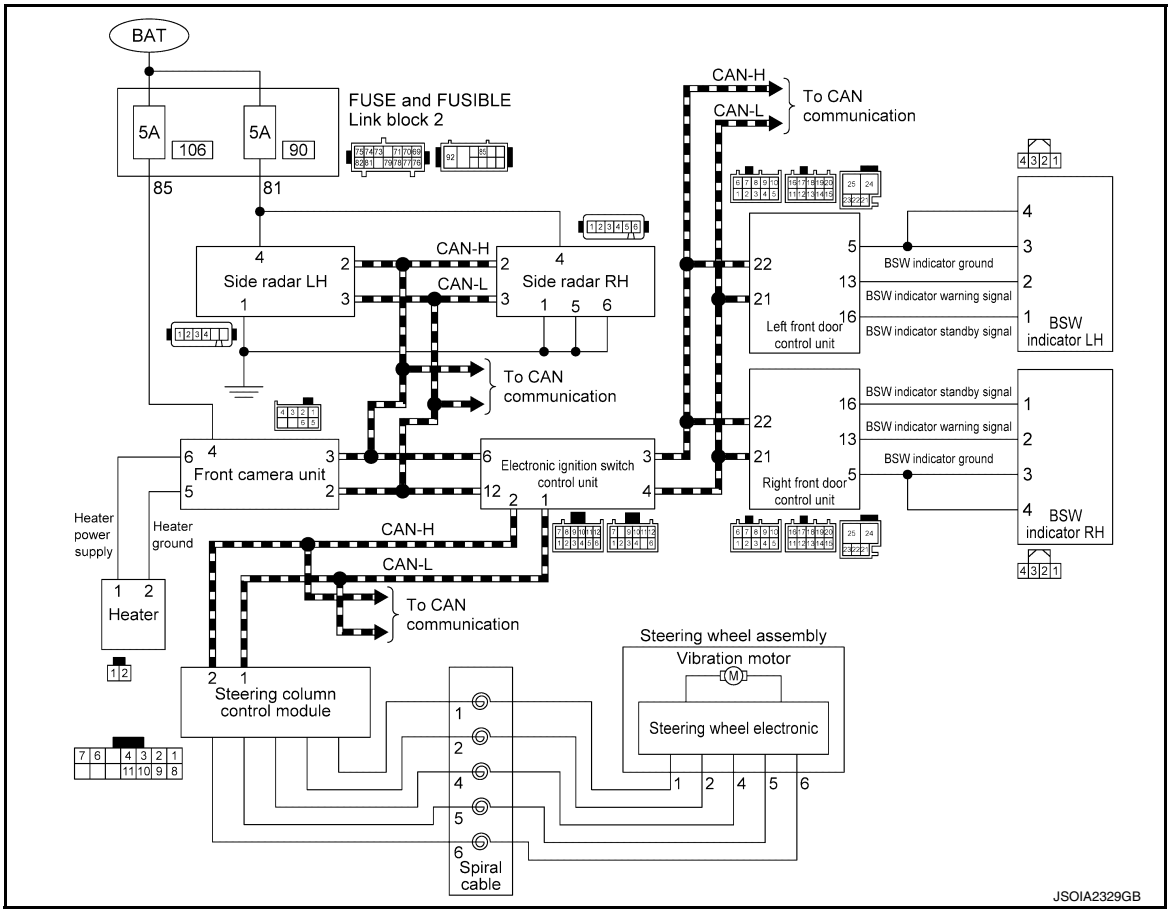
① BSW indicator



Operation state	BSW indicator OFF	BSW indicator ON	BSW indicator flashing
Circuit 15 OFF	×		
Circuit 15 ON (less than 1.5 sec.)		×	
Vehicle accelerates, vehicle speed 30 km/h (18.6 MPH) or more	×		
Vehicle speed more than 200 km/h (124.2 MPH)	×		
Trailer recognized (With trailer hitch)	×		
Vehicle recognized in blind spot		×	
Turn signal active, vehicle detection in blind spot			×
Malfunction in BSW system	×		

Circuit Diagram

INFOID:0000000013583266



INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER) : Warning/Indicator (On Information Display)

INFOID:0000000013583267

System name	Design	Warning message	Description
LDW	—	Lane Departure Warning inoperative	LDW is not available due to a malfunction
	—	Lane Departure Warning currently unavailable See Owner's Manual	LDW is temporarily unavailable
BSW	—	Blind Spot Warning inoperative	BSW is not available due to a malfunction
	—	Blind Spot Warning currently unavailable See Owner's Manual	BSW is temporarily unavailable

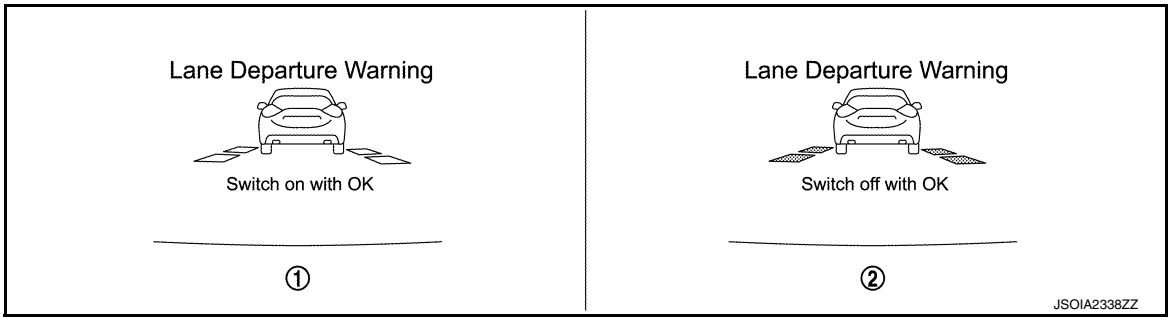
OPERATION

LDW

LDW : Switch Name and Function

INFOID:0000000013583268

LDW



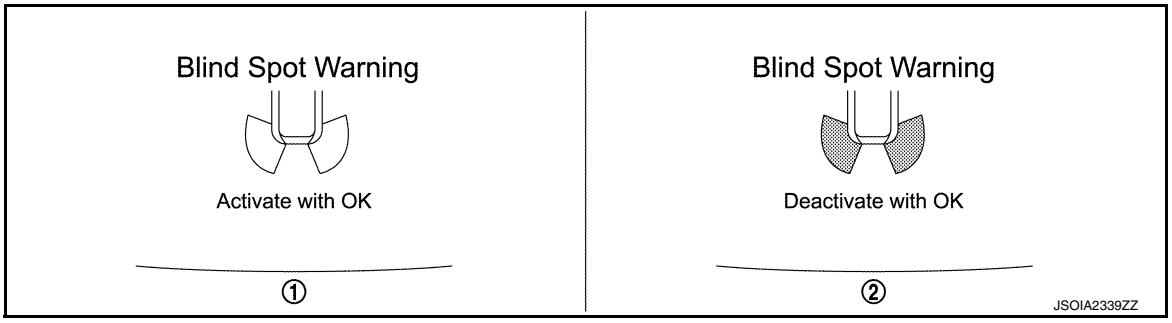
No.	Switch name	Description
①	LDW system OFF (Information display)	The setting of LDW system can be switched between ON and OFF
②	LDW system ON (Information display)	

BSW

BSW : Switch Name and Function

INFOID:0000000013583269

BSW

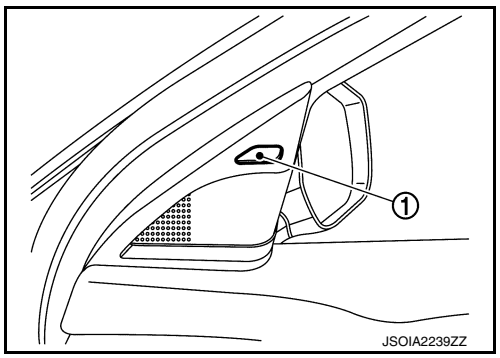


No.	Switch name	Description
①	BSW system OFF (Information display)	The setting of BSW system can be switched between ON and OFF
②	BSW system ON (Information display)	

BSW : Menu Displayed by Pressing Each Switch

INFOID:0000000013583270

SYSTEM DISPLAY



No.	Switch name	Description
①	BSW indicator LH/RH	• Illuminates when detect other vehicles beside vehicle in an adjacent lane • Blinks when BSW system is warning to driver

WARNING

BSW indicator

Operation state	BSW indicator OFF	BSW indicator ON	BSW indicator flashing
Circuit 15 OFF	×		
Circuit 15 ON (more than 1.5 sec)		×	
Vehicle accelerates, vehicle speed 30 km/h (18.6 MPH) or more	×		
Vehicle speed more than 200 km/h (124.2 MPH)	×		
Trailer recognized (With trailer hitch)	×		
Vehicle recognized in blind spot		×	
Turn signal active, vehicle detection in blind spot			×
Malfunction in BSW system	×		

HANDLING PRECAUTION

Precautions for Driver Assistance System

INFOID:0000000013583273

LANE DEPARTURE WARNING (LDW) SYSTEM

Failure to follow the warnings and instructions for proper use of the LDW system could result in serious personal injury or death. The LDW system will not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the travelling lane, and be in control of vehicle at all times.

LDW SYSTEM LIMITATIONS

Listed below are the system limitations for the LDW system. Failure to operate the vehicle in accordance with these system limitations could result in serious injury or death.

- This system is only a warning device to inform the driver of a potential unintended lane departure. It will not steer the vehicle or prevent loss of control. It is the driver's responsibility to stay alert, drive safely, keep the vehicle in the travelling lane, and be in control of the vehicle at all times.
- The system will not operate at speeds below approximately 60 km/h (37.2 MPH), above 200 km/h (124.2 MPH) or if it cannot detect lane markers.
- Excessive noise will interfere with the warning chime sound, and the chime may not be heard.
- The system may not function properly under the following conditions:
- On roads where there are multiple parallel lane markers; lane markers that are faded or not painted clearly; yellow painted lane markers; non-standard lane markers; or lane markers covered with water, dirt, snow, etc.
- On roads where the discontinued lane markers are still detectable.
- On roads where there are sharp curves.
- On roads where there are sharply contrasting objects, such as shadows, snow water, wheel ruts, seams or lines remaining after road repairs. (The LDW system could detect these items as lane markers.)
- On roads where the travelling lane merges or separates.
- When the vehicle's travelling direction does not align with the lane marker.
- When travelling close to the vehicle in front of own vehicle, which obstructs the lane camera unit detection range.
- When rain, snow or dirt adheres to the windscreen in front of the lane camera unit.
- When the headlights are not bright due to dirt on the lens or if the aiming is not adjusted properly.
- When strong light enters the lane camera unit. (For example, the light directly shines on the front of the vehicle at sunrise or sunset.)
- When a sudden change in brightness occurs. (For example, when the vehicle enters or exits a tunnel or under a bridge.)
- When there is poor visibility. (For example, due to insufficient illumination of the road, or due to snow, rain, fog or spray.
- When there is glare. (For example, from oncoming traffic, the sun or reflection when the road is wet).

BLIND SPOT WARNING (BSW) SYSTEM

Failure to follow the warnings and instructions for proper use of the BSW system could result in serious injury or death.

- The Blind Spot Warning (BSW) system is not a replacement for proper driving procedure and is not designed to prevent contact with vehicles or objects. When changing lanes, always use the side and rear mirrors and turn and look in the direction own vehicle will move to ensure it is safe to change lanes. Never rely solely on the BSW system.
- The BSW system is not a replacement for proper driving procedure and is not designed to prevent contact with vehicles or objects. When changing lanes, always use the side and rear mirrors and turn and look in the direction own vehicle will move to ensure it is safe to change lanes. Never rely solely on the BSW system.
- The BSW system may not provide a warning for vehicles that pass through the detection zone quickly.
- Do not use the BSW system when towing a trailer because the system may not function properly.
- Excessive noise (for example audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.
- The radar sensors may not be able to detect and activate BSW when certain objects are present such as:
- Pedestrians, bicycles, animals
- Several types of vehicles such as motorcycles
- Oncoming vehicles
- Vehicles remaining in the detection zone when driver accelerate from a stop.
- A vehicle merging into an adjacent lane at a speed approximately the same as own vehicle.
- A vehicle approaching rapidly from behind.

- A vehicle which own vehicle overtakes rapidly.
• Severe weather or road spray conditions may reduce the ability of the radar to detect other vehicles.
• The radar sensors detection zone is designed based on a standard lane width. When driving in a wider lane, the radar sensors may not detect vehicles in an adjacent lane. When driving in a narrow lane, the radar sensors may detect vehicles driving two lanes away.
• The radar sensors are designed to ignore most stationary objects, however objects such as guardrails walls, foliage and parked vehicles may occasionally be detected. This is a normal operating condition.

Listed below are the system limitations for the BSW system. Failure to operate the vehicle in accordance with these system limitations could result in serious or death.
• The BSW system cannot detect all vehicles under all conditions.
• The radar sensors may not be able to detect and activate BSW when certain objects are present such as:
- Pedestrians, bicycles, or animals.
- Vehicles such as motorcycles, low height vehicles, or high ground clearance vehicles.
- Oncoming vehicles.
- Vehicles remaining in the detection zone when own vehicle accelerate from a stop.
- A vehicle merging into an adjacent lane at a speed approximately the same as own vehicle.
- A vehicle that is too close to own vehicle.
- A vehicle approaching rapidly from behind.
- A vehicle which own vehicle overtakes rapidly.
• The radar sensors detection zone is designed based on a standard lane width. When driving in a wider lane, the radar sensors may not detect vehicles in an adjacent lane. When driving in a narrow lane, the radar sensors may detect vehicles driving two lanes away.
• The radar sensors are designed to ignore most stationary objects, however objects such as guardrails, walls, foliage and parked vehicles may occasionally be detected. This is a normal operating condition.
• The following conditions may reduce the ability of the radar to detect other vehicles:
- Severe weather
- Road spray
- Ice build-up on the vehicle
- Frost build-up on the vehicle
- Dirt build- up on the vehicle
• Do not attach stickers (including transparent material), install accessories or apply additional paint near the radar sensors. These conditions may reduce the ability of the radar to detect other vehicles.
• Excessive noise (e.g. audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.

BSW SYSTEM LIMITATIONS

Listed below are the system limitations for the BSW system. Failure to operate the vehicle in accordance with these system limitations could result in serious or death.
• The BSW system cannot detect all vehicles under all conditions.
• The radar sensors may not be able to detect and activate BSW when certain objects are present such as:
- Pedestrians, bicycles, or animals.
- Vehicles such as motorcycles, low height vehicles, or high ground clearance vehicles.
- Oncoming vehicles.
- Vehicles remaining in the detection zone when own vehicle accelerate from a stop.
- A vehicle merging into an adjacent lane at a speed approximately the same as own vehicle.
- A vehicle that is too close to own vehicle.
- A vehicle approaching rapidly from behind.
- A vehicle which own vehicle overtakes rapidly.
• The radar sensors detection zone is designed based on a standard lane width. When driving in a wider lane, the radar sensors may not detect vehicles in an adjacent lane. When driving in a narrow lane, the radar sensors may detect vehicles driving two lanes away.
• The radar sensors are designed to ignore most stationary objects, however objects such as guardrails, walls, foliage and parked vehicles may occasionally be detected. This is a normal operating condition.
• The following conditions may reduce the ability of the radar to detect other vehicles:
- Severe weather
- Road spray
- Ice build-up on the vehicle
- Frost build-up on the vehicle
- Dirt build- up on the vehicle

- Do not attach stickers (including transparent material), install accessories or apply additional paint near the radar sensors. These conditions may reduce the ability of the radar to detect other vehicles.
- Do not use the BSW system when towing a trailer because the system may not function properly.
- Excessive noise (e.g. audio system volume, open vehicle window) will interfere with the chime sound, and it may not be heard.

DIAGNOSIS SYSTEM (FRONT CAMERA UNIT)

CONSULT Function (LANE CAMERA)

INFOID:0000000013583274

APPLICATION ITEMS

CONSULT performs the following functions by communicating with the front camera unit.

Diagnosis mode	Description
Work Support	Performs the camera aiming.
Self Diagnostic Result	Displays the name of a malfunctioning system stored in the front camera unit
Data Monitor	Displays front camera unit input/output data in real time
Active Test	Enables an operational check of a load by transmitting a driving signal from the front camera unit to the load
Ecu Identification	Displays front camera unit part number
Configuration	Writes the vehicle specification when replace front camera unit

WORK SUPPORT

Work support items	Description
CALIBRATION	Performs camera aiming of front camera unit.
RETROFITTING	—

SELF DIAGNOSTIC RESULT

Refer to DAS-44, "DTC Index".

When “CRNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Freeze Frame Data Item	Unit	Display item
Original Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the first time.
Most Recent Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the last time.
Frequency Counter	0 – 255	Displays the frequency counter defined as the total number of times the DTC status has changed from “stored - not active” to “active”.
Operation cycle counter	0 – 255	Displays the operation cycle counter.

DATA MONITOR

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitored item [Unit]	Description
INSIDE TEMP OF CONT UNIT [°C]	—
Inside temperature of control unit (Left camera) [°C]	—
Status of calibration [Yes, No]	—

Monitored item [Unit]	Description
RESULT OF CALIBRATION [No Error, INVAID, COND, NOTFND, MOVING, ANGLE, NOTCAL, VIN INV, NOT ST, ERROR1, ERROR2, ERROR3, INT ERR]	—
STATUS OF FUNCTION AHBA [OFF, On, SNA]	—
STRG WHL VIB MTR STATUS [Stop, Start, UNSTBL, STBL, UNLMT, LMTD, NDEF, SNA]	—
OPERATING CONDITION [OFF, On]	—
BATTERY VOLTAGE [V]	Displays status of power supply voltage
Supply voltage of cntrl module [V]	Displays status of power supply voltage
PITCH ANGLE	—
ROLL ANGLE	—
YAW ANGLE	—
OPERATING TIME [min]	—
Activating signals functions : PMA Md RQ [OFF, NOWRN, WARN, SNA]	—
STATUS OF FUNCTION TSA [OFF, NOWRN, WARN, SNA]	—
STATUS OF FUNCTION WWA [OFF, NOWRN, WARN, SNA]	—
STATUS OF FUNCTION LKA [OFF, LDW1, LDW2, LDW3, LDP1, LDP2, LDP3, SNA]	—
EDGE FRONT LEFT [mm]	—
EDGE FRONT RIGHT [mm]	—
EDGE REAR LEFT [mm]	—
EDGE REAR RIGHT [mm]	—
STRG WHL VIB MTR STATUS [VIB OFF, ON, SHORT, BLOCK, OPEN, VIB FLT, LIN FLT, SNA]	—

ACTIVE TEST

Monitored item [Unit]	Description
CHECK AUXILIARY HEATER HEATING ELEMENT HAS A MALFUNCTION	Outputs heater power supply to heater element

CHECK AUXILIARY HEATER HEATING ELEMENT HAS A MALFUNCTION

Monitored item [Unit]	Operation	Description
CHECK AUXILIARY HEATER HEATING ELEMENT HAS A MALFUNCTION	ON	Outputs heater power supply to heater element
	OFF	Finish the test

DIAGNOSIS SYSTEM (SIDE RADAR LH)

CONSULT Function (SIDE RADAR LEFT)

INFOID:0000000013583275

DESCRIPTION

CONSULT performs the following functions by communicating with the side radar LH.

Select diag mode	Function
Self Diagnostic Result	Displays memorized DTC in the side radar.
Data Monitor	Displays real-time data of side radar.
Ecu Identification	Displays part number of side radar.

SELF DIAGNOSTIC RESULT

Refer to DAS-46, "DTC Index".

When “CRNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Freeze Frame Data Item	Unit	Display item
Original Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the first time.
Most Recent Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the last time.
Frequency Counter	0 – 255	Displays the frequency counter defined as the total number of times the DTC status has changed from “stored - not active” to “active”.
Ignition cycle counter	0 – 255	Displays the number of consecutive operation cycles recorded since a DTC first became stored -not active and is no longer an active DTC. This information is needed for Self-healing functionality.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitored Item	Description
FUNC BLIND SPOT ASSIST	—
TRAILER HITCH	—
BSA FUNCTION STATUS	—
RADAR SYSTEM STATUS	—
LH BLIND SPOT ASSIST W/L	—
RH BLIND SPOT ASSIST W/L	—

DIAGNOSIS SYSTEM (SIDE RADAR RH)

CONSULT Function (SIDE RADAR RIGHT)

INFOID:0000000013583276

DESCRIPTION

CONSULT performs the following functions by communicating with the side radar RH.

Select diag mode	Function
Self Diagnostic Result	Displays memorized DTC in the side radar.
Data Monitor	Displays real-time data of side radar.
Ecu Identification	Displays part number of side radar.

SELF DIAGNOSTIC RESULT

Refer to DAS-49, "DTC Index".

When “CRNT” is displayed on self-diagnosis result.
- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result.
- System malfunction in the past is detected, but the system is presently normal.

FREEZE FRAME DATA (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Freeze Frame Data Item	Unit	Display item
Original Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the first time.
Most Recent Odometer Value	km	Displays the odometer value stored when the respective DTC is detected for the last time.
Frequency Counter	0 – 255	Displays the frequency counter defined as the total number of times the DTC status has changed from “stored - not active” to “active”.
Ignition cycle counter	0 – 255	Displays the number of consecutive operation cycles recorded since a DTC first became stored -not active and is no longer an active DTC. This information is needed for Self-healing functionality.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitored Item	Description
FUNC BLIND SPOT ASSIST	—
TRAILER HITCH	—
BSA FUNCTION STATUS	—
RADAR SYSTEM STATUS	—
LH BLIND SPOT ASSIST W/L	—
RH BLIND SPOT ASSIST W/L	—

DIAGNOSIS SYSTEM (STEERING COLUMN CONTROL MODULE)

CONSULT Function (Steering Column Control Module)

INFOID:0000000013759067

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with steering column control module.

Diagnosis mode	Description
ECU Identification	Allows confirmation of steering column control module part number.
Self Diagnostic Result	Displays the diagnosis results judged by steering column control module.
Data Monitor	Displays the real-time input/output data from steering column control module input/output data.
Active Test	Steering column control module can provide a drive signal to electronic components to check their operations.

SELF DIAGNOSTIC RESULT

Refer to BCS-61, "DTC Index".

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor	Item Contents
STRG SW CRRNT	—
Current Limitation	—
STEERING SENSOR	—
STEERING ANGLE	—
STEERING ANGLE SENSOR STATUS	—
HIGH BEAM STATUS	Display the status of combination switch (High beam)
FRONT WIPER	Display the status of combination switch (Front wiper)
FR WASHER SW	Display the status of combination switch (Front washer)
RR WIPER	Display the status of combination switch (Rear wiper)
IND SIG	—
HEATED STEERING WHEEL	—
CRUISE CONTROL FUNCTION	Display the status of cruise control lever
UP SW	Display the status of steering switch
DOWN SW	Display the status of steering switch
VOLUME “+” BUTTON	Display the status of steering switch
VOLUME “-” BUTTON	Display the status of steering switch
REPEAT KEY	—
MUTE BUTTON	—
GEAR POSITION	Display the status of paddle shifter
SUPPLY VOLTAGE	—

ACTIVE TEST

Monitor	Item Contents
Speedtronic light emitting diode	—
Steering wheel heater	—

DIAGNOSIS SYSTEM (LEFT FRONT DOOR CONTROL UNIT)

CONSULT Function (Left Front Door Control Unit)

INFOID:0000000013759112

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with left front door control unit.

Diagnosis mode	Function Description
Self Diagnostic Result	Displays the diagnosis results judged by left front door control unit
Data Monitor	The left front door control unit input/output signals are displayed
Ecu Identification	The left front door control unit part number is displayed
Work Support	Changes the setting for system function
Active Test	The signals used to activate each device are forcibly supplied from left front door control unit
Configuration	Writes the vehicle specification when replacing left front door control unit

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Description
OPEN CENTRAL LOCKING	–
CLOSE CENTRAL LOCKING	–
RR LID REMOTE RELEASE-SW	–
RR LID REMOTE CLOSE-SW	–
MAN-NOTCH (DR OPEN)	–
MICROSWITCH (PRELATCH)	–
EXIT AND WARNING LAMP	–
MIRROR INDICATOR ACTIVE	–
DOOR INSIDE HANDLE ACTIVE	–
ENTRANCE LAMP ACTIVE	–
LIGHT BAR 1	–
I/L (BLIND SPOT ASSIST)	Display the status of BSW indicator
W/L (BLIND SPOT ASSIST)	Display the status of BSW indicator
LIGHT BAR 2	–
SWITCH ILLUMINATION	Display the status of switch illumination
CHILD SAFETY LOCK	Display the status of power window lock
LH OUTSIDE MIRROR ADJUST	Display the status of outside mirror LH adjustment operation
RH OUTSIDE MIRROR ADJUST	Display the status of outside mirror RH adjustment operation
BRIGHT VALUE OF SW ILLUMI	Display the status of switch illumination
LH FRONT POWER WINDOW	Display the status of left front power window operation
RH FRONT POWER WINDOW	Display the status of right front power window operation
LH REAR POWER WINDOW	Display the status of left rear power window operation
RH REAR POWER WINDOW	Display the status of right rear power window operation
CHILD SECURITY LOCK	Display the status of power window lock
VENT WINDOWS	–
POS OF POWER WINDOW	Display the status of power window position
POWER WINDOW	–

Monitor Item	Description
POWER WINDOW BLOCKAGE	–
PW RLY (TOWARD RAISING)	–
PW RLY (TOWARD LOWERING)	–
PW RLY (SWITCHES)	–
POWER WINDOW MOTOR	Display the status of right rear power window motor
OUTSIDE MIRROR ADJUST	Display the status of outside mirror adjustment operation
LEFT MIRROR SELECTION	Display the status of outside mirror LH operation
RIGHT MIRROR SELECTION	Display the status of outside mirror RH operation
FOLD IN/OUT OUTSIDE MIR	Display the status of outside mirror folding operation
MIRROR GLASS UP	Display the status of outside mirror glass operation
MIRROR GLASS DOWN	Display the status of outside mirror glass operation
MIRROR GLASS TO RIGHT	Display the status of outside mirror glass operation
MIRROR GLASS TO LEFT	Display the status of outside mirror glass operation
FOLDING-IN OUTSIDE MIR	Display the status of outside mirror folding operation
FOLDING-OUT OUTSIDE MIR	Display the status of outside mirror folding operation
MOVING DEFAULT POSITION	–
SPEC PTMR HRZTL INC ADJ	–
SPEC PTMR VRTCL INC ADJ	–
ACTL PTMR HRZTL INC ADJ	–
ACTL PTMR VRTCL INC ADJ	–
MIRROR HEATER ACTIVE	Display the status of door mirror defogger operation
SPEC HZL INC ADJ PARK POS	–
SPEC VTL INC ADJ PARK POS	–
SPEC HZL INC ADJ DFLT POS	–
SPEC VTL INC ADJ DFLT POS	–
MOVE TO PARKING POSITION	–
PARKING START POSITION	–
SEAT FORE/AFT ADJUSTMENT	–
SEAT HEIGHT ADJUSTMENT	–
SEAT INCLINATION ADJUSTMENT	–
BACKREST ADJUSTMENT	–
HEAD RESTRAINT SETTING	–
SWITCH 1 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH 2 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH 3 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH M FOR MEMORY FUNCTION	Display the status of seat memory switch operation
INFRARED SIG VALID KEY	–
INFRARED SIG INVALID KEY	–
DISRUPT OF INFRARED SIG	–
INFRARED SIG CNVN FTURE	–
CONVENIENCE FEATURE	–
DR DOR INRED RMT CNT RCV	–

Monitor Item	Description
UNLOCK CENTRAL LOCKING	Display the status of door unlock operation
LOCK CENTRAL LOCKING	Display the status of door lock operation
ACTIVATE ADD DR LOCK	**NOTE:** This item is displayed, but cannot be monitored.
DEACTIVATE ADD DR LOCK	**NOTE:** This item is displayed, but cannot be monitored.
LIN COMPONENT	–
WINDOW LOWERING	–
WINDOW RAISING	–
INCORRECT VIN	–
HALL SEN OR SIGNAL FAULTY	–
RLY STICK IN SWITCH STATE	–
CHECKSUM ERROR	–
DENML POW WND VIA DIG CM	–
UNDRVLT ACT OF POW WND	–
WCDG RST ACT OF POW WND	–
WIND RAIS FROM UPP STOP	–
INITITATE CNTR IN LOW BLCK	–
REVERSAL OF POW WINDOW	–
CRNT LMT VLE IN RNG 1	–
CRNT LMT VLE IN RNG 3	–
CRNT LMT VLE IN RNG 2	–
CRNT LMT VLE IN RNG 1 POS	–
CRNT LMT VLE IN RNG 3 POS	–
CRNT LMT VLE IN RNG 2 POS	–
STRE LMT VLE IN RNG 1	–
STRE LMT VLE IN RNG 3	–
STRE LMT VLE IN RNG 2	–
STRE LMT VLE IN RNG 1 POS	–
STRE LMT VLE IN RNG 3 POS	–
STRE LMT VLE IN RNG 2 POS	–
SEAT CUSHION LENGTH	–
FR PASSENGER SEAT ADJUST-MENT	–
ACT MTR POW CLS DRT CLS	–
STATUS LED SWITCH TRAILER HITCH	–
STATUS SWITCH TRAILER HITCH	–
ACTUAL VALUE STATUS	–

WORK SUPPORT

Monitor Item	Description
Power window initialization	This function able to perform the power window system initialization

ACTIVE TEST

Monitor Item	Description
Front door lock actuator left	This function able to check front door lock actuator LH operation
Front door switch illumination left	This function able to check switch illumination operation
Front super lock actuator left	This function able to check front door super lock actuator LH operation
Front door handle illumination left	This function able to check ambient lamp (front inside handle) LH operation
Front door exit and warning lamp left	This function able to check front door step lamp LH operation
Front door ambience illumination left	This function able to check ambient lamp (front door grip) LH operation
Side turn signal lamp left	This function able to check side turn signal lamp operation
Front power window motor left	This function able to check front power window motor LH operation
Outside mirror ambient lamp left	This function able to check ambient lamp (outside mirror) LH operation
Left blind spot assist warning	This function able to check BSW indicator operation
Auto anti-dazzling mirror	This function able to check auto anti-dazzling mirror operation
Power folding unit	–
Door mirror defogger	This function able to outside mirror defogger operation
Adjustment actuator motor via actuation	This function able to check outside mirror adjustment operation
Vertical and horizontal inclination adjustment	This function able to check outside mirror adjustment operation
Left memory function	This function able to check left seat memory operation
Denormalization of left front power window	–
Left outside mirror adjust	This function able to check left outside mirror adjustment operation
LEDs	This function able to check mirror and power window lock switch illumination operation
Control unit reset	–

SELF DIAGNOSTIC RESULT

Refer to DLK-60, "DTC Index".

DIAGNOSIS SYSTEM (RIGHT FRONT DOOR CONTROL UNIT)

CONSULT Function (Right Front Door Control Unit)

INFOID:0000000013759113

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with right front door control unit.

Diagnosis mode	Function Description
Self Diagnostic Result	Displays the diagnosis results judged by right front door control unit
Data Monitor	The right front door control unit input/output signals are displayed
Ecu Identification	The right front door control unit part number is displayed
Work Support	Changes the setting for system function
Active Test	The signals used to activate each device are forcibly supplied from right front door control unit
Configuration	Writes the vehicle specification when replacing right front door control unit

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Description
OPEN CENTRAL LOCKING	Display the status of left front door open
CLOSE CENTRAL LOCKING	Display the status of left front door close
RR LID REMOTE RELEASE-SW	–
RR LID REMOTE CLOSE-SW	–
MAN-NOTCH (DR OPEN)	–
MICROSWITCH (PRELATCH)	–
EXIT AND WARNING LAMP	–
MIRROR INDICATOR ACTIVE	–
DOOR INSIDE HANDLE ACTIVE	–
ENTRANCE LAMP ACTIVE	–
LIGHT BAR 1	–
I/L (BLIND SPOT ASSIST)	Display the status of BSW indicator
W/L (BLIND SPOT ASSIST)	Display the status of BSW indicator
LIGHT BAR 2	–
SWITCH ILLUMINATION	Display the status of switch illumination
CHILD SAFETY LOCK	Display the status of power window lock
LH OUTSIDE MIRROR ADJUST	Display the status of outside mirror LH adjustment operation
RH OUTSIDE MIRROR ADJUST	Display the status of outside mirror RH adjustment operation
BRIGHT VALUE OF SW ILLUMI	Display the status of switch illumination
LH FRONT POWER WINDOW	Display the status of left front power window operation
RH FRONT POWER WINDOW	Display the status of right front power window operation
LH REAR POWER WINDOW	Display the status of left rear power window operation
RH REAR POWER WINDOW	Display the status of right rear power window operation
CHILD SECURITY LOCK	Display the status of power window lock
VENT WINDOWS	–
POS OF POWER WINDOW	Display the status of power window position
POWER WINDOW	–

Monitor Item	Description
POWER WINDOW BLOCKAGE	–
PW RLY (TOWARD RAISING)	–
PW RLY (TOWARD LOWERING)	–
PW RLY (SWITCHES)	–
POWER WINDOW MOTOR	Display the status of right rear power window motor
OUTSIDE MIRROR ADJUST	Display the status of outside mirror adjustment operation
LEFT MIRROR SELECTION	Display the status of outside mirror LH operation
RIGHT MIRROR SELECTION	Display the status of outside mirror RH operation
FOLD IN/OUT OUTSIDE MIR	Display the status of outside mirror folding operation
MIRROR GLASS UP	Display the status of outside mirror glass operation
MIRROR GLASS DOWN	Display the status of outside mirror glass operation
MIRROR GLASS TO RIGHT	Display the status of outside mirror glass operation
MIRROR GLASS TO LEFT	Display the status of outside mirror glass operation
FOLDING-IN OUTSIDE MIR	Display the status of outside mirror folding operation
FOLDING-OUT OUTSIDE MIR	Display the status of outside mirror folding operation
MOVING DEFAULT POSITION	–
SPEC PTMR HRZTL INC ADJ	–
SPEC PTMR VRTCL INC ADJ	–
ACTL PTMR HRZTL INC ADJ	–
ACTL PTMR VRTCL INC ADJ	–
MIRROR HEATER ACTIVE	Display the status of door mirror defogger operation
SPEC HZL INC ADJ PARK POS	–
SPEC VTL INC ADJ PARK POS	–
SPEC HZL INC ADJ DFLT POS	–
SPEC VTL INC ADJ DFLT POS	–
MOVE TO PARKING POSITION	–
PARKING START POSITION	–
SEAT FORE/AFT ADJUSTMENT	–
SEAT HEIGHT ADJUSTMENT	–
SEAT INCLINATION ADJUSTMENT	–
BACKREST ADJUSTMENT	–
HEAD RESTRAINT SETTING	–
SWITCH 1 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH 2 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH 3 FOR MEMORY FUNCTION	Display the status of seat memory switch operation
SWITCH M FOR MEMORY FUNCTION	Display the status of seat memory switch operation
INFRARED SIG VALID KEY	–
INFRARED SIG INVALID KEY	–
DISRUPT OF INFRARED SIG	–
INFRARED SIG CNVN FTURE	–
CONVENIENCE FEATURE	–
DR DOR INRED RMT CNT RCV	–

Monitor Item	Description
UNLOCK CENTRAL LOCKING	Display the status of door unlock operation
LOCK CENTRAL LOCKING	Display the status of door lock operation
ACTIVATE ADD DR LOCK	**NOTE:** This item is displayed, but cannot be monitored.
DEACTIVATE ADD DR LOCK	**NOTE:** This item is displayed, but cannot be monitored.
LIN COMPONENT	–
WINDOW LOWERING	–
WINDOW RAISING	–
INCORRECT VIN	–
HALL SEN OR SIGNAL FAULTY	–
RLY STICK IN SWITCH STATE	–
CHECKSUM ERROR	–
DENML POW WND VIA DIG CM	–
UNDRVLT ACT OF POW WND	–
WCDG RST ACT OF POW WND	–
WIND RAIS FROM UPP STOP	–
INITITATE CNTR IN LOW BLCK	–
REVERSAL OF POW WINDOW	–
CRNT LMT VLE IN RNG 1	–
CRNT LMT VLE IN RNG 3	–
CRNT LMT VLE IN RNG 2	–
CRNT LMT VLE IN RNG 1 POS	–
CRNT LMT VLE IN RNG 3 POS	–
CRNT LMT VLE IN RNG 2 POS	–
STRE LMT VLE IN RNG 1	–
STRE LMT VLE IN RNG 3	–
STRE LMT VLE IN RNG 2	–
STRE LMT VLE IN RNG 1 POS	–
STRE LMT VLE IN RNG 3 POS	–
STRE LMT VLE IN RNG 2 POS	–
RIGHT SEAT CUSHION LENGTH SW	–
FR PASSENGER SEAT ADJUST-MENT	–
ACT MTR POW CLS DRT CLS	–
STATUS LED SWITCH TRAILER HITCH	–
STATUS SWITCH TRAILER HITCH	–
ACTUAL VALUE STATUS	–

WORK SUPPORT

Monitor Item	Description
Power window initialization	This function able to perform the power window system initialization

ACTIVE TEST

Monitor Item	Description
Front door exit and warning lamp right	This function able to check front door step lamp RH operation
Adjustment actuator motor via actuation	This function able to check outside mirror adjustment operation
Front door lock actuator right	This function able to check front door lock actuator RH operation
Front door switch illumination right	This function able to check switch illumination operation
Front super lock actuator right	This function able to check front door super lock actuator RH operation
Front door handle illumination right	This function able to check ambient lamp (front inside handle) RH operation
Front door ambience illumination right	This function able to check ambient lamp (front door grip) RH operation
Side turn signal lamp right	This function able to check side turn signal lamp operation
Front power window motor right	This function able to check front power window motor RH operation
Outside mirror ambient lamp right	This function able to check ambient lamp (outside mirror) RH operation
Right blind spot assist warning	This function able to check BSW indicator operation
Auto anti-dazzling mirror	This function able to check auto anti-dazzling mirror operation
Power folding unit	–
Door mirror defogger	This function able to outside mirror defogger operation
Vertical and horizontal inclination adjustment	This function able to check outside mirror adjustment operation
Right memory function	This function able to check right seat memory operation
Right outside mirror adjust	This function able to check right outside mirror adjustment operation
Denormalization of right rear power window	–
LEDs	This function able to check mirror and power window lock switch illumination operation
Control unit reset	–

SELF DIAGNOSTIC RESULT

Refer to DLK-70, "DTC Index".

ECU DIAGNOSIS INFORMATION

FRONT CAMERA UNIT

Reference Value

INFOID:0000000013583280

VALUES ON THE DIAGNOSIS TOOL

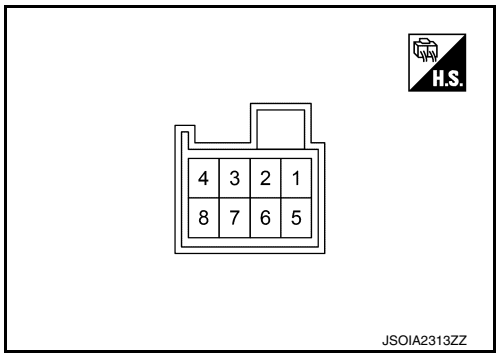
NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Condition	Value/Status
INSIDE TEMP OF CONT UNIT	—	°C
Inside temperature of control unit (Left camera)	—	°C
Status of calibration	—	Yes
	—	No
RESULT OF CALIBRATION	—	No Error
	—	INVAID
	—	COND
	—	NOTFND
	—	MOVING
	—	ANGLE
	—	NOTCAL
	—	VIN INV
	—	NOT ST
	—	ERROR1
	—	ERROR2
	—	ERROR3
	—	INT ERR
STATUS OF FUNCTION AHBA	—	OFF
	—	On
	—	SNA
STRG WHL VIB MTR STATUS	—	Stop
	—	Start
	—	UNSTBL
	—	STBL
	—	UNLMT
	—	LMTD
	—	NDEF
	—	SNA
OPERATING CONDITION	—	OFF
	—	On
BATTERY VOLTAGE	Ignition SW ON	Power supply voltage value
Supply voltage of cntrl module	Ignition SW ON	Power supply voltage value
PITCH ANGLE	—	—
ROLL ANGLE	—	—
YAW ANGLE	—	—

Monitor Item	Condition	Value/Status
OPERATING TIME	—	min
Activating signals functions : PMA Md RQ	—	OFF
	—	NOWRN
	—	WARN
	—	SNA
STATUS OF FUNCTION TSA	—	OFF
	—	NOWRN
	—	WARN
	—	SNA
STATUS OF FUNCTION WWA	—	OFF
	—	NOWRN
	—	WARN
	—	SNA
STATUS OF FUNCTION LKA	—	OFF
	—	LDW1
	—	LDW2
	—	LDW3
	—	LDP1
	—	LDP2
	—	LDP3
	—	SNA
EDGE FRONT LEFT	—	mm
EDGE FRONT RIGHT	—	mm
EDGE REAR LEFT	—	mm
EDGE REAR RIGHT	—	mm
STRG WHL VIB MTR STATUS	—	VIB OFF
	—	ON
	—	SHORT
	—	BLOCK
	—	OPEN
	—	VIB FLT
	—	LIN FLT
	—	SNA

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard value	Reference value
+	–	Signal name	Input/ Output			
1 (BR)	Ground	Ground	—	—	0 - 0.1 V	Approx. 0 V
2 (L)		CAN communication-H	—	—	—	—
3 (W)		CAN communication-L	—	—	—	—
4 (R)		Battery power supply	Input	Ignition switch OFF	10 - 16 V	Battery voltage
5 (O)		Heater ground	—	Ignition switch ON: Front camera unit heater ON	0 - 0.1 V	Approx. 0 V
6 (Y)		Heater power supply	Output	Ignition switch ON: Front camera unit heater ON	10 - 16 V	Battery voltage
				Ignition switch ON: Front camera unit heater OFF	0 - 0.1 V	Approx. 0 V

DTC Index

INFOID:0000000013583281

DTC	Items	Reference
B1EB0-56	Lane keeping assist has a malfunction	DAS-68
B1EB0-97	Lane keeping assist has a malfunction	DAS-68
B210A-00	Power supply circuit	DAS-74
B210B-00	Power supply circuit	DAS-75
B210D-00	Power supply	DAS-77
B210E-00	Power supply	DAS-83
B21A0-00	No-load current consumption malf	DAS-88
B227E-98	MOTOR ELECTRONICS OVER TEMP	DAS-89
B227E-9A	MOTOR ELECTRONICS OVER TEMP	DAS-89
B2286-00	Calibration	DAS-90
B229B-04	Multifunction camera has malf	DAS-91
B229B-56	Multifunction camera has malf	DAS-91
B229B-64	Multifunction camera has malf	DAS-91
B229B-97	Field of view is restricted	DAS-91
B23A8-11	Output for window heating has malf	DAS-94
B23A8-12	Output for window heating has malf	DAS-94
B23A8-13	Output for window heating has malf	DAS-94
P1805-04	Hardware monitor detected malf	DAS-113
U0010-88	Communication with CAN has malf	DAS-114
U0100-87	Communication error	DAS-115
U0122-87	Lost Communication With VDCM	DAS-118
U0141-87	Communication error	DAS-121
U0142-87	Lost communication with BCM B	DAS-122
U0155-87	COMMUNICATION ERROR (LOST)	DAS-126
U0168-87	COMMUNICATION ERROR (LOST)	DAS-129

DTC	Items	Reference
U0212-87	COMMUNICATION ERROR (LOST)	DAS-132
U0401-82	Communication error (invalid)	DAS-138
U0401-83	Communication error (invalid)	DAS-138
U0416-00	COMMUNICATION ERROR (INVALID)	DAS-143
U0416-82	COMMUNICATION ERROR (INVALID)	DAS-143
U0416-83	COMMUNICATION ERROR (INVALID)	DAS-143
U0429-82	COMMUNICATION ERROR (INVALID)	DAS-150
U0429-83	COMMUNICATION ERROR (INVALID)	DAS-150
U120B-87	Communication error	DAS-159
U120B-97	Communication error	DAS-159
U1459-82	Implausible data received from H/L	DAS-165
U1459-83	Implausible data received from H/L	DAS-165

SIDE RADAR LH

Reference Value

INFOID:0000000013583282

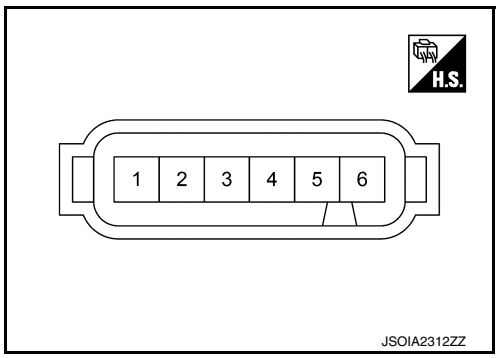
VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT MONITOR ITEM

Monitor Item	Condition	Value/Status
FUNC BLIND SPOT ASSIST	—	—
TRAILER HITCH	—	—
BSA FUNCTION STATUS	—	—
RADAR SYSTEM STATUS	—	—
LH BLIND SPOT ASSIST W/L	—	—
RH BLIND SPOT ASSIST W/L	—	—

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard value	Reference value
+	–	Signal name	Input/ Output			
1 (BR)	Ground	Ground	—	—	0 - 0.1 V	Approx. 0 V
2 (P)	—	CAN communication-H	—	—	—	—
3 (P/W)	—	CAN communication-L	—	—	—	—
4 (B)	Ground	Battery power supply	Input	Ignition switch OFF	10 - 16 V	Approx. 12 V

DTC Index

INFOID:0000000013583283

DTC	Items	Reference
B210D-00	Power supply	DAS-78
B210E-00	Power supply	DAS-84

DTC	Items	Reference
C1101-00	Radar sensor 5 has a malfunction	DAS-103
C1101-09	Radar sensor 5 has a malfunction	DAS-103
C1101-4B	Radar sensor 5 has a malfunction	DAS-103
C1101-55	Radar sensor 5 has a malfunction	DAS-103
C1101-68	Radar sensor 5 has a malfunction	DAS-103
C1101-FA	Radar sensor 5 has a malfunction	DAS-103
C1111-00	Radar sensor 5 is disrupted	DAS-108
C1111-FA	Radar sensor 5 is blocked	DAS-108
P1644-00	INTERNAL CONTROL MODULE	DAS-111
U0100-87	Communication error	DAS-116
U0122-87	Lost Communication With VDCM	DAS-119
U0146-87	COMMUNICATION ERROR (LOST)	DAS-124
U0155-87	COMMUNICATION ERROR (LOST)	DAS-127
U0168-87	COMMUNICATION ERROR (LOST)	DAS-130
U0212-00	COMMUNICATION ERROR (LOST)	DAS-133
U0212-87	COMMUNICATION ERROR (LOST)	DAS-133
U0252-00	Lost Communication With LCM Rear B	DAS-136
U0401-83	Communication error (invalid)	DAS-138
U0402-00	COMMUNICATION ERROR (INVALID)	DAS-141
U0416-00	COMMUNICATION ERROR (INVALID)	DAS-144
U0416-82	COMMUNICATION ERROR (INVALID)	DAS-144
U0423-00	COMMUNICATION ERROR (INVALID)	DAS-146
U0427-83	COMMUNICATION ERROR (INVALID)	DAS-148
U0429-83	COMMUNICATION ERROR (INVALID)	DAS-150
U0504-00	Communication error	DAS-153
U0505-00	Communication error	DAS-155
U1043-88	Peripheral CAN comm has malfunction	DAS-157
U140D-00	WHEEL SPEED SIGNAL	DAS-161
U144E-87	Communication error	DAS-163

SIDE RADAR RH

Reference Value

INFOID:0000000013583284

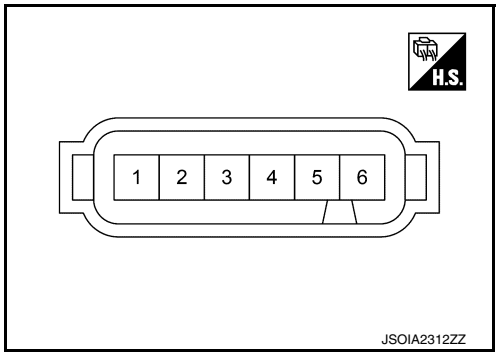
VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT MONITOR ITEM

Monitor Item	Condition	Value/Status
FUNC BLIND SPOT ASSIST	—	—
TRAILER HITCH	—	—
BSA FUNCTION STATUS	—	—
RADAR SYSTEM STATUS	—	—
LH BLIND SPOT ASSIST W/L	—	—
RH BLIND SPOT ASSIST W/L	—	—

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard value	Reference value
+	–	Signal name	Input/ Output			
1 (Y)	Ground	Ground	—	—	0 - 0.1 V	Approx. 0 V
2 (G/W)	—	CAN communication-H	—	—	—	—
3 (G)	—	CAN communication-L	—	—	—	—
4 (B)	Ground	Battery power supply	Input	Ignition switch OFF	10 - 16 V	Approx. 12 V
5 (BR)	Ground	Ground	—	—	0 - 0.1 V	Approx. 0 V
6 (Y)	Ground	Ground	—	—	0 - 0.1 V	Approx. 0 V

DTC Index

INFOID:0000000013583285

DTC	Items	Reference
B210D-00	Power supply	DAS-80
B210E-00	Power supply	DAS-85
C1101-00	Radar sensor 5 has a malfunction	DAS-105
C1101-09	Radar sensor 5 has a malfunction	DAS-105
C1101-4B	Radar sensor 5 has a malfunction	DAS-105
C1101-55	Radar sensor 5 has a malfunction	DAS-105
C1101-68	Radar sensor 5 has a malfunction	DAS-105
C1101-FA	Radar sensor 5 has a malfunction	DAS-105
C1111-00	Radar sensor 5 is disrupted	DAS-109
C1111-FA	Radar sensor 5 is blocked	DAS-109
P1644-00	INTERNAL CONTROL MODULE	DAS-111
U0100-87	Communication error	DAS-117
U0122-87	Lost Communication With VDCM	DAS-120
U0146-87	COMMUNICATION ERROR (LOST)	DAS-125
U0155-87	COMMUNICATION ERROR (LOST)	DAS-128
U0168-87	COMMUNICATION ERROR (LOST)	DAS-131
U0212-00	COMMUNICATION ERROR (LOST)	DAS-134
U0212-87	COMMUNICATION ERROR (LOST)	DAS-134
U0252-00	Lost Communication With LCM Rear B	DAS-136
U0401-83	Communication error (invalid)	DAS-139
U0402-00	COMMUNICATION ERROR (INVALID)	DAS-141
U0416-00	COMMUNICATION ERROR (INVALID)	DAS-144
U0416-82	COMMUNICATION ERROR (INVALID)	DAS-144
U0423-00	COMMUNICATION ERROR (INVALID)	DAS-146
U0427-83	COMMUNICATION ERROR (INVALID)	DAS-148
U0429-83	COMMUNICATION ERROR (INVALID)	DAS-151
U0504-00	Communication error	DAS-153
U0505-00	Communication error	DAS-155
U1403-88	Peripheral CAN comm has malfunction	DAS-158
U140D-00	WHEEL SPEED SIGNAL	DAS-161
U144E-87	Communication error	DAS-164
U1502-87	Radar sensor 8 comm has malfunction	DAS-167
U1503-87	Radar sensor 8 comm has malfunction	DAS-169
U1504-87	Radar sensor 8 comm has malfunction	DAS-171

STEERING COLUMN CONTROL MODULE

List of ECU Reference

INFOID:0000000013583286

ECU name	Refer to
Steering column control module	BCS-59, "Reference Value"
	BCS-61, "DTC Index"

FRONT DOOR CONTROL UNIT

List of ECU Reference

INFOID:0000000013583287

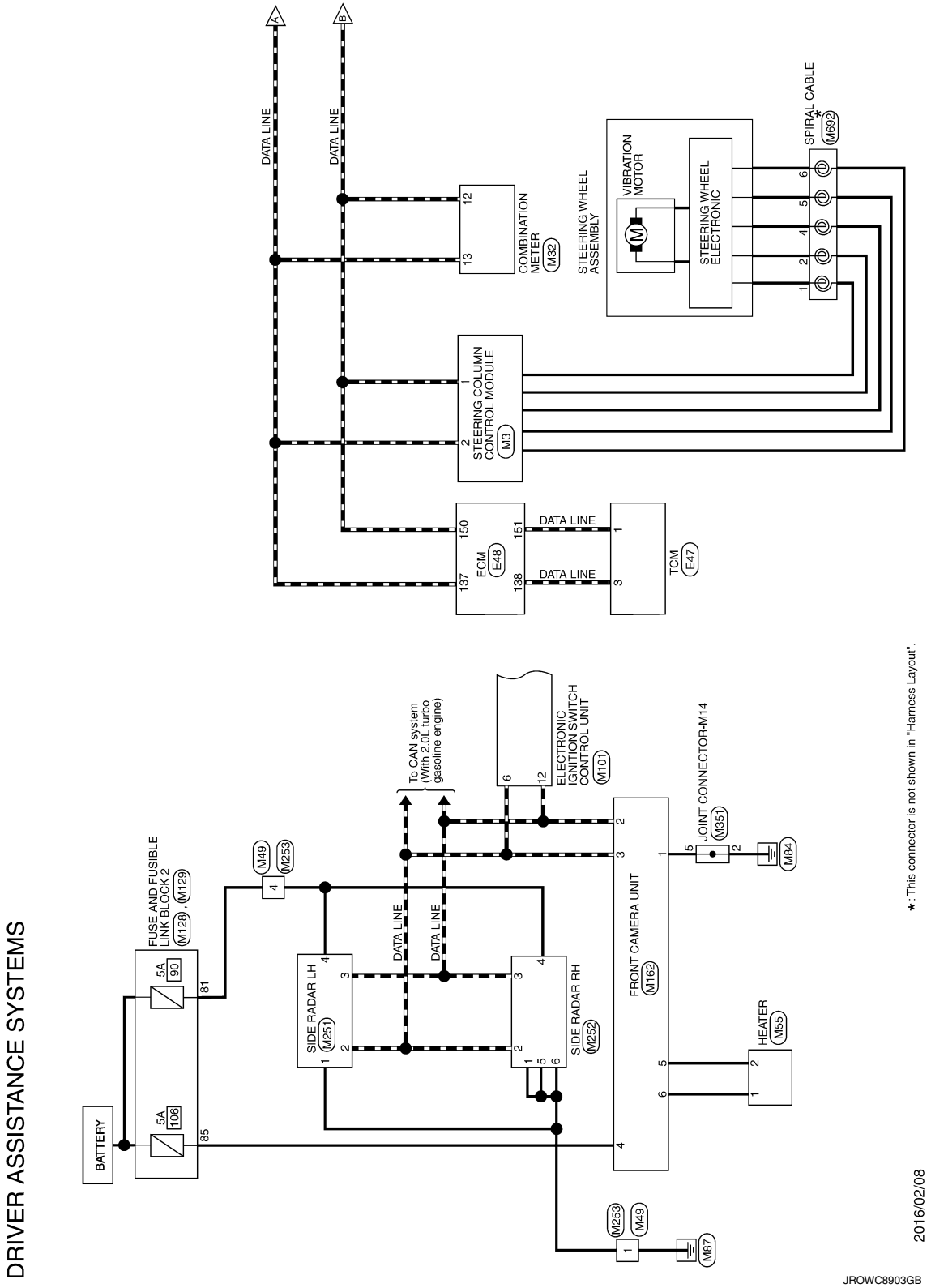
ECU name	Refer to
Left front door control unit	DLK-50, "Reference Value"
	DLK-60, "DTC Index"
Right front door control unit	DLK-62, "Reference Value"
	DLK-70, "DTC Index"

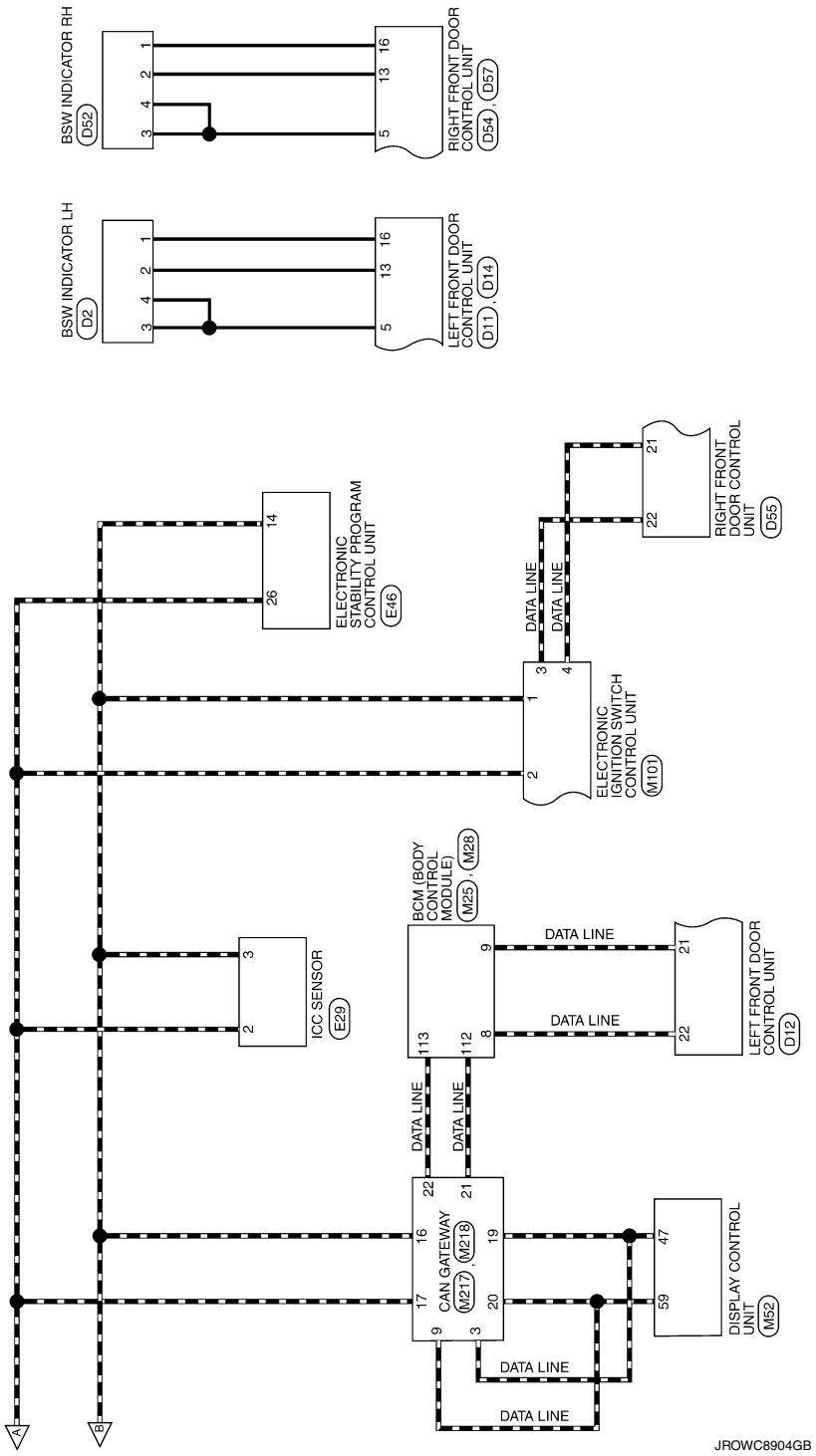
WIRING DIAGRAM

DRIVER ASSISTANCE SYSTEMS

Wiring Diagram

INFOID:0000000013583288




BSW INDICATOR RH
D52
RIGHT FRONT DOOR CONTROL UNIT
D54, D57
BSW INDICATOR LH
D2
LEFT FRONT DOOR CONTROL UNIT
D11, D14
ELECTRONIC STABILITY PROGRAM CONTROL UNIT
E46
RIGHT FRONT DOOR CONTROL UNIT
D55
DATA LINE
ELECTRONIC IGNITION SWITCH CONTROL UNIT
M101
BCM (BODY CONTROL MODULE)
M25, M28
ICC SENSOR
E29
LEFT FRONT DOOR CONTROL UNIT
D12
CAN GATEWAY
M217, M218
DISPLAY CONTROL UNIT
M52
A
B
JROWC8904GB

DRIVER ASSISTANCE SYSTEMS

Connector No.	D2
Connector Name	BSW INDICATOR LH
Connector Type	TH04MW-NH

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	L	-
3	B	-
4	BR	-

Connector No.	D11
Connector Name	LEFT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025405981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	AUOTMATIC DIMMING MIRROR PWR
2	W	GND
3	B	DOOR MIRROR DEFOGGER GROUND
4	L	DOOR MIRROR DEFOGGER POWER SUPPLY
5	BR	BSW INDICATOR GND
6	P	ADJUSTMENTMOTOR POWER
7	L	VERTICAL INCLINATION CONT
8	Y	HORIZONTAL INCLINATION CONT
9	G	TURN SIG LAMP POWER
10	V	TURN SIG LAMP GND

Connector No.	D12
Connector Name	LEFT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025406281

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
21	BR	BODY CAN 2-L
22	R	BODY CAN 2-H
23	L	ROTARY CATCH SIGNAL
24	BR	GROUND
25	R	BATTERY POWER SUPPLY

Connector No.	D14
Connector Name	LEFT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025407881

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
11	BR	AMBIENT LAMP (OUTSIDE MIRROR) PWR
12	V	AMBIENT LAMP (OUTSIDE MIRROR) GND
13	L	BSW INDICATOR STANDBY SIG
14	O	DOOR MIRROR LH OPEN
15	O	DOOR MIRROR LH CLOSE
16	L	BSW INDICATOR WARNING SIG
17	GR	HORIZONTAL INCLINATION SIG
18	BR	POTENTIONMETER GND
19	G	VERTICAL INCLINATION SIG
20	B	POTENTIONMETER PWR

Connector No.	D52
Connector Name	BSW INDICATOR RH
Connector Type	TH04MW-NH

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
2	L	-
3	B	-
4	BR	-

Connector No.	D54
Connector Name	RIGHT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025405981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	AUOTMATIC DIMMING MIRROR PWR
2	Y	GND
3	G	DOOR MIRROR DEFOGGER GROUND
4	L	DOOR MIRROR DEFOGGER POWER SUPPLY
5	BR	BSW INDICATOR GND
6	V	ADJUSTMENTMOTOR POWER
7	P	VERTICAL INCLINATION CONT
8	W	HORIZONTAL INCLINATION CONT
9	GR	TURN SIG LAMP POWER
10	O	TURN SIG LAMP GND

Connector No.	D55
Connector Name	RIGHT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025406281

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
21	BR	BODY CAN 1-L
22	R	BODY CAN 1-H
24	BR	GROUND
25	R	BATTERY POWER SUPPLY

Connector No.	D57
Connector Name	RIGHT FRONT DOOR CONTROL UNIT
Connector Type	MB_A0025407881

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
11	L	AMBIENT LAMP (OUTSIDE MIRROR) PWR
12	P	AMBIENT LAMP (OUTSIDE MIRROR) GND
13	L	BSW INDICATOR STANDBY SIG
14	B	DOOR MIRROR LH OPEN
15	B	DOOR MIRROR LH CLOSE
16	L	BSW INDICATOR WARNING SIG
17	O	HORIZONTAL INCLINATION SIG
18	O	POTENTIONMETER GND
19	BR	VERTICAL INCLINATION SIG
20	Y	POTENTIONMETER PWR

JROWC8905GB

DRIVER ASSISTANCE SYSTEMS

Connector No.	E29
Connector Name	ICC SENSOR
Connector Type	MB_A2105404581

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
2	W	CAN-H
3	G	CAN-L
8	B	BATTERY POWER SUPPLY

Connector No.	E46
Connector Name	ELECTRONIC STABILITY PROGRAM CONTROL UNIT
Connector Type	MB_A2465400581

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	MOTOR POWER SUPPLY
2	W	BRAKE PEDAL
4	P	RIGHT FRONT AXLE RPM SENSOR SIGNAL
5	GR	BRAKE VACUUM SENSOR POWER SUPPLY
6	B	BRAKE LIGHT SWITCH-L
7	R	BATTERY POWER SUPPLY
8	Y	LEFT FRONT AXLE RPM SENSOR SIGNAL
10	O	STANDSTILL CONTROL (SSC) STATUS
12	P	BRAKE VACUUM SENSOR SIGNAL
13	BR	GROUND (MOTOR)
14	G	CAN-L
16	B	RIGHT FRONT AXLE RPM SENSOR POWER SUPPLY
17	Y	RIGHT REAR AXLE RPM SENSOR POWER SUPPLY
18	BR	LEFT REAR AXLE RPM SENSOR SIGNAL
19	W	LEFT FRONT AXLE RPM SENSOR POWER SUPPLY
23	B	BRAKE VACUUM SENSOR GROUND

25	P	VALVE RELAY POWER SUPPLY
26	W	CAN-H
28	R	BATTERY POWER SUPPLY
29	P	RIGHT REAR AXLE RPM SENSOR SIGNAL
30	V	BRAKE LIGHT SWITCH-H
31	GR	LFET REAR AXLE RPM SENSOR POWER SUPPLY
32	L	BRAKE LIGHT SWITCH GROUND
35	R	BRAKE LIGHT SWITCH POWER SUPPLY
38	B	GROUND (VALVE)

Connector No.	E47
Connector Name	TCM
Connector Type	MB_A2465450026

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	CAN-L
2	V	NOT P
3	GR	CAN-H
5	W	BATTERY POWER SUPPLY

Connector No.	E48
Connector Name	ECM
Connector Type	MB_A0075406981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
97	R	POWER SUPPLY (ECM)
98	BR	ECM GROUND
99	V	POWER SUPPLY (ECM)
100	BR	ECM GROUND
101	R	POWER SUPPLY (ECM)

102	B	ECM GROUND
103	L	COOLING FAN CONTROL SIGNAL
104	R	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 3)
105	G	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
106	BR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR1)
111	B	IGNITION SIGNAL
112	Y	POWER SUPPLY (BATTERY)
116	W	STARTER RELAY-L
119	GR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 3)
120	O	SENSOR GROUND
122	R	HOT START SIGNAL
123	GR	MOTOR RELAY CONTROL SIGNAL
127	O	FUEL PUMP ON SIGNAL
132	G	ACCELERATOR PEDAL POSITION SENSOR 1
136	Y	POWERTRAIN SENSOR CAN-H
137	W	CAN-H
138	GR	POWERTRAIN CAN-H
141	B	WATER PUMP RELAY CONTROL SIGNAL
145	W	ACCELERATOR PEDAL POSITION SENSOR 2
146	G	FUEL TANK PRESSURE SENSOR
147	L	CRASH SIGNAL
148	W	STARTER RELAY-H
149	B	POWERTRAIN SENSOR CAN-L
150	G	CAN-L
151	L	POWERTRAIN CAN-L
152	V	EVAP CANISTER VENT CONTROL VALVE
153	BR	EVAP PURGE CONTROL VALVE

Connector No.	M3
Connector Name	STEERING COLUMN CONTROL MODULE
Connector Type	MB_A2045401281

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CAN-L (CHASIS)
2	W	CAN-H (CHASIS)
3	BR	GND
4	R	KL30G
6	R	KL30
7	BR	GND
8	L	AB1+

9	Y	AB1-
10	V	AB2+
11	G	AB2-

Connector No.	M25
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A0075405081

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	ROTARY LIGHT SW GND
2	O	ROTARY LIGHT SW (PU,PR/TAL)
3	R	ROTARY LIGHT SW (AUTO/LOW)
4	G	ROTARY LIGHT SW (FR FOG)
5	Y	-
7	GR	SWITCH INDICATOR
8	R	CAN-H (BODY 2)
9	BR	CAN-L (BODY 2)
12	O	LIN (IBS)
14	G	FOOT LAMP

Connector No.	M28
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A1665400481

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
67	V	BACK DOOR UNLOCK
69	GR	STOP LAMP (BODY RH)
70	B	REAR TURN SIGNAL LH
71	GR	BACK-UP LAMP RH
72	Y	LICENSE PLATE LAMP RH

JROWC8906GB

DRIVER ASSISTANCE SYSTEMS

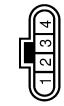
73	L	RR POWER WINDOW SW RH UP
74	B	RR POWER WINDOW SW RH DOWN
75	L	RR POWER WINDOW SW RH GND
76	GR	HALL SENSOR RH POWER SUPPLY
77	R	SUB BAT-
78	B	TERMINAL RELAY 15R1 CONT
80	B	REAR WIPER RELAY CONT
82	GR	TAIL LAMP (BODY LH)
83	P	TERMINAL RELAY 15R2 CONT
85	B	TAIL LAMP (BK LH)
87	R	BAT (VIA LATCHING TERMINAL RELAY 30G)
89	O	HALL SENSOR RH GND
90	V	HALL SENSOR RH SIGNAL
91	P	FUEL LEVEL SENSOR GND
92	L	FUEL LEVEL SENSOR
93	GR	FUEL LEVEL SENSOR
94	Y	FUEL FILLER LID STATUS
97	G	LATCHING TERMINAL RELAY 30G CONT 1
98	B	LATCHING TERMINAL RELAY 30G GND 1
99	W	LATCHING TERMINAL RELAY 30G GND 2
100	V	LATCHING TERMINAL RELAY 30G CONT 2
101	Y	REAR DOOR INSIDE HANDLE LAMP CONT
102	GR	AMBIENT LAMP CONT
103	V	SUB BAT RELAY CONT
105	G	RR DOOR LH UNLOCK
106	W	FUEL FILLER LID UNLOCK
107	L	RR DOOR LH LOCK
108	R	SUB BAT+
109	O	LIN (ROOF)
112	BR	CAN-L (BODY 1)
113	R	CAN-H (BODY 1)
114	B	INJECTION RELAY CONT

Connector No.	M32
Connector Name	COMBINATION METER
Connector Type	MB_A0525452726



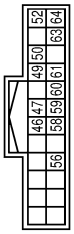
Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
4	R	BATTERY POWER SUPPLY
12	GR	CAN-L
13	W	CAN-H
17	BR	CAN-L
18	R	CAN-H

Connector No.	M49
Connector Name	WIRE TO WIRE
Connector Type	MB_A0535451528



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	L	-
3	W	-
4	O	-

Connector No.	M52
Connector Name	DISPLAY CONTROL UNIT
Connector Type	TH24FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
46	G	AV COMMUNICATION SIGNAL (L)
47	P	CAN-L
49	R	DIMMER SIGNAL
50	BR	REVERSE SIGNAL
52	B	GROUND
56	BR	CAMERA SWITCH SIGNAL
58	Y	AV COMMUNICATION SIGNAL (H)
59	L	CAN-H
60	W	IGNITION SIGNAL
61	R	VEHICLE SPEED SIGNAL (8-PULSE)
63	L	ACC POWER SUPPLY
64	Y	BATTERY POWER SUPPLY

Connector No.	M55
Connector Name	HEATER
Connector Type	MB_A0535456628



Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	-
2	O	-

Connector No.	M101
Connector Name	ELECTRONIC IGNITION SWITCH CONTROL UNIT
Connector Type	MB_A0265458426

Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CHASSIS CAN-L
2	W	CHASSIS CAN-H
3	R	BODY CAN 1-H
4	BR	BODY CAN 1-L
6	W	STEERING LOCK OPERATION
9	GR	REMOTE KEYLESS
10	W	POWER SUPPLY
11	BR	DIAGNOSTIC CAN-L
12	L	DIAGNOSTIC CAN-H

Connector No.	M128
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A0395456128

Terminal No.	Color Of Wire	Signal Name [Specification]
69	B	-
70	P	-
71	B	-
73	BR	-
74	B	-
75	G	-
76	R	-
77	Y	-
78	P	-
79	GR	-
81	O	-
82	B	-

Connector No.	M129
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A2205453428

Terminal No.	Color Of Wire	Signal Name [Specification]
85	R	-
92	BR	-

JROWC8907GB

DRIVER ASSISTANCE SYSTEMS

Connector No.	M162
Connector Name	FRONT CAMERA UNIT
Connector Type	MB_A0255458826

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
2	L	CAN-L
3	W	CAN-H
4	R	BATTERY POWER SUPPLY
5	O	HEATER GROUND
6	Y	HEATER POWER SUPPLY

Connector No.	M217
Connector Name	CAN GATEWAY
Connector Type	MB_A0225400481

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	SOS SWITCH LED SIGNAL
2	R	DIMMER SIGNAL
3	P	MULTIFUNCTION MEDIA CAN-L
4	O	ENGINE SPEED SIGNAL
7	BR	REVERSE SIGNAL
8	V	ACC POWER SUPPLY
9	L	MULTIFUNCTION MEDIA CAN-H
10	W	SOS CALL SWITCH SIGNAL
11	Y	VEHICLE SPEED SIGNAL
12	W	ILLUMINATION CONTROL SIGNAL

Connector No.	M218
Connector Name	CAN GATEWAY
Connector Type	MB_A0225400581

Terminal No.	Color Of Wire	Signal Name [Specification]
13	B	GROUND
14	G	AV COMMUNICATION-L
15	L	AV COMMUNICATION-H
16	G	CHASSIS CAN-L
17	W	CHASSIS CAN-H
18	O	BATTERY POWER SUPPLY
19	P	MULTIFUNCTION MEDIA CAN-L
20	L	MULTIFUNCTION MEDIA CAN-H
21	BR	BODY CAN 1-L
22	R	BODY CAN 1-H
23	L	DIAGNOSTIC CAN-L
24	V	DIAGNOSTIC CAN-H

Connector No.	M251
Connector Name	SIDE RADAR LH
Connector Type	MB_A2215400981

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	GROUND
2	P	CAN-H
3	P/W	CAN-L
4	B	BATTERY POWER SUPPLY

Connector No.	M252
Connector Name	SIDE RADAR RH
Connector Type	MB_A2215400981

Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	GROUND
2	G/W	CAN-H
3	G	CAN-L
4	B	BATTERY POWER SUPPLY
5	BR	GROUND
6	Y	GROUND

Connector No.	M253
Connector Name	WIRE TO WIRE
Connector Type	MB_A0225452726

Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	-
2	L	-
3	W	-
4	B	-

Connector No.	M351
Connector Name	JOINT CONNECTOR-M14
Connector Type	FEA08JB

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	B	-
3	B	-
5	BR	-
7	G	-
8	B	-

Connector No.	M692
Connector Name	SPIRAL CABLE
Connector Type	A204004169 9BLATT2

Terminal No.	Color Of Wire	Signal Name [Specification]
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

JROWC8908GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000013583289

1.INTERVIEW FOR MALFUNCTION

It is also important to clarify the customer concerns before starting the inspection. Interview the customer about the concerns carefully and understand the symptoms fully.

NOTE:

The customers are not professionals. Never assume that “maybe the customer means···” or “maybe the customer mentioned this symptom”.

>> GO TO 2.

2.SELF-DIAGNOSIS WITH CONSULT

1. Perform “All DTC Reading” with CONSULT.
2. Check if the DTC is detected on the self-diagnosis results of following.

- “Front camera unit”
- “Side radar LH”
- “Side radar RH”
- “Steering Column Control Module”
- “Left front door control unit”
- “Right front door control unit”

Is any DTC detected?

YES >> GO TO 3.
NO >> GO TO 5.

3.TROUBLE DIAGNOSIS BY DTC

1. Check the DTC in the self-diagnosis results.
2. Perform trouble diagnosis for the detected DTC following.

- “Front camera unit”: DAS-44, "DTC Index"
- “Side radar LH”: DAS-46, "DTC Index"
- “Side radar RH”: DAS-49, "DTC Index"
- “Steering Column Control Module”: BCS-61, "DTC Index"
- “Left front door control unit”: DLK-60, "DTC Index"
- “Right front door control unit”: DLK-70, "DTC Index"

>> GO TO 4.

4.MALFUNCTIONING PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 5.

5.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

1. Erases self-diagnosis results.
2. Perform “All DTC Reading” again after repairing or replacing the specific items.
3. Check if any DTC is detected in self-diagnosis results of following.

- “Front camera unit”
- “Side radar LH”
- “Side radar RH”
- “Steering Column Control Module”
- “Left front door control unit”
- “Right front door control unit”

Is any DTC detected?

YES >> GO TO 3.
NO >> INSPECTION END

ADDITIONAL SERVICE WHEN REPLACING FRONT CAMERA UNIT

Description

INFOID:0000000013583290

Always adjust the camera aiming after removing and installing or replacing the front camera unit. Refer to DAS-59, "Work Procedure".

CAUTION:

The system does not operate normally unless the camera aiming adjustment is performed. Always perform it.

Work Procedure

INFOID:0000000013583291

1.PERFORM CONFIGURATION

Perform the configuration of front camera unit. Refer to DAS-66, "FRONT CAMERA UNIT : Description".

>> GO TO 2.

2.CAMERA AIMING ADJUSTMENT

Perform the camera aiming adjustment. Refer to DAS-60, "Description".

>> GO TO 3.

3.PERFORM SELF-DIAGNOSIS

Perform the self-diagnosis of lane camera unit with CONSULT. Check if any DTC is detected.

Is any DTC detected?

YES >> Perform the trouble diagnosis for the detected DTC. Refer to DAS-44, "DTC Index"

NO >> INSPECTION END

CAMERA AIMING ADJUSTMENT

Description

INFOID:0000000013583292

Always adjust the camera aiming after removing and installing or replacing the front camera unit. Refer to DAS-60, "Work Procedure (Preparation)".

CAUTION:

- **The vehicle must be standing horizontally on a level surface.**
- **Park the vehicle with all four wheels on a flat surface without any additional load.**
- **The vehicle is at the normal level.**
- **Check tire pressure and correct if necessary.**
- **The headlamps must be switched off.**
- **Straighten steering.**
- **All the doors of the vehicle must be closed.**
- **Start engine and allow to idle.**

SET UP OF TARGET

- The target must be set up on the same horizontal and level surface as the vehicle.
- Position the target at the center of the bumper.
- Ensure that target is parallel with the bumper.
- If necessary, clean the windshield in the area of the front camera.

Work Procedure (Preparation)

INFOID:0000000013583293

1. PERFORM SELF-DIAGNOSIS

1. Perform self-diagnosis of front camera unit.
2. Erase DTC if DTC is detected.

Is any current DTC detected?

YES >> Perform diagnosis on the detected DTC and repair or replace the malfunction parts. Refer to DAS-44, "DTC Index".

NO >> GO TO 2.

2. PREPARATION BEFORE CAMERA AIMING ADJUSTMENT

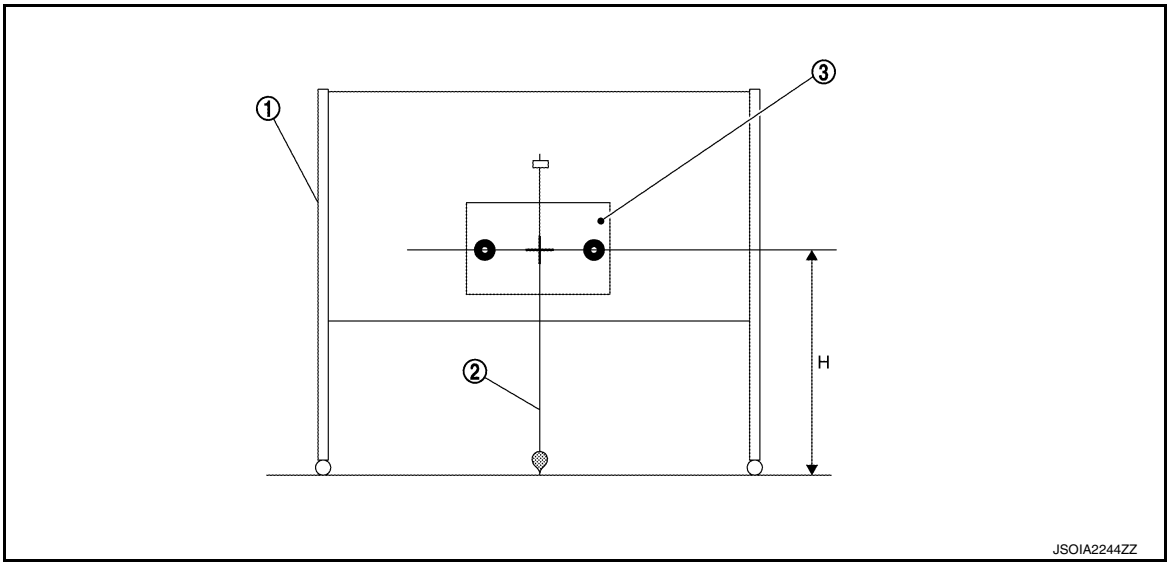
1. Adjust the tire pressure to the specified pressure value.
2. Maintain no-load in vehicle.
3. Check if coolant and engine oil are filled up to correct level and fuel tank is full.
4. Shift the selector lever to “P” position and release the parking brake.
5. Clean the windshield.
6. Completely clear off the instrument panel.

>> GO TO 3.

3. PREPARATION OF AIMING ADJUSTMENT JIG

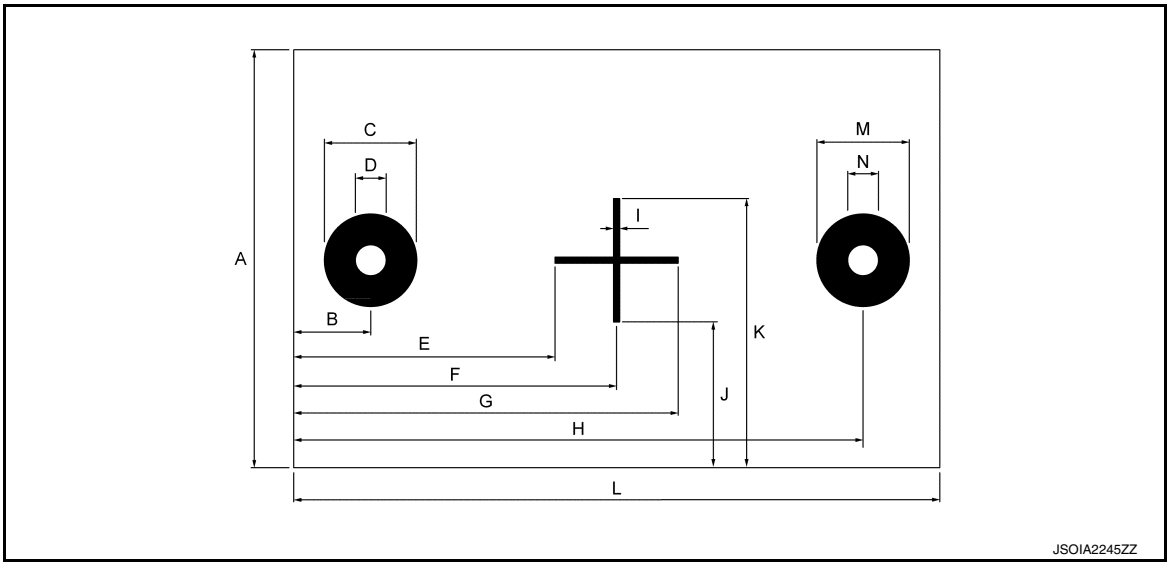
Prepare the aiming adjustment jig according to the following procedure and the figure.

1. Print out the target mark attached in this service manual. Refer to DAS-64, "Work Procedure (Target Mark Sample)".
2. Stick a printed target mark on the board with a scotch tape or a piece of double-sided tape.
   NOTE:
   - Use the board that peripheral area of the target is monochrome such as a white-board.
   - Notice that the cross of the target is horizontal and vertical.



① Board ② String ③ Printed target

Height of a target center (H) : 1275 mm (50.2 in)



A	**: 200.0 mm (7.87 in)**	**H**	**: 277.5 mm (10.93 in)**
B	**: 37.5 mm (1.476 in)**	**I**	**: 3.0 mm (0.12 in)**
C	**: 45.0 mm (1.77 in)**	**J**	**: 70.0 mm (2.76 in)**
D	**: 15.0 mm (0.59 in)**	**K**	**: 130.0 mm (5.12 in)**
E	**: 127.5 mm (5.02 in)**	**L**	**: 315.0 mm (12.40 in)**
F	**: 157.5 mm (6.20 in)**	**M**	**: 45.0 mm (1.77 in)**
G	**: 187.5 mm (7.38 in)**	**N**	**: 15.0 mm (0.59 in)**

>> Proceed to DAS-61, "Work Procedure (Target Setting)".

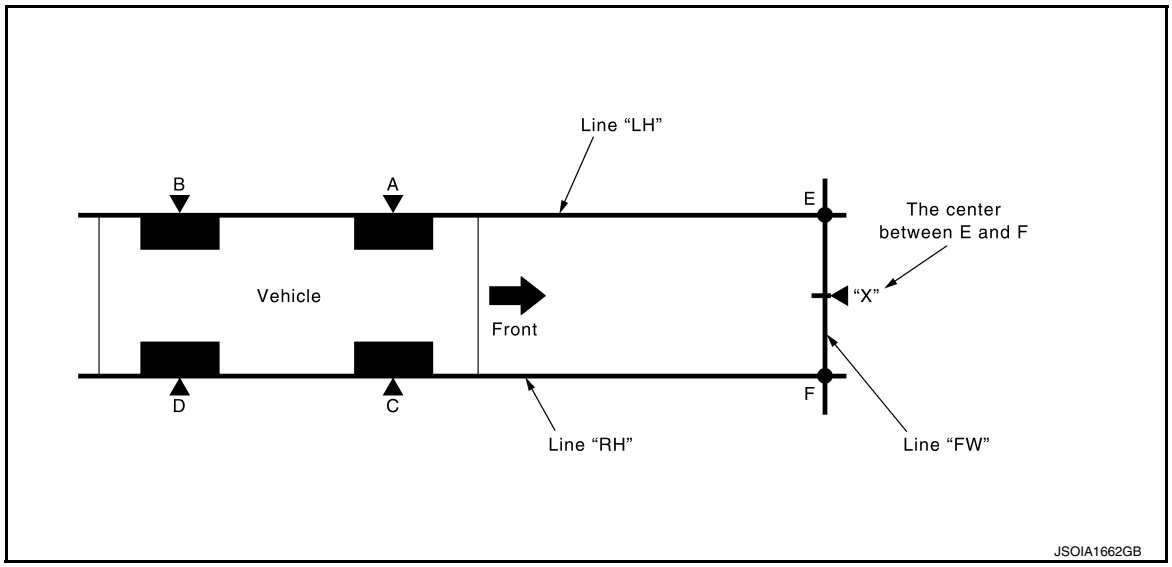
Work Procedure (Target Setting)

INFOID:0000000013583294

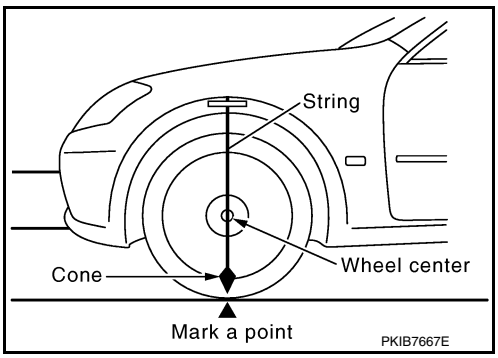
CAUTION:

- **Be sure to place the target correctly according to work procedures because the system may not operate normally.**
- **Perform this operation in a horizontal position where there is a clear view for 3 m (9.84 ft) forward and 3 m (9.84 ft) wide.**
- **Place the target in a well-lighted location. (Poor lighting may make it hard to adjust.)**
- **The target may not be detected when there is a light source within 1.5 m (4.92 ft) from either side and within 1 m (3.28 ft) upward/downward from the target.**
- **Check the location of the sun. (Sunlight should not shine directly on the front of the vehicle.)**
- **The target may not be detected when there is the same pattern of black and white as the target when the pattern is within 1 m (3.28 ft) from either side and upward/downward position from the target. (It is desirable that the vehicle is positioned on the opposite side of a single-color wall.)**

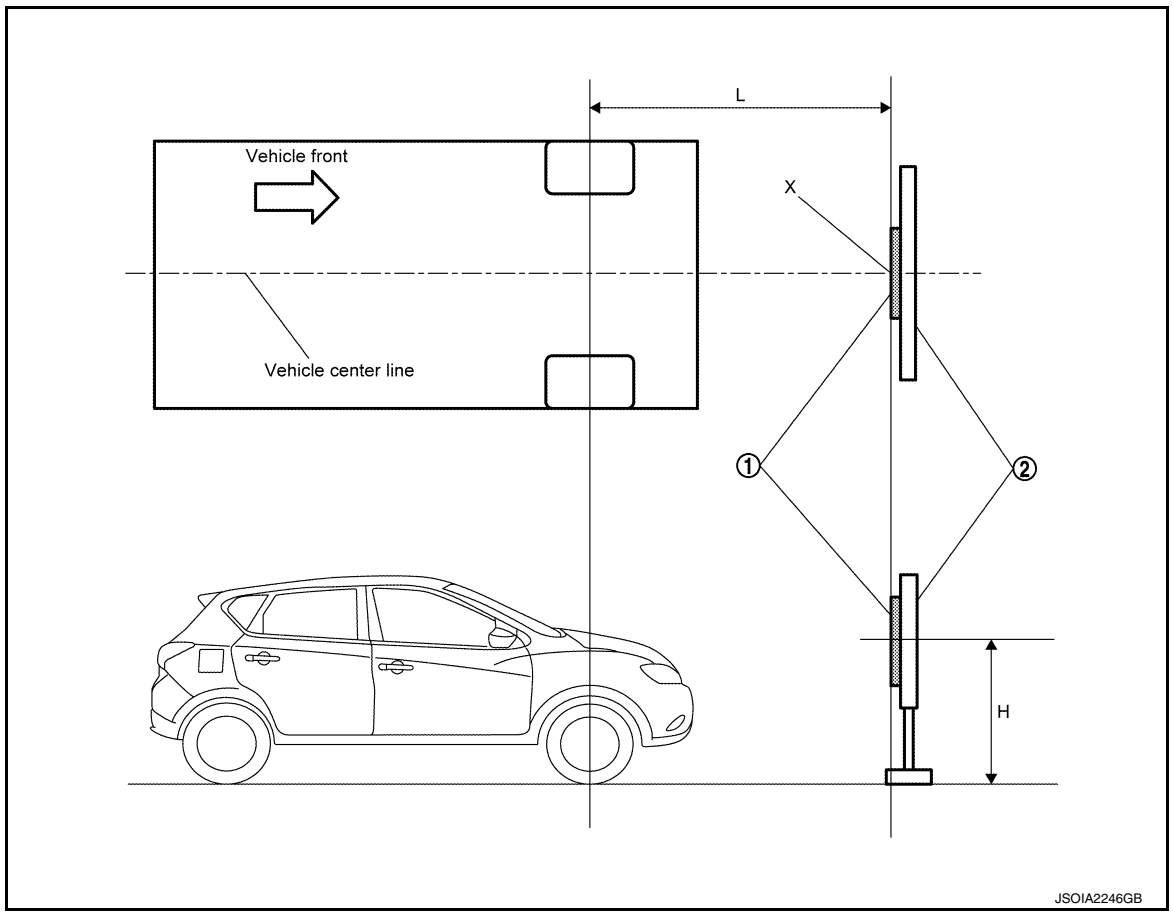
1. TARGET SETTING



“A” – “E” (“C” – “F”) : 1,600 mm (62.99 in)



1. Mark points “A”, “B”, “C” and “D”at the center of the lateral surface of each wheels.
   NOTE:
   Hang a string with a cone from the fender so as to pass through the center of wheel, and then mark a point at the center of the lateral surface of the wheel.
2. Draw line “LH” passing through points “A” and “B” on the left side of vehicle.
   NOTE:
   Approximately 2 m (6.56 ft) or more from the front end of vehicle.
3. Mark point “E” on the line “LH” at the positions 1,600 mm (62.99 in) from point “A”.
4. Draw line “RH” passing through points “C” and “D” on the right side of vehicle in the same way as step 2.
   NOTE:
   Approximately 2 m (6.56 ft) or more from the front end of vehicle.
5. Mark point “F” on the line “RH” at the positions 1,600 mm (62.99 in) from point “C”.
6. Draw line “FW” passing through the points “E” and “F” on the front side of vehicle.
7. Mark point “X” at the center of point “E” and “F” on the line “FW”.
   CAUTION:
   Make sure that “E” to “X” is equal to “F” to “X”.
8. Position the center of the right target to point of “X”.



① Target ② Board X Center of target

H : 1275 mm (50.2 in)
L : 1600 mm (62.99 in)

>> Proceed to DAS-63, "Work Procedure (Camera Aiming Adjustment)".

Work Procedure (Camera Aiming Adjustment)

INFOID:0000000013583295

CAUTION:
Perform the adjustment under unloaded vehicle condition.

1. CAMERA AIMING ADJUSTMENT

CAUTION:
Operate CONSULT outside the vehicle, and close all the doors. (To retain vehicle attitude appropriately)

1. Select “Work Support” on “Front camera” with CONSULT.
2. Select “CALIBRATION”.
3. Confirm the following items;

- The target should be accurately placed.
- The vehicle should be stopped.

4. Select “Start” and check vehicle condition.
5. Select “Continue” to perform camera aiming.

CAUTION:
Never select “Start” when the target is not accurately placed.

6. Input the following parameters, and then select “Write”.

PatternPosition_Xmm : –1600
PatternPosition_Zmm : 1275

7. Confirm the displayed item.
- “Completed”: Calibration was completed.
- Any error: Perform the following services.

Displayed item		Possible cause	Service procedure
Current status	FAILED	DTC is detected.	Perform trouble diagnosis for the detected DTC. Refer to DAS-44, "DTC Index".
	INVAID	Invalid parameter	Position the target appropriately again. Then perform the aiming again.
	COND	Lighting deficient, calibration board or disk contaminated	
	NOTFND	No calibration board found	
	MOVING	Vehicle or panel moves	
	ANGLE	Angles lie outside the tolerance range	
	NOTCAL	System not calibrated	
	VIN INV	VIN invalid	
	NOT ST	Not start calibration in this ignition cycle	
	ERROR1	Imager is not running	
	ERROR2	Other routine is active	
	ERROR3	Invalid vehicle data	
	INT ERR	General internal calibration error	

NOTE:
Replace front camera unit if error monitor item is repeatedly indicated during the above two services are performed.

8. Confirm that “Completed” is displayed and then select “End” to close the adjustment procedure.

>> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

Perform self-diagnosis of front camera unit with CONSULT.

Is any DTC detected?

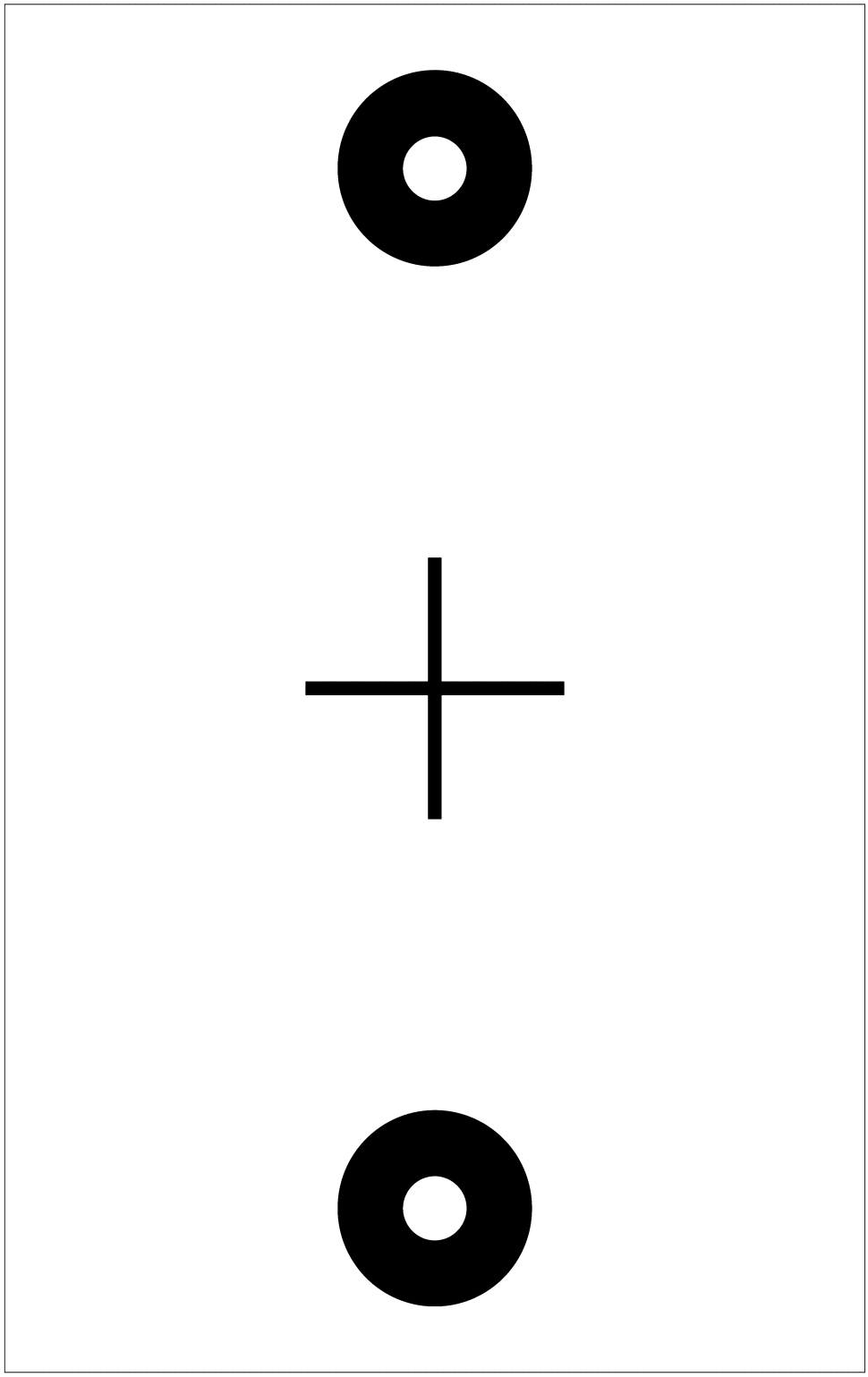
YES >> Perform diagnosis on the detected DTC and repair or replace the applicable item. Refer to DAS-44, "DTC Index".
NO >> WORK END.

Work Procedure (Target Mark Sample)

INFOID:0000000013583296

NOTE:

Print this illustration in such as a way that the short side is 200 mm (7.87 in) long.



JSOIA2247ZZ

CONFIGURATION
FRONT CAMERA UNIT
FRONT CAMERA UNIT : Description

INFOID:0000000013583297

Vehicle specification needs to be written with CONSULT because it is not written after replacing the front camera unit.
The configuration requires network connection. CONSULT connects to network and then it downloads the configuration data from the server. Then CONSULT writes the vehicle specification to the front camera unit.
Refer to DAS-66, "FRONT CAMERA UNIT : Work Procedure".
NOTE:
For details the network connection and operation, refer to “CONSULT Operation Manual”.
The configuration no need to “save” configuration data from the front camera unit.The configuration data is always generated freshly at the server and then downloaded to the CONSULT.
CAUTION:
Follow the instructions listed below.
- **Complete the procedure of “Read / Write Configuration” in order.**
- **If incorrect “Read / Write Configuration”, incidents might occur.**
- **Never perform “Read / Write Configuration” except for new front camera unit.**

FRONT CAMERA UNIT : Work Procedure

INFOID:0000000013583298

1.WRITING VEHICLE SPECIFICATION

CONSULT Configuration
Perform “WRITE CONFIGURATION” for CONTROL UNIT according to “CONSULT Operation Manual”.
NOTE:
- Log in the network according to CONSULT guidance.
- For details the network connection and operation, refer to “CONSULT Operation Manual”.

>> WORK END

RETROFITTING

FRONT CAMERA UNIT

FRONT CAMERA UNIT : Description

INFOID:0000000013583299

- Perform re learning of Front camera unit.
- For work procedure, refer to DAS-67, "FRONT CAMERA UNIT : Work Procedure".

FRONT CAMERA UNIT : Work Procedure

INFOID:0000000013583300

1.PERFORM RE LEARNING

With CONSULT

1. On the CONSULT screen, select “Front camera unit” >> “Work support” >> “RE LEARNING”.
2. Touch “Start”.

>> WORK END

DTC/CIRCUIT DIAGNOSIS

B1EB0 LANE KEEPING ASSIST HAS A MALFUNCTION
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583301

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B1EB0	56	Lane keeping assist has a malfunction [Lane Keeping Assist has a malfunction.]	incorrect or incompatible configuration was detected	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—
B1EB0	97	Lane keeping assist has a malfunction [Lane Keeping Assist has a malfunction.]	[CMP/SYS OPR OBST OR BLKD]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE

B1EB0-56
Electronic ignition switch control unit coding is malfunction.

B1EB0-97
Steering column control module has a malfunction.

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B1EB0” detected?

YES >> Proceed to DAS-68, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583302

B1EB0-56

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

With CONSULT

Perform self-diagnosis for “Electric ign switch cont unit”. Refer to PCS-8, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to PCS-12, "DTC Index".
NO >> GO TO 2.

2.PERFORM THE CONFIGURATION OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

Perform the configuration of electronic ignition switch control unit. Refer to PCS-24, "Description".

>> INSPECTION END

B1EB0-97

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT

Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> GO TO 2.

2.CHECK STEERING WHEEL VIBRATION MOTOR ACTUATION

Check steering wheel vibration motor actuation.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning parts.

STEERING COLUMN CONTROL MODULE

STEERING COLUMN CONTROL MODULE : DTC Description

INFOID:0000000013583303

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition		
B1EB0	56	Lane keeping assist has a malfunction [Lane Keeping Assist has a malfunction.]	incorrect or incompatible configuration was detected	1	Diagnosis condition	• Ignition switch ON • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	In the LDW-power supply, there is a short circuit detected.
					Diagnosis delay time	0.1 second
B1EB0	56	Lane keeping assist has a malfunction [Lane Keeping Assist has a malfunction.]	incorrect or incompatible configuration was detected	2	Diagnosis condition	• Ignition switch ON • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	The measured current via the volute spring cassette is too high.
					Diagnosis delay time	0.1 second
B1EB0	56	Lane keeping assist has a malfunction [Lane Keeping Assist has a malfunction.]	incorrect or incompatible configuration was detected	3	Diagnosis condition	• Ignition switch ON • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	LIN Slave has detected an error.
					Diagnosis delay time	0.05 seconds

POSSIBLE CAUSE

- Short circuit for LDW
- Balance data of the LDW-function is erroneous
- Erroneous actuation of the LDW-function
- Steering angle is outside the function range of the LDW-function
- Steering wheel vibration motor is shorted
- Steering wheel vibration motor is blocked

- Current supply to steering wheel vibration motor has an open circuit
- Steering wheel vibration motor does not switch off the vibration again

FAIL-SAFE

- The power supply to steering wheel will be switched off
- The steering wheel vibration motor is maintained until the error is resolved

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON and wait for 1 second or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Steering column cont module”.

Is DTC “B1EB0” detected?

YES >> Proceed to DAS-70, "STEERING COLUMN CONTROL MODULE : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

STEERING COLUMN CONTROL MODULE : Diagnosis Procedure

INFOID:0000000013583304

1.CHECK STEERING WHEEL VIBRATION MOTOR ACTUATION

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON.
3. Check steering wheel vibration motor actuation.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning parts.

2.CHECK STEERING WHEEL INSTALLATION STATUS

Check that steering wheel is installed correctly. Refer to ST-8, "Exploded View".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Install the steering wheel correctly. Refer to ST-8, "Removal and Installation".

3.CHECK ELECTRICAL LINE

Check the electrical line between steering column control module and steering wheel assembly.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace the malfunctioning parts.

4.PERFORM SELF-DIAGNOSIS OF FRONT CAMERA UNIT

With CONSULT

Perform self-diagnosis for “Front camera unit”. Refer to DAS-29, "CONSULT Function (LANE CAMERA)".

Is DTC detected?

YES >> Check the DTC. Refer to DAS-44, "DTC Index".
NO >> Replace the steering wheel. Refer to ST-8, "Removal and Installation".

B1F72 HEATED STEERING WHEEL OUTPUT SIG
STEERING COLUMN CONTROL MODULE

STEERING COLUMN CONTROL MODULE : DTC Description

INFOID:0000000013583305

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition		
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	1	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	2 seconds after the shut down of the steering wheel vibration there are still flowing more than 0.5 A to power the steering actuators.
					Diagnosis delay time	2 seconds
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	2	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	It is flowing more than 8 A to power the steering actuators.
					Diagnosis delay time	0.05 seconds
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	3	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	Depending on the environment temperature and the SLA-consumer current a prediction of the WFK-Temperature will be calculated. If this temperature exceeds 90°C, then the current supply will be shut down.
					Diagnosis delay time	Immediately
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	4	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	Internal calibration value is not plausible.
					Diagnosis delay time	Immediately

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition		
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	5	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	CRC (cyclic redundancy check) of the internal calibration value is not valid.
					Diagnosis delay time	Immediately
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	6	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	The internal calibration value cannot be punctually loaded.
					Diagnosis delay time	1 second
B1F72	00	Heated steering wheel output sig [The output for the steering wheel heater voltage supply and the 'steering wheel' vibration motor has a malfunction.]	[NO SUBTYPE INFORMATION]	7	Diagnosis condition	• Ignition switch ON • battery voltage is between 7.2 – 16.2V • Operational voltage in range between 7.5 – 17.5V ±10%
					Signal (terminal)	—
					Threshold	The hardware to measure the current could not be requested.
					Diagnosis delay time	Immediately

POSSIBLE CAUSE

1, 2
- Error in the steering wheel or short circuit of the current supply steering wheel vibration motor.

3
- Error in the steering wheel or short circuit of the connection cables or erroneous actuation of the steering wheel vibration motor through the respective control unit.

4, 5, 6
- Error of the hardware module of the EEPROM in steering column control module or the software of steering column control module.

7
- Error in the hardware or software of the steering column control module.

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 2 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Steering column cont module”.

Is DTC “B1F72” detected?

YES >> Proceed to DAS-73, "STEERING COLUMN CONTROL MODULE : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

STEERING COLUMN CONTROL MODULE : Diagnosis Procedure

INFOID:0000000013583306

1.CHECK INTERNAL TEMPERATURE SENSOR OPERATION

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON.
3. Check that the internal temperature sensor operates properly.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning parts.

2.CHECK ELECTRICAL LINE

Check the electrical line between steering column control module and steering wheel assembly.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace the malfunctioning parts.

3.REPLACE STEERING WHEEL

With CONSULT

1. Replace the steering wheel. Refer to ST-8, "Removal and Installation".
2. Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> Replace the steering column control module. Refer to BCS-250, "Removal and Installation".

B210A POWER SUPPLY CIRCUIT
FRONT CAMERA UNIT
FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583307

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210A	00	Power Supply circuit [The power supply in the system is too low]	[NO SUBTYPE IN-FORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	The system voltage is above 10.0 V
				Diagnosis delay time	15 seconds

POSSIBLE CAUSE
The voltage of the on-board electrical system is too low

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 15 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B210A” detected?

YES >> Proceed to DAS-74, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583308

1.CHECK BATTERY AND CHARGING SYSTEM

Check battery and charging system condition. Refer to PG-102, "MAIN BATTERY : Work Procedure" and CHG-27, "Inspection Procedure".

>> INSPECTION END

B210B POWER SUPPLY CIRCUIT
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583309

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210B	00	Power Supply circuit [The power supply in the system is too high]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	The system voltage is less than 10.0 V
				Diagnosis delay time	15 seconds

POSSIBLE CAUSE
The voltage of the on-board electrical system is too high

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 15 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B210B” detected?

YES >> Proceed to DAS-75, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583310

1.CHECK FRONT CAMERA UNIT POWER SUPPLY CIRCUIT

1. Start the engine.
2. Check voltage between front camera unit harness connector and ground.

Terminal (+)		Terminal (–)	Condition	Voltage (Approx.)
Front camera unit		Ground	Ignition switch	
Connector	Terminal			
M162	4		OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> If voltage is 15.5 V or more and other control units also report undervoltage, check alternator. Refer to CHG-27, "Inspection Procedure".

2.CHECK DIAGNOSTIC RESULT

Check the diagnostic result for other control unit.

Is the DTC detected in other control units?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK BATTERY AND CHARGING SYSTEM

Check charging system condition. Refer to CHG-27, "Inspection Procedure".

>> INSPECTION END

4.PERFORM SELF-DIAGNOSIS OF BCM

With CONSULT

Perform self-diagnosis for “BCM”. Refer to BCS-24, "CONSULT Function (BCM)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-51, "DTC Index".
NO >> INSPECTION END

B210D SUPPLY VOLT OF CPA CONTROL UNIT IS LOW
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583311

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210D	00	Power supply [The power supply is too low]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	Battery power supply
				Threshold	Battery power supply < 9 V
				Diagnosis delay time	15 seconds

POSSIBLE CAUSE
Voltage at front camera unit is too low

FAIL-SAFE
Complete function deactivation front camera unit

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 15 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B210D” detected?

YES >> Proceed to DAS-77, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583312

1.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK FUSE FOR BCM

Check the fuse for BCM. Refer to BCS-63, "Wiring Diagram".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK FRONT CAMERA UNIT POWER SUPPLY AND GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front camera unit harness connector.
3. Check voltage between front camera unit harness connector terminals.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Front camera unit			Ignition switch	
Connector	Terminal			
M162	4	1	OFF	11.0 – 15.5 V

Is the inspection result normal?

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

4.CHECK CONNECTOR AND TERMINAL

1. Check the front camera unit harness connector for disconnection or looseness.
2. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

5.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> GO TO 6.

6.CHECK THE GROUND CIRCUIT

Check continuity between front camera unit harness connector and ground.

Front camera unit		—	Continuity
Connector	Terminal		
M162	1	Ground	Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open circuit in harness or connectors.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583313

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210D	00	Power supply [The power supply is too low]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	Battery power supply
				Threshold	Battery power supply < 7.5 V
				Diagnosis delay time	5 seconds

POSSIBLE CAUSE

Battery

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON and wait for 5 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “B210D” detected?

YES >> Proceed to DAS-79, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583314

1.CHECK DIAGNOSTIC RESULT

Check the diagnostic result for other control unit.

Is the DTC detected in other control units?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK CHARGING SYSTEM

Check charging system condition. Refer to CHG-27, "Inspection Procedure".

>> INSPECTION END

3.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace the malfunctioning part.

4.CHECK FUSE FOR BCM

Check the fuse for BCM. Refer to BCS-63, "Wiring Diagram".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

5.CHECK SIDE RADAR LH POWER SUPPLY AND GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect side radar LH harness connector.
3. Check voltage between side radar LH harness connector terminals.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Side radar LH			Ignition switch	
Connector	Terminal			
M251	4	1	OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 7.

6.CHECK CONNECTOR AND TERMINAL

1. Check the front camera unit harness connector for disconnection or looseness.
2. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

7.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> GO TO 8.

8.CHECK THE GROUND CIRCUIT

Check continuity between front camera unit harness connector and ground.

Side radar LH		—	Continuity
Connector	Terminal		
M251	1	Ground	Existed

Is the inspection result normal?

YES >> If other control units also report undervoltage, check battery or alternator. Refer to PG-102, "MAIN BATTERY : Work Procedure" and CHG-27, "Inspection Procedure".
NO >> Repair open circuit in harness or connectors.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583315

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210D	00	Power supply [The power supply is too low]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	Battery power supply
				Threshold	Battery power supply < 7.5 V
				Diagnosis delay time	5 seconds

POSSIBLE CAUSE

Battery

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON and wait for 5 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “B210D” detected?

YES >> Proceed to DAS-80, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583316

1.CHECK DIAGNOSTIC RESULT

Check the diagnostic result for other control unit.

Is the DTC detected in other control units?

YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK CHARGING SYSTEM

Check charging system condition. Refer to CHG-27, "Inspection Procedure".

>> INSPECTION END

3.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace the malfunctioning part.

4.CHECK FUSE FOR BCM

Check the fuse for BCM. Refer to BCS-63, "Wiring Diagram".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

5.CHECK SIDE RADAR RH POWER SUPPLY AND GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect side radar RH harness connector.
3. Check voltage between side radar RH harness connector terminals.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Side radar RH			Ignition switch	
Connector	Terminal			
M252	4	1	OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 7.

6.CHECK CONNECTOR AND TERMINAL

1. Check the front camera unit harness connector for disconnection or looseness.
2. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

7.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> GO TO 8.

8.CHECK THE GROUND CIRCUIT

Check continuity between front camera unit harness connector and ground.

Side radar RH		—	Continuity
Connector	Terminal		
M252	1	Ground	Existed

Is the inspection result normal?

YES >> If other control units also report undervoltage, check battery or alternator. Refer to PG-102, "MAIN BATTERY : Work Procedure" and CHG-27, "Inspection Procedure".

NO >> Repair open circuit in harness or connectors.

B210E CPA CONTROL UNIT PWR SUP IS NOT OK
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583317

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210E	00	Power supply [The power supply is too high]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	Battery power supply > 16 V
				Diagnosis delay time	15 seconds

POSSIBLE CAUSE
Voltage at front camera unit is too high

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 15 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B210E” detected?

YES >> Proceed to DAS-83, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583318

1.CHECK FRONT CAMERA UNIT POWER SUPPLY AND GROUND CIRCUIT

1. Start the engine.
2. Check voltage between front camera unit harness connector and ground.

Terminal (+)		Terminal (–)	Condition	Voltage (Approx.)
Front camera unit		Ground	Ignition switch	
Connector	Terminal			
M162	4		OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 3.

2.PERFORM SELF-DIAGNOSIS OF BCM

With CONSULT
Perform self-diagnosis for “BCM”. Refer to BCS-24, "CONSULT Function (BCM)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-51, "DTC Index".
NO >> INSPECTION END

3.CHECK BATTERY AND CHARGING SYSTEM

Check charging system condition. Refer to CHG-27, "Inspection Procedure".

>> INSPECTION END

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583319

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210E	00	Power supply [The power supply is too high]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	Battery power supply
				Threshold	Battery power supply > 16.6 V
				Diagnosis delay time	5 seconds

POSSIBLE CAUSE

Alternator

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON and wait for 5 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “B210E” detected?

YES >> Proceed to DAS-84, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583320

1.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK FUSE FOR BCM

Check the fuse for BCM. Refer to BCS-63, "Wiring Diagram".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK SIDE RADAR LH POWER SUPPLY AND GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect side radar LH harness connector.
3. Check voltage between side radar LH harness connector terminals.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Side radar LH			Ignition switch	
Connector	Terminal			
M251	4	1	OFF	11.0 – 15.5 V

Is the inspection result normal?

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

4.CHECK CONNECTOR AND TERMINAL

1. Check the front camera unit harness connector for disconnection or looseness.
2. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

5.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> GO TO 6.

6.CHECK THE GROUND CIRCUIT

Check continuity between front camera unit harness connector and ground.

Side radar LH		—	Continuity
Connector	Terminal		
M251	1	Ground	Existed

Is the inspection result normal?

YES >> If other control units also report overvoltage, check battery or alternator. Refer to PG-102, "MAIN BATTERY : Work Procedure" and CHG-27, "Inspection Procedure".
NO >> Repair open circuit in harness or connectors.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583321

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B210E	00	Power supply [The power supply is too high]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	Battery power supply
				Threshold	Battery power supply > 16.6 V
				Diagnosis delay time	5 seconds

POSSIBLE CAUSE
Alternator

FAIL-SAFE
none

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON and wait for 5 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “B210E” detected?

YES >> Proceed to DAS-86, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583322

1.CHECK BATTERY

Check battery. Refer to PG-102, "MAIN BATTERY : Work Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning part.

2.CHECK FUSE FOR BCM

Check the fuse for BCM. Refer to BCS-63, "Wiring Diagram".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

3.CHECK SIDE RADAR RH POWER SUPPLY AND GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect side radar RH harness connector.
3. Check voltage between side radar RH harness connector terminals.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Side radar RH			Ignition switch	
Connector	Terminal			
M252	4	1	OFF	11.0 – 15.5 V

Is the inspection result normal?

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

4.CHECK CONNECTOR AND TERMINAL

1. Check the front camera unit harness connector for disconnection or looseness.
2. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

5.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

>> GO TO 6.

6.CHECK THE GROUND CIRCUIT

Check continuity between front camera unit harness connector and ground.

Side radar RH		—	Continuity
Connector	Terminal		
M252	1	Ground	Existed

Is the inspection result normal?

YES >> If other control units also report overvoltage, check battery or alternator. Refer to PG-102, "MAIN BATTERY : Work Procedure" and CHG-27, "Inspection Procedure".

NO >> Repair open circuit in harness or connectors.

B21A0 NO-LOAD CURRENT CONSUMPTION MALF
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583323

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B21A0	00	No-load current consumption malf [The no-load current consumption of the control unit is malfunction.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	Control unit could not be switched into the idle state after at least ten attempts
				Diagnosis delay time	0 second

POSSIBLE CAUSE
CAN transceiver malfunction or other electric malfunction

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B21A0” detected?

YES >> Proceed to DAS-88, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583324

1.REPLACE FRONT CAMERA UNIT

Replace the front camera unit. Refer to DAS-176, "Removal and Installation".

>> INSPECTION END

B227E MOTOR ELECTRONICS OVER TEMP
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583325

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B227E	98	MOTOR ELECTRONICS OVER TEMP [The control unit is overheated.]	[COMPONENT/SYS OVER TEMP]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—
B227E	9A	MOTOR ELECTRONICS OVER TEMP [The control unit is overheated.]	[OPERATING CONDITIONS]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE
Front camera unit has over temperature

NOTE:
The permissible temperature range of front camera unit is between –40°C (–40°F) and 85°C (185°F).

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B227E” detected?

YES >> Proceed to DAS-89, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583326

1.WAIT FOR SEVERAL MINUTES

With CONSULT
1. On the CONSULT screen, select “Front camera unit” >> “Data Monitor” >> “INSIDE TEMP OF CONT UNIT” and “Inside temperature of control unit (Left camera)”.
2. Check the value.

Monitor item	Values
INSIDE TEMP OF CONT UNIT	–40°C (–40°F) – 85°C (185°F)
Inside temperature of control unit (Left camera)	–40°C (–40°F) – 85°C (185°F)

Is the inspection result normal?

YES >> INSPECTION END
NO >> Wait for several minutes until the data monitor indication becomes between –40°C (–40°F) and 85°C (185°F).

B2286 CALIBRATION
FRONT CAMERA UNIT
FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583327

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B2286	00	Calibration [The calibration of the control unit has been lost or was not carried out]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	• Control unit is not or with wrong values calibrated • Vehicle identification number has been changed after calibrating (Control unit has been fitted into another vehicle)
				Diagnosis delay time	0 second

POSSIBLE CAUSE
- Front camera unit not calibrated
- Vehicle identification number changed

FAIL-SAFE
Complete function deactivation front camera unit

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B2286” detected?

YES >> Proceed to DAS-90, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583328

1.PERFORM INITIALIZE FOR FRONT CAMERA UNIT

Perform additional service when replacing front camera unit. Refer to DAS-59, "Description".

>> INSPECTION END

B229B MULTIFUNCTION CAMERA HAS MALF
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583329

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B229B	04	Multifunction camera has malf [The multifunction camera has a malfunction]	[SYSTEM INTERNAL MALFUNCTN]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	• The DSP sent a data test pattern from the MCU more than five times invalid back. • Malfunction when reading or writing from/into EEPROM recognized or malfunctioning EEPROM content recognized. • A value out off the Production parameters at flash is out of the valid range.
				Diagnosis delay time	0 second
B229B	56	Multifunction camera has malf [The multifunction camera has a malfunction]	incorrect or incompatible configuration was detected	Diagnosis condition	Engine running for 2.5 seconds or more
				Signal (terminal)	—
				Threshold	Software calibration number coding data does not match CAN Data (model series, Body version, Left-hand steering/ Right-hand steering, Nightview available)
				Diagnosis delay time	0.9 seconds
B229B	64	Multifunction camera has malf [The multifunction camera has a malfunction]	[SIGNAL PLAUSIBILITY ERROR]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—
B229B	97	Field of view is restricted [The field of view of component (Stereo multifunction camera) is completely restricted.]	[CMP/SYS OPR OBST OR BLKD]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE

B229B-04
Hardware malfunction in front camera unit

B229B-56
Software calibration number coding data does not match to the vehicle model (model series, Body version, Left-hand steering/ Right-hand steering, Nightview available)

B229B-64
Implausible data were received from steering column control module.

B229B-97
The system function is restricted.

FAIL-SAFE

B229B-04, B229B-56
Complete function deactivation front camera unit

B229B-64, B229B-97
—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 2.5 seconds or more.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B229B” detected?

YES >> Proceed to DAS-92, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583330

B229B-04

1.REPLACE FRONT CAMERA UNIT

Replace the front camera unit. Refer to DAS-176, "Removal and Installation".

>> INSPECTION END

B229B-56

1.PERFORM THE CONFIGURATION OF FRONT CAMERA UNIT

Perform the configuration of front camera unit. Refer to DAS-66, "FRONT CAMERA UNIT : Description".

>> INSPECTION END

B229B-64

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT
Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

B229B-97

1.CHECK THE DIRTY OR FOGGED OF WINDSHIELD GLASS

Check that the windshield is dirty or fogged in the area of front camera unit.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Clean inside and outside of windshield area in front camera unit. If the windshield is damage replace the windshield glass. Refer to GW-16, "Removal and Installation".

2.CHECK THE OPERATION OF HEATER FOR FRONT CAMERA UNIT

With CONSULT
1. Connect front camera unit harness connector.
2. Connect heater harness connector.
3. On the CONSULT screen, select “Front camera unit” >> “Active Test” >> “CHECK AUXILIARY HEATER HEATING ELEMENT HAS A MALFUNCTION”.

NOTE:
The function is temporarily unavailable in the following cases:
- The view is impaired by heavy precipitation, spray or fog.
- Message is displayed in information display on combination meter.

Does the heater operate?

YES >> INSPECTION END
NO >> The heater is malfunctioning. Replace the Windshield glass. Refer to GW-16, "Removal and Installation".

B23A8 OUTPUT FOR WINDOW HEATING HAS MALF
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583331

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B23A8	11	Output for window heating has malf [The output for window heating has a malfunction]	[CIRCUIT SHORT TO GROUND]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	If model has been detected as 'with internal heater' AND heater has short circuit to ground after the heater has been switched on for one second (Debouncing)
				Diagnosis delay time	—
B23A8	12	Output for window heating has malf [The output for window heating has a malfunction]	[CIRCUIT SHORT TO BATTERY]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	If model has been detected as 'with internal heater' AND heater has short circuit to positive, tested once per second in the off state
				Diagnosis delay time	—
B23A8	13	Output for window heating has malf [The output for window heating has a malfunction]	[CIRCUIT OPEN]	Diagnosis condition	Ignition switch ON
				Signal (terminal)	—
				Threshold	If model has been detected as 'with internal heater' AND Line to heater has open circuit, Will be tested once per second in the off state.
				Diagnosis delay time	—

POSSIBLE CAUSE

B23A8-11
Short to ground circuit in cable between front camera unit and window heater

B23A8-12
Short to battery circuit in cable between front camera unit and window heater

B23A8-13
Open circuit in cable between front camera unit and window heater

FAIL-SAFE

No reaction or function deactivation

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “B23A8” detected?

YES >> Proceed to DAS-95, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583332

1.CHECK HEATER CIRCUIT

1. Disconnect front camera unit harness connector.
2. Disconnect heater harness connector.
3. Check continuity between front camera unit harness connector and heater harness connector.

Front camera unit		Heater		Continuity
Connector	Terminal	Connector	Terminal	
M162	6	M55	1	Existed
	5		2	

4. Check continuity between front camera unit harness connector and ground.

Front camera unit		—	Continuity
Connector	Terminal		
M162	6	Ground	Not existed
	5		

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair open circuit or short to ground or short to power in harness or connectors.

2.CHECK CONNECTOR TERMINALS

Check terminal of front camera unit and heater for loose contact, damage and corrosion.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace terminal

3.CHECK THE OPERATION OF HEATER FOR FRONT CAMERA UNIT

With CONSULT

1. Connect front camera unit harness connector.
2. Connect heater harness connector.
3. On the CONSULT screen, select “Front camera unit” >> “Active Test” >> “CHECK AUXILIARY HEATER HEATING ELEMENT HAS A MALFUNCTION”.

Does the heater operate?

YES >> INSPECTION END
NO >> The heater is malfunctioning. Replace the windshield glass. Refer to GW-16, "Removal and Installation".

B2808 THE OUTPUT FOR THE WARNING LAMP ''BLIND SPOT ASSIST'' HAS A MALFUNCTION
LEFT FRONT DOOR CONTROL UNIT

LEFT FRONT DOOR CONTROL UNIT : DTC Description

INFOID:0000000013583333

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B2808	11	The output for the warning lamp "Blind Spot Assist" has a malfunction [The output for the warning lamp "Blind Spot Assist" has a malfunction]	[CIRCUIT SHORT TO GROUND]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	BSW indicator circuit is short to ground
				Diagnosis delay time	0.5 seconds
B2808	15	The output for the warning lamp "Blind Spot Assist" has a malfunction [The output for the warning lamp "Blind Spot Assist" has a malfunction]	[CIRC SHORT TO BATT OR OPEN]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• BSW indicator circuit is short to battery • BSW indicator circuit is open
				Diagnosis delay time	0.5 seconds

POSSIBLE CAUSE

B2808-11
- Harness short to ground
- BSW indicator malfunction

B2808-15
- Harness short to battery
- Harness is not connected
- BSW indicator malfunction

FAIL-SAFE

BSW indicator is not functioning

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 1 second or more.
2. Perform self-diagnosis for “Left front door control unit”.

Is DTC “B2808” detected?

YES >> Proceed to DAS-96, "LEFT FRONT DOOR CONTROL UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

LEFT FRONT DOOR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000013583334

1. PERFORM SELF-DIAGNOSIS OF LEFT FRONT DOOR CONTROL UNIT

With CONSULT
Perform self-diagnosis for “Left front door control unit”. Refer to DLK-31, "CONSULT Function (Left Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-60, "DTC Index"
NO >> GO TO 2.

2.CHECK THE OPERATION OF BSW INDICATOR

With CONSULT

1. On the CONSULT screen, select “Left front door control unit” >> “Active Test” >> “Left blind spot assist warning”.
2. Check the value.

Monitor item	Display value
W/L (BLIND SPOT ASSIST)	YES

Is the inspection result normal?

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

3.CHECK CONNECTOR AND TERMINAL

1. Disconnect left front door control unit harness connector.
2. Check the left front door control unit harness connector for disconnection or looseness.
3. Check the left front door control unit harness connector pin terminals for damage or loose connection with harness connector.
4. Disconnect BSW indicator LH harness connector.
5. Check the BSW indicator LH harness connector for disconnection or looseness.
6. Check the BSW indicator LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

4.CHECK BSW INDICATOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front camera unit harness connector.
3. Check the continuity between left front door control unit harness connector and BSW indicator LH.

Left front door control unit		BSW indicator LH		Continuity
Connector	Terminal	Connector	Terminal	
D4	5	D2	3	Existed
			4	
D7	16		1	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open or short circuit in harness or connectors.

RIGHT FRONT DOOR CONTROL UNIT

RIGHT FRONT DOOR CONTROL UNIT : DTC Description

INFOID:0000000013583335

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B2808	11	The output for the warning lamp "Blind Spot Assist" has a malfunction [The output for the warning lamp "Blind Spot Assist" has a malfunction]	[CIRCUIT SHORT TO GROUND]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	BSW indicator circuit is short to ground
				Diagnosis delay time	0.5 seconds
B2808	15	The output for the warning lamp "Blind Spot Assist" has a malfunction [The output for the warning lamp "Blind Spot Assist" has a malfunction]	[CIRC SHORT TO BATT OR OPEN]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• BSW indicator circuit is short to battery • BSW indicator circuit is open
				Diagnosis delay time	0.5 seconds

POSSIBLE CAUSE

B2808-11
- Harness short to ground
- BSW indicator malfunction

B2808-15
- Harness short to battery
- Harness is not connected / open
- BSW indicator malfunction

FAIL-SAFE

BSW indicator is not functioning

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 1 second or more.
2. Perform self-diagnosis for “Right front door control unit”.

Is DTC “B2808A” detected?

YES >> Proceed to DAS-98, "RIGHT FRONT DOOR CONTROL UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

RIGHT FRONT DOOR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000013583336

1.PERFORM SELF-DIAGNOSIS OF RIGHT FRONT DOOR CONTROL UNIT

With CONSULT

Perform self-diagnosis for “Right front door control unit”. Refer to DLK-35, "CONSULT Function (Right Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-70, "DTC Index".
NO >> GO TO 2.

2.CHECK THE OPERATION OF BSW INDICATOR

With CONSULT
1. On the CONSULT screen, select “Right front door control unit” >> “Active Test” >> “Right blind spot assist warning”.
2. Check the value.

Monitor item	Display value
W/L (BLIND SPOT ASSIST)	YES

Is the inspection result normal?

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

3.CHECK CONNECTOR AND TERMINAL

1. Disconnect right front door control unit harness connector.
2. Check the right front door control unit harness connector for disconnection or looseness.
3. Check the right front door control unit harness connector pin terminals for damage or loose connection with harness connector.
4. Disconnect BSW indicator LH harness connector.
5. Check the BSW indicator LH harness connector for disconnection or looseness.
6. Check the BSW indicator LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

4.CHECK BSW INDICATOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front camera unit harness connector.
3. Check the continuity between right front door control unit harness connector and BSW indicator RH.

Right front door control unit		BSW indicator RH		Continuity
Connector	Terminal	Connector	Terminal	
D54	5	D52	3	Existed
			4	
D57	16		1	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open or short circuit in harness or connectors.

B280C THE OUTPUT FOR THE INDICATOR LAMP ''BLIND SPOT ASSIST'' HAS A MALFUNCTION
LEFT FRONT DOOR CONTROL UNIT

LEFT FRONT DOOR CONTROL UNIT : DTC Description

INFOID:0000000013583337

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B280C	11	The output for the indicator lamp "Blind Spot Assist" has a malfunction [The output for the indicator lamp "Blind Spot Assist" has a malfunction]	[CIRCUIT SHORT TO GROUND]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	BSW indicator circuit is short to ground
				Diagnosis delay time	0.5 seconds
B280C	15	The output for the indicator lamp "Blind Spot Assist" has a malfunction [The output for the indicator lamp "Blind Spot Assist" has a malfunction]	[CIRC SHORT TO BATT OR OPEN]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• BSW indicator circuit is short to battery • BSW indicator circuit is open
				Diagnosis delay time	0.5 seconds

POSSIBLE CAUSE

B280C-11
Harness short to ground

B280C-15
- Harness short to battery
- Harness is not connected / open

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Left front door control unit”.

Is DTC “B280C” detected?

YES >> Proceed to DAS-100, "LEFT FRONT DOOR CONTROL UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

LEFT FRONT DOOR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000013583338

1. PERFORM SELF-DIAGNOSIS OF LEFT FRONT DOOR CONTROL UNIT

With CONSULT
Perform self-diagnosis for “Left front door control unit”. Refer to DLK-31, "CONSULT Function (Left Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-60, "DTC Index".
NO >> GO TO 2.

2.CHECK BSW INDICATOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front camera unit harness connector.
3. Check the continuity between left front door control unit harness connector and BSW indicator LH.

Left front door control unit		BSW indicator LH		Continuity
Connector	Terminal	Connector	Terminal	
D4	5	D2	3	Existed
			4	
D7	13		2	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open or short circuit in harness or connectors.

RIGHT FRONT DOOR CONTROL UNIT

RIGHT FRONT DOOR CONTROL UNIT : DTC Description

INFOID:0000000013583339

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
B280C	11	The output for the indicator lamp "Blind Spot Assist" has a malfunction [The output for the indicator lamp "Blind Spot Assist" has a malfunction]	[CIRCUIT SHORT TO GROUND]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	BSW indicator circuit is short to ground
				Diagnosis delay time	0.5 seconds
B280C	15	The output for the indicator lamp "Blind Spot Assist" has a malfunction [The output for the indicator lamp "Blind Spot Assist" has a malfunction]	[CIRC SHORT TO BATT OR OPEN]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• BSW indicator circuit is short to battery • BSW indicator circuit is open
				Diagnosis delay time	0.5 seconds

POSSIBLE CAUSE

B280C-11
Harness short to ground

B280C-15
- Harness short to battery
- Harness is not connected / open

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 1 second or more.
2. Perform self-diagnosis for “Right front door control unit”.

Is DTC "B280C" detected?

YES >> Proceed to DAS-102, "RIGHT FRONT DOOR CONTROL UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

RIGHT FRONT DOOR CONTROL UNIT : Diagnosis Procedure

INFOID:0000000013583340

1. PERFORM SELF-DIAGNOSIS OF RIGHT FRONT DOOR CONTROL UNIT

With CONSULT

Perform self-diagnosis for "Right front door control unit". Refer to DLK-35, "CONSULT Function (Right Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-70, "DTC Index".
NO >> GO TO 2.

2. CHECK BSW INDICATOR CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect front camera unit harness connector.
3. Check the continuity between right front door control unit harness connector and BSW indicator RH.

Right front door control unit		BSW indicator RH		Continuity
Connector	Terminal	Connector	Terminal	
D54	5	D52	3	Existed
			4	
D57	16		1	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open or short circuit in harness or connectors.

C1101 RADAR SENSOR 5 HAS A MALFUNCTION
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583341

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
C1101	00	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Calibration error
				Diagnosis delay time	150 seconds
C1101	09	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[COMPONENT MALFUNCTION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal noise excess of the sensor
				Diagnosis delay time	4 seconds
C1101	4B	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[OVER TEMPERATURE]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• Temperature of sensor part > 107°C (225°F) • Temperature of control unit part > 155°C (311°F)
				Diagnosis delay time	2 seconds
C1101	55	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[NOT CONFIGURED]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	1 second
C1101	68	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[EVENT INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Side radar detected the blind spot object, but it does not pass within 30 seconds.
				Diagnosis delay time	30 seconds
C1101	FA	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	—	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	1 second

POSSIBLE CAUSE

C1101-00, C1101-09, C1101-FA
Hardware damaged

C1101-4B
Heat buildup in the bumper

C1101-55
Harness for sensor damaged

C1101-68
Blind spot object is not passing

FAIL-SAFE

C1101-00, C1101-09, C1101-4B, C1101-55, C1101-FA
Function is not available anymore

C1101-68
—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 150 seconds or more.
2. Drive the vehicle at 30 km/h (18.6 MPH) or more for 30 seconds or more.
3. Stop the vehicle
4. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1101” detected?

YES >> Proceed to DAS-104, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583342

C1101-00, C1101-09

1.REPLACE FRONT SIDE RADAR LH

Replace the side radar LH. Refer to DAS-177, "Removal and Installation".

>> INSPECTION END

C1101-4B

1.WAIT FOR SEVERAL MINUTES

Wait for several minutes until the internal temperature becomes low.

>> INSPECTION END

C1101-55, C1101-68

1.CHECK THE GROUND CIRCUIT

1. Disconnect side radar LH harness connector.
2. Check continuity between side radar LH harness connector and ground.

Side radar LH		—	Continuity
Connector	Terminal		
M251	1	Ground	Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open circuit in harness or connectors.

C1101-FA

1.PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Erase self-diagnosis for “Side radar LH”.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON.

CAUTION:
Never start the engine.

5. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1101-FA” detected?

YES >> Replace the side radar LH. Refer to DAS-177, "Removal and Installation".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583343

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
C1101	00	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Calibration error
				Diagnosis delay time	150 seconds
C1101	09	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[COMPONENT MALFUNCTION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal noise excess of the sensor
				Diagnosis delay time	4 seconds
C1101	4B	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[OVER TEMPERATURE]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	• Temperature of sensor part > 107°C (225°F) • Temperature of control unit part > 155°C (311°F)
				Diagnosis delay time	2 seconds
C1101	55	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[NOT CONFIGURED]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	1 second
C1101	68	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	[EVENT INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Side radar detected the blind spot object, but it does not pass within 30 seconds.
				Diagnosis delay time	30 seconds
C1101	FA	Radar sensor 5 has a malfunction [The radar sensor 5 has a malfunction.]	—	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	1 second

POSSIBLE CAUSE

C1101-00, C1101-09, C1101-FA
Hardware damaged

C1101-4B
Heat buildup in the bumper

C1101-55
Harness for sensor damaged

C1101-68
Blind spot object is not passing

FAIL-SAFE

C1101-00, C1101-09, C1101-4B, C1101-55, C1101-FA
Function is not available anymore

C1101-68
—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 150 seconds or more.
2. Drive the vehicle at 30 km/h (18.6 MPH) or more for 30 seconds or more.
3. Stop the vehicle
4. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1101” detected?

YES >> Proceed to DAS-106, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583344

C1101-00, C1101-09

1.REPLACE FRONT SIDE RADAR RH

Replace the side radar RH. Refer to DAS-177, "Removal and Installation".

>> INSPECTION END

C1101-4B

1.WAIT FOR SEVERAL MINUTES

Wait for several minutes until the internal temperature becomes low.

>> INSPECTION END

C1101-55, C1101-68

1.CHECK THE GROUND CIRCUIT

1. Disconnect side radar RH harness connector.
2. Check continuity between side radar RH harness connector and ground.

Side radar RH		—	Continuity
Connector	Terminal		
M251	1	Ground	Existed
	5		
	6		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair open circuit in harness or connectors.

C1101-FA

1.PERFORM SELF-DIAGNOSIS

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Erase self-diagnosis for “Side radar LH”.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
5. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1101-FA” detected?

YES >> Replace the side radar LH. Refer to DAS-177, "Removal and Installation".
NO >> INSPECTION END

C1111 RADAR SENSOR 5 IS DISRUPTED
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583345

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
C1111	00	Radar sensor 8 is disrupted [Radar sensor 8 is disrupted by interference from an external transmitter.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	External interruption of the sensor
				Diagnosis delay time	2 seconds
C1111	FA	Radar sensor 8 is blocked [Radar sensor 8 is blocked by dirt or by a foreign object.]	—	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Sensor is blocked
				Diagnosis delay time	0.04 seconds

POSSIBLE CAUSE

C1111-00
—

C1111-FA
Dirty bumpers

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 2 seconds.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1111” detected?

YES >> Proceed to DAS-108, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583346

C1111-00

1.ERASE SELF-DIAGNOSTIC RESULT

With CONSULT
Ignore DTC code and erase self-diagnostic result.

>> INSPECTION END

C1111-FA

1.CHECK THE SIDE RADAR LH

1. Check the side radar LH for dirt.
2. Check surface of bumper in area of relevant sensor for painting or filling operations.
3. Check gap between side radar LH and inside surface of bumper for dirt and foreign objects.

4. Manually check side radar for tight seating.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Clear or repair the malfunctioning parts.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583347

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
C1111	00	Radar sensor 5 is disrupted [Radar sensor 8 is disrupted by interference from an external transmitter.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	External interruption of the sensor
				Diagnosis delay time	2 seconds
C1111	FA	Radar sensor 5 is blocked [Radar sensor 8 is blocked by dirt or by a foreign object.]	—	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Sensor is blocked
				Diagnosis delay time	0.04 seconds

POSSIBLE CAUSE

C1111-00
—

C1111-FA
Dirty bumpers

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine and wait for 2 seconds.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “C1111” detected?

YES >> Proceed to DAS-109, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583348

C1111-00

1.ERASE SELF-DIAGNOSTIC RESULT

With CONSULT
Ignore DTC code and erase self-diagnostic result.

>> INSPECTION END

C1111-FA

1.CHECK THE SIDE RADAR RH

1. Check the side radar RH for dirt.
2. Check surface of bumper in area of relevant sensor for painting or filling operations.
3. Check gap between side radar RH and inside surface of bumper for dirt and foreign objects.
4. Manually check side radar for tight seating.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Clear or repair the malfunctioning parts.

P1644 CHECK CODINGS IN ELECTRONIC IGN LOCK

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583349

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P1644	00	INTERNAL CONTROL MODULE [An incorrect variant coding or configuration was detected.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Side radar LH coding is malfunction

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “P1644” detected?

YES >> Proceed to DAS-111, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583350

1. PERFORM THE CONFIGURATION OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

Perform the configuration of electronic ignition switch control unit. Refer to PCS-24, "Description".

>> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583351

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P1644	00	INTERNAL CONTROL MODULE [An incorrect variant coding or configuration was detected.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	—
				Threshold	Internal malfunction
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Wrong number of side radar installed.

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “P1644” detected?

YES >> Proceed to DAS-112, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583352

1.PERFORM THE CONFIGURATION OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

Perform the configuration of electronic ignition switch control unit. Refer to PCS-24, "Description".

>> INSPECTION END

P1805 HARDWARE MONITOR DETECTED MALF
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583353

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
P1805	04	Hardware monitor detected malf [The hardware monitoring function has detected a fault in the control unit.]	[SYSTEM INTERNAL MALFUNCTN]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE
Front camera unit has a malfunction

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “P1805” detected?

YES >> Proceed to DAS-113, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583354

1. PERFORM SELF-DIAGNOSIS

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Erase self-diagnosis for “Front camera unit”.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
5. Perform self-diagnosis for “Front camera unit”.

Is DTC “P1805” detected?

YES >> Replace the front camera unit. Refer to DAS-176, "Removal and Installation".
NO >> INSPECTION END

U0010 COMMUNICATION WITH CAN HAS MALF
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583355

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0010	88	Communication with CAN has malf [Communication with the CAN-bus has a malfunction.]	[BUS OFF]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	• Timeout at hardware Initializing • CAN Controller produce permanently interrupts
				Diagnosis delay time	—

POSSIBLE CAUSE
CAN communication has a malfunction

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0010” detected?

YES >> Proceed to DAS-114, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583356

1.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the front camera unit harness connector.
3. Check the front camera unit harness connector for disconnection or looseness.
4. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair/replace harness connector or terminal.

2.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal, and erase self-diagnosis result for “Front camera unit”.

U0100 LOST COMMUNICATION WITH ECM/PCM A
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583357

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0100	87	Communication error [Communication with the control unit combustion engine has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from ECM is missing
				Diagnosis delay time	1 second

POSSIBLE CAUSE
- CAN communication malfunction
- ECM

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 1 second or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0100” detected?

YES >> Proceed to DAS-115, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583358

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the ECM harness connector.
3. Check the ECM harness connector for disconnection or looseness.
4. Check the ECM harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583359

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0100	87	Communication error [Communication with the control unit combustion engine has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from ECM is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- ECM

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0100” detected?

YES >> Refer to DAS-116, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583360

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the ECM harness connector.
3. Check the ECM harness connector for disconnection or looseness.
4. Check the ECM harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583361

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0100	87	Communication error [Communication with the control unit 'combustion engine' has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from ECM is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- ECM

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0100” detected?

YES >> Refer to DAS-117, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583362

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the ECM harness connector.
3. Check the ECM harness connector for disconnection or looseness.
4. Check the ECM harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0122 LOST COMMUNICATION WITH VDCM
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583363

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0122	87	Lost Communication With VDCM [Communication with control unit Traction system has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic stability program control unit is missing
				Diagnosis delay time	0.2 seconds

POSSIBLE CAUSE
- CAN communication malfunction
- Electronic stability program control unit

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON and wait for 1 seconds or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0122” detected?

YES >> Refer to DAS-118, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583364

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic stability program control unit harness connector.
3. Check the electronic stability program control unit harness connector for disconnection or looseness.
4. Check the electronic stability program control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583365

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0122	87	Lost Communication With VDCM [Communication with control unit Traction system has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic stability program control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic stability program control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0122” detected?

YES >> Refer to DAS-119, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583366

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic stability program control unit harness connector.
3. Check the electronic stability program control unit harness connector for disconnection or looseness.
4. Check the electronic stability program control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583367

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0122	87	Lost Communication With VDCM [Communication with control unit 'Traction system' has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic stability program control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic stability program control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0122” detected?

YES >> Refer to DAS-120, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583368

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic stability program control unit harness connector.
3. Check the electronic stability program control unit harness connector for disconnection or looseness.
4. Check the electronic stability program control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0141 COMMUNICATION ERROR
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583369

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0141	87	Communication error [Communication with the front signal acquisition and actuation module has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from BCM is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- BCM

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0141” detected?

YES >> Refer to DAS-121, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583370

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the BCM harness connector.
3. Check the BCM harness connector for disconnection or looseness.
4. Check the BCM harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0142 LOST COMMUNICATION WITH BCM B
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583371

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0142	87	Lost communication with BCM B [Communication with the rear signal acquisition and actuation module has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from trailer recognition control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- Trailer recognition control unit

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0142” detected?

YES >> Refer to DAS-122, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583372

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the trailer recognition control unit harness connector.
3. Check the trailer recognition control unit harness connector for disconnection or looseness.
4. Check the trailer recognition control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

U0146 COMMUNICATION ERROR (LOST)
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583373

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0146	87	COMMUNICATION ERROR (LOST) [Communication with the central gateway has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic ignition switch control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic ignition switch control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0146” detected?

YES >> Refer to DAS-124, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583374

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic ignition switch control unit harness connector.
3. Check the electronic ignition switch control unit harness connector for disconnection or looseness.
4. Check the electronic ignition switch control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583375

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0146	87	COMMUNICATION ERROR (LOST) [Communication with the central gateway has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic ignition switch control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic ignition switch control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0146” detected?

YES >> Refer to DAS-125, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583376

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic ignition switch control unit harness connector.
3. Check the electronic ignition switch control unit harness connector for disconnection or looseness.
4. Check the electronic ignition switch control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0155 LOST COMMUNICATION WITH IPCCM
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583377

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0155	87	COMMUNICATION ERROR (LOST) [Communication with the instrument cluster has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from combination meter is missing
				Diagnosis delay time	2 second

POSSIBLE CAUSE
- CAN communication malfunction
- Combination meter

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON and wait for 2 second or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0155” detected?

YES >> Refer to DAS-126, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583378

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the combination meter harness connector.
3. Check the combination meter harness connector for disconnection or looseness.
4. Check the combination meter harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583379

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0155	87	COMMUNICATION ERROR (LOST) [Communication with the instrument cluster has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from combination meter is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Combination meter

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0155” detected?

YES >> Refer to DAS-127, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583380

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the combination meter harness connector.
3. Check the combination meter harness connector for disconnection or looseness.
4. Check the combination meter harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583381

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0155	87	COMMUNICATION ERROR (LOST) [Communication with the instrument cluster has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from combination meter is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Combination meter

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0155” detected?

YES >> Refer to DAS-128, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583382

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the combination meter harness connector.
3. Check the combination meter harness connector for disconnection or looseness.
4. Check the combination meter harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0168 LOST COMMUNICATION WITH VSCM
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583383

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0168	87	COMMUNICATION ERROR (LOST) [Communication with the electronic ignition lock has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic ignition switch control unit is missing
				Diagnosis delay time	1 second

POSSIBLE CAUSE
- CAN communication malfunction
- Electronic ignition switch control unit

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON and wait for 1 second or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0168” detected?

YES >> Refer to DAS-129, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583384

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic ignition switch control unit harness connector.
3. Check the electronic ignition switch control unit harness connector for disconnection or looseness.
4. Check the electronic ignition switch control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583385

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0168	87	COMMUNICATION ERROR (LOST) [Communication with the electronic ignition lock has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic ignition switch control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic ignition switch control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0168” detected?

YES >> Refer to DAS-130, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583386

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic ignition switch control unit harness connector.
3. Check the electronic ignition switch control unit harness connector for disconnection or looseness.
4. Check the electronic ignition switch control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583387

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0168	87	COMMUNICATION ERROR (LOST) [Communication with the electronic ignition lock has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from electronic ignition switch control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Electronic ignition switch control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0168” detected?

YES >> Refer to DAS-131, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583388

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the electronic ignition switch control unit harness connector.
3. Check the electronic ignition switch control unit harness connector for disconnection or looseness.
4. Check the electronic ignition switch control unit harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0212 LOST COMMUNICATION WITH SCCM
FRONT CAMERA UNIT
FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583389

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0212	87	COMMUNICATION ERROR (LOST) [Communication with the steering column module has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from steering column control module is missing
				Diagnosis delay time	1 second

POSSIBLE CAUSE
- CAN communication malfunction
- Steering column control module

FAIL-SAFE
No reaction or function deactivation

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON and wait for 1 second or more.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0212” detected?

YES >> Proceed to DAS-132, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583390

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the steering column control module harness connector.
3. Check the steering column control module harness connector for disconnection or looseness.
4. Check the steering column control module harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the front camera unit harness connector.
6. Check the front camera unit harness connector for disconnection or looseness.
7. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583391

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0212	00	COMMUNICATION ERROR (LOST) [Communication with the steering column module has a malfunction.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	Immediately
U0212	87	COMMUNICATION ERROR (LOST) [Communication with the steering column module has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from steering column control module is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

U0212-00
Steering column control module does not send valid values.

U0212-87
- CAN communication malfunction
- Steering column control module

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0212” detected?

YES >> Proceed to DAS-133, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583392

U0212-00

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT
Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

U0212-87

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the steering column control module harness connector.
3. Check the steering column control module harness connector for disconnection or looseness.
4. Check the steering column control module harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583393

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0212	00	COMMUNICATION ERROR (LOST) [Communication with the steering column module has a malfunction.]	[NO SUBTYPE INFORMATION] ([No subtype information])	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	Immediately
U0212	87	COMMUNICATION ERROR (LOST) [Communication with the steering column module has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from steering column control module is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

U0212-00
Steering column control module does not send valid values.

U0212-87
- CAN communication malfunction
- Steering column control module

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.

2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0212” detected?

YES >> Proceed to DAS-135, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583394

U0212-00

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT

Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

U0212-87

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the steering column control module harness connector.
3. Check the steering column control module harness connector for disconnection or looseness.
4. Check the steering column control module harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U0252 LOST COMMUNICATION WITH LCM REAR B

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583395

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0252	00	Lost Communication With LCM Rear B [Implausible data were received from the trailer connection unit.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from BCM
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

BCM does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0252” detected?

YES >> Proceed to DAS-136, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583396

1.PERFORM SELF-DIAGNOSIS OF BCM

With CONSULT

Perform self-diagnosis for “BCM”. Refer to BCS-24, "CONSULT Function (BCM)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-51, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583397

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0252	00	Lost Communication With LCM Rear B [Implausible data were received from the trailer connection unit.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from BCM
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

BCM does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0252” detected?

YES >> Proceed to DAS-137, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583398

1.PERFORM SELF-DIAGNOSIS OF BCM

With CONSULT

Perform self-diagnosis for “BCM”. Refer to BCS-24, "CONSULT Function (BCM)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-51, "DTC Index".
NO >> INSPECTION END

U0401 INVALID DATA RECEIVED FROM ECM/PCM A
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583399

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0401	82	Communication error (invalid) [Implausible data were received from control unit combustion engine.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from ECM
				Diagnosis delay time	—
U0401	83	Communication error (invalid) [Implausible data were received from control unit combustion engine.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from ECM
				Diagnosis delay time	—

POSSIBLE CAUSE
ECM does not send valid values.

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0401” detected?

YES >> Proceed to DAS-138, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583400

1.PERFORM SELF-DIAGNOSIS OF ECM

With CONSULT
Perform self-diagnosis for “ENGINE”.
- 1.6/2.0L TURBO ENGINE: Refer to EC-97, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC.
- 1.6/2.0L TURBO ENGINE: Refer to EC-142, "DTC Index".

NO >> INSPECTION END

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583401

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0401	83	Communication error (invalid) [Implausible data were received from control unit combustion engine.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from ECM
				Diagnosis delay time	—

POSSIBLE CAUSE
ECM does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0401” detected?

YES >> Proceed to DAS-139, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure
INFOID:0000000013583402

1.PERFORM SELF-DIAGNOSIS OF ECM

With CONSULT
Perform self-diagnosis for “ENGINE”.
- 1.6/2.0L TURBO ENGINE: Refer to EC-142, "DTC Index".

Is DTC detected?

YES >> Check the DTC.
- 1.6/2.0L TURBO ENGINE: Refer to EC-142, "DTC Index".

NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description
INFOID:0000000013583403

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0401	83	Communication error (invalid) [Implausible data were received from control unit 'combustion engine'.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from ECM
				Diagnosis delay time	—

POSSIBLE CAUSE
ECM does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0401” detected?

YES >> Proceed to DAS-140, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583404

1.PERFORM SELF-DIAGNOSIS OF ECM

With CONSULT

Perform self-diagnosis for “ENGINE”.

- 1.6/2.0L TURBO ENGINE: Refer to EC-142, "DTC Index".

Is DTC detected?

YES >> Check the DTC.
- 1.6/2.0L TURBO ENGINE: Refer to EC-142, "DTC Index".

NO >> INSPECTION END

U0402 INVALID DATA RECEIVED FROM TCM

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583405

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0402	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Transmission.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from TCM
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

TCM does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0402” detected?

YES >> Proceed to DAS-141, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583406

1. PERFORM SELF-DIAGNOSIS OF TCM

With CONSULT

Perform self-diagnosis for “TRANSMISSION”. Refer to TM-36, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to TM-45, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583407

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0402	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit 'Transmission'.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from TCM
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

TCM does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0402” detected?

YES >> Proceed to DAS-142, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583408

1.PERFORM SELF-DIAGNOSIS OF TCM

With CONSULT

Perform self-diagnosis for “TRANSMISSION”. Refer to TM-36, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to TM-45, "DTC Index".
NO >> INSPECTION END

U0416 INVALID DATA RECEIVED FROM VDCM
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583409

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0416	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Traction system.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	—
U0416	82	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Traction system.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	—
U0416	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Traction system.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	—

POSSIBLE CAUSE
Electronic stability program control unit does not send valid values.

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0416” detected?

YES >> Proceed to DAS-143, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583410

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC STABILITY PROGRAM CONTROL UNIT

With CONSULT
Perform self-diagnosis for “ABS”. Refer to BRC-49, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to BRC-59, "DTC Index".

NO >> INSPECTION END

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583411

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0416	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Traction system.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	Immediately
U0416	82	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit Traction system.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	—

POSSIBLE CAUSE

Electronic stability program control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0416” detected?

YES >> Proceed to DAS-144, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583412

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC STABILITY PROGRAM CONTROL UNIT

With CONSULT

Perform self-diagnosis for “ABS”. Refer to BRC-49, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to BRC-59, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583413

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0416	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit 'Traction system'.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	Immediately
U0416	82	COMMUNICATION ERROR (INVALID) [Implausible data were received from control unit 'Traction system'.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	—

POSSIBLE CAUSE

Electronic stability program control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0416” detected?

YES >> Proceed to DAS-145, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583414

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC STABILITY PROGRAM CONTROL UNIT

With CONSULT

Perform self-diagnosis for “ABS”. Refer to BRC-49, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to BRC-59, "DTC Index".
NO >> INSPECTION END

U0423 INVALID DATA RECEIVED FROM IPCCM

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583415

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0423	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from the instrument cluster.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from combination meter
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Combination meter does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0423” detected?

YES >> Proceed to DAS-146, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583416

1. PERFORM SELF-DIAGNOSIS OF COMBINATION METER

With CONSULT

Perform self-diagnosis for “METER/M&A”. Refer to MWI-68, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to MWI-85, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583417

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0423	00	COMMUNICATION ERROR (INVALID) [Implausible data were received from the instrument cluster.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from combination meter
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Combination meter does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0423” detected?

YES >> Proceed to DAS-147, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583418

1.PERFORM SELF-DIAGNOSIS OF COMBINATION METER

With CONSULT

Perform self-diagnosis for “METER/M&A”. Refer to MWI-68, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to MWI-85, "DTC Index".
NO >> INSPECTION END

U0427 CHECK CODINGS IN ELECTRONIC IGN LOCK

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583419

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0427	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from the electronic ignition lock.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic ignition switch control unit
				Diagnosis delay time	—

POSSIBLE CAUSE

Electronic ignition switch control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0427” detected?

YES >> Proceed to DAS-148, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583420

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

With CONSULT

Perform self-diagnosis for “Electric ign switch cont unit”. Refer to PCS-8, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to PCS-12, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583421

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0427	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from the electronic ignition lock.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic ignition switch control unit
				Diagnosis delay time	—

POSSIBLE CAUSE

Electronic ignition switch control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0427” detected?

YES >> Proceed to DAS-149, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583422

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC IGNITION SWITCH CONTROL UNIT

With CONSULT

Perform self-diagnosis for “Electric ign switch cont unit”. Refer to PCS-8, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to PCS-12, "DTC Index".
NO >> INSPECTION END

U0429 INVALID DATA RECEIVED FROM SCCM
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583423

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0429	82	COMMUNICATION ERROR (INVALID) [Implausible data were received from the steering column module.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	—
U0429	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from the steering column module.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	—

POSSIBLE CAUSE
Steering column control module does not send valid values.

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U0429” detected?

YES >> Proceed to DAS-150, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583424

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT
Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583425

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0429	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from the steering column module.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	—

POSSIBLE CAUSE
Steering column control module does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0429” detected?

YES >> Proceed to DAS-151, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure
INFOID:0000000013583426

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT
Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description
INFOID:0000000013583427

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0429	83	COMMUNICATION ERROR (INVALID) [Implausible data were received from the steering column module.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from steering column control module
				Diagnosis delay time	—

POSSIBLE CAUSE
Steering column control module does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0429” detected?

YES >> Proceed to DAS-152, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583428

1.PERFORM SELF-DIAGNOSIS OF STEERING COLUMN CONTROL MODULE

With CONSULT

Perform self-diagnosis for “Steering column cont module”. Refer to BCS-30, "CONSULT Function (Steering Column Control Module)".

Is DTC detected?

YES >> Check the DTC. Refer to BCS-61, "DTC Index".
NO >> INSPECTION END

U0504 COMMUNICATION ERROR
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583429

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0504	00	Communication error [Implausible data were received from control unit “Left front door”.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from left front door control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE
Left front door control unit does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0504” detected?

YES >> Proceed to DAS-153, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583430

1. PERFORM SELF-DIAGNOSIS OF LEFT FRONT DOOR CONTROL UNIT

With CONSULT
Perform self-diagnosis for “Left front door control unit”. Refer to DLK-31, "CONSULT Function (Left Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-60, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583431

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0504	00	Communication error [Implausible data were received from control unit “Left front door”.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from left front door control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE
Left front door control unit does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0504” detected?

YES >> Proceed to DAS-154, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure
INFOID:0000000013583432

1.PERFORM SELF-DIAGNOSIS OF LEFT FRONT DOOR CONTROL UNIT

With CONSULT
Perform self-diagnosis for “Left front door control unit”. Refer to DLK-31, "CONSULT Function (Left Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-60, "DTC Index".
NO >> INSPECTION END

U0505 COMMUNICATION ERROR
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583433

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0505	00	Communication error Implausible data were received from control unit “Right front door”.	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from right front door control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE
Right front door control unit does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U0505” detected?

YES >> Proceed to DAS-155, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583434

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583435

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U0505	00	Communication error [Implausible data were received from control unit “Right front door”.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from right front door control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE
Right front door control unit does not send valid values.

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT
1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U0505” detected?

YES >> Proceed to DAS-156, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583436

1.PERFORM SELF-DIAGNOSIS OF RIGHT FRONT DOOR CONTROL UNIT

With CONSULT
Perform self-diagnosis for “Right front door control unit”. Refer to DLK-35, "CONSULT Function (Right Front Door Control Unit)".

Is DTC detected?

YES >> Check the DTC. Refer to DLK-70, "DTC Index".
NO >> INSPECTION END

U1043 CHASSIS CAN BUS OFF MALFUNCTION
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583437

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1043	88	Peripheral CAN comm has malfunction [Communication with the peripheral CAN bus has a malfunction.]	[BUS OFF]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN hardware reports BUS OFF status
				Diagnosis delay time	—

POSSIBLE CAUSE
CAN communication has a malfunction

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U1043” detected?

YES >> Refer to DAS-157, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583438

1. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the side radar LH harness connector.
3. Check the side radar LH harness connector for disconnection or looseness.
4. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair/replace harness connector or terminal.

2. CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal, and erase self-diagnosis result for “Side radar LH”.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583439

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1043	88	Peripheral CAN comm has malfunction [Communication with the peripheral CAN bus has a malfunction.]	[BUS OFF]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN hardware reports BUS OFF status
				Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication has a malfunction

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U1043” detected?

YES >> Refer to DAS-158, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583440

1.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the side radar RH harness connector.
3. Check the side radar RH harness connector for disconnection or looseness.
4. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair/replace harness connector or terminal.

2.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal, and erase self-diagnosis result for “Side radar RH”.

U120B COMMUNICATION ERROR
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583441

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U120B	87	Communication error [Communication with the control unit Headlamp has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from headlamp control unit LH or RH is missing
				Diagnosis delay time	—
U120B	97	Communication error [Communication with the control unit Headlamp has a malfunction.]	[CMP/SYS OPR OBST OR BLKD]	Diagnosis condition	—
				Signal (terminal)	—
				Threshold	—
				Diagnosis delay time	—

POSSIBLE CAUSE
U120B-87
- CAN communication malfunction
- Headlamp control unit LH or RH

POSSIBLE CAUSE
U120B-97
—

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U120B” detected?

YES >> Refer to DAS-159, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583442

1. CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the headlamp control unit LH harness connector.

3. Check the headlamp control unit LH harness connector for disconnection or looseness.
4. Check the headlamp control unit LH harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the headlamp control unit RH harness connector.
6. Check the headlamp control unit RH harness connector for disconnection or looseness.
7. Check the headlamp control unit RH harness connector pin terminals for damage or loose connection with harness connector.
8. Disconnect the front camera unit harness connector.
9. Check the front camera unit harness connector for disconnection or looseness.
10. Check the front camera unit harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U140D WHEEL SPEED SIGNAL IS IMPLAUSIBLE

SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583443

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U140D	00	WHEEL SPEED SIGNAL [An implausible wheel speed signal was received.]	NO SUBTYPE INFORMATION	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Electronic stability program control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U140D” detected?

YES >> Proceed to DAS-161, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583444

1. PERFORM SELF-DIAGNOSIS OF ELECTRONIC STABILITY PROGRAM CONTROL UNIT

With CONSULT

Perform self-diagnosis for “ABS”. Refer to BRC-49, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to BRC-59, "DTC Index".
NO >> INSPECTION END

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583445

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U140D	00	WHEEL SPEED SIGNAL [An implausible wheel speed signal was received.]	[NO SUBTYPE INFORMATION]	Diagnosis condition	Engine running
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from electronic stability program control unit
				Diagnosis delay time	Immediately

POSSIBLE CAUSE

Electronic stability program control unit does not send valid values.

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION

With CONSULT

1. Start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U140D” detected?

YES >> Proceed to DAS-162, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583446

1.PERFORM SELF-DIAGNOSIS OF ELECTRONIC STABILITY PROGRAM CONTROL UNIT

With CONSULT

Perform self-diagnosis for “ABS”. Refer to BRC-49, "CONSULT Function".

Is DTC detected?

YES >> Check the DTC. Refer to BRC-59, "DTC Index".
NO >> INSPECTION END

U144E COMMUNICATION ERROR
SIDE RADAR LH

SIDE RADAR LH : DTC Description

INFOID:0000000013583447

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U144E	87	Communication error [Communication with the upper control panel has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from upper control panel control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- Upper control panel control unit

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar LH”.

Is DTC “U144E” detected?

YES >> Refer to DAS-163, "SIDE RADAR LH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583448

1. CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the upper control panel control harness connector.
3. Check the upper control panel control harness connector for disconnection or looseness.
4. Check the upper control panel control harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar LH harness connector.
6. Check the side radar LH harness connector for disconnection or looseness.
7. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583449

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U144E	87	Communication error [Communication with the upper control panel has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from upper control panel control unit is missing
				Diagnosis delay time	—

POSSIBLE CAUSE

- CAN communication malfunction
- Upper control panel control unit

FAIL-SAFE

Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U144E” detected?

YES >> Refer to DAS-164, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583450

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the upper control panel control harness connector.
3. Check the upper control panel control harness connector for disconnection or looseness.
4. Check the upper control panel control harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair/replace harness connector or terminal.

U1459 IMPLAUSIBLE DATA RECEIVED FROM H/L
FRONT CAMERA UNIT

FRONT CAMERA UNIT : DTC Description

INFOID:0000000013583451

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1459	82	Implausible data received from H/L [Implausible data were received from the control unit 'Headlamps'.]	[SEQUENCE COUNTER INCORRECT]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from headlamp control unit LH or RH
				Diagnosis delay time	—
U1459	83	Implausible data received from H/L [Implausible data were received from the control unit 'Headlamps'.]	[PROTECT CALCULATION ERROR]	Diagnosis condition	—
				Signal (terminal)	CAN communication signal
				Threshold	Control unit receive the invalid data from headlamp control unit LH or RH
				Diagnosis delay time	—

POSSIBLE CAUSE
Headlamp control unit LH or RH does not send valid values.

FAIL-SAFE
—

DTC CONFIRMATION PROCEDURE
1. PERFORM DTC CONFIRMATION

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Front camera unit”.

Is DTC “U1459” detected?

YES >> Proceed to DAS-165, "FRONT CAMERA UNIT : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583452

1. PERFORM SELF-DIAGNOSIS OF HEADLAMP CONTROL UNIT LH

With CONSULT
Perform self-diagnosis for “H/L control module LH”.
- LED headlamp: Refer to EXL-64, "CONSULT Function (H/L control module LH)".
- Halogen headlamp: Refer to EXL-354, "CONSULT Function (H/L control module LH)".

Is DTC detected?

YES >> Check the DTC.
- LED headlamp: Refer to EXL-83, "DTC Index".
- Halogen headlamp: Refer to EXL-365, "DTC Index".

NO >> GO TO 2.

2. PERFORM SELF-DIAGNOSIS OF HEADLAMP CONTROL UNIT RH

With CONSULT
Perform self-diagnosis for “H/L control module RH”.

- LED headlamp: Refer to EXL-67, "CONSULT Function (H/L control module RH)".
- Halogen headlamp: Refer to EXL-357, "CONSULT Function (H/L control module RH)".

Is DTC detected?

YES >> Check the DTC.
- LED headlamp: Refer to EXL-94, "DTC Index".
- Halogen headlamp: Refer to EXL-370, "DTC Index".

NO >> INSPECTION END

U1502 RADAR SENSOR 8 COMM HAS MALFUNCTION
SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583453

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1502	87	Radar sensor 8 comm has malfunction [Communication with the radar sensor 8 has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from side radar LH is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- Side radar LH

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U1502” detected?

YES >> Refer to DAS-167, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583454

1.CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2.CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the side radar LH harness connector.
3. Check the side radar LH harness connector for disconnection or looseness.
4. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

U1503 RADAR SENSOR 8 COMM HAS MALFUNCTION
SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583455

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1503	87	Radar sensor 8 comm has malfunction [Communication with the radar sensor 8 has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from side radar LH is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- Side radar LH

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U1503” detected?

YES >> Refer to DAS-169, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583456

1. CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the side radar LH harness connector.
3. Check the side radar LH harness connector for disconnection or looseness.
4. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

U1504 RADAR SENSOR 8 COMM HAS MALFUNCTION
SIDE RADAR RH

SIDE RADAR RH : DTC Description

INFOID:0000000013583457

DTC DETECTION LOGIC

DTC		CONSULT screen terms (Trouble diagnosis content)	CONSULT screen terms [Malfunction type]	DTC detection condition	
U1504	87	Radar sensor 8 comm has malfunction [Communication with the radar sensor 8 has a malfunction.]	[MISSING MESSAGE]	Diagnosis condition	CAN communication is active
				Signal (terminal)	CAN communication signal
				Threshold	CAN messages from side radar LH is missing
				Diagnosis delay time	—

POSSIBLE CAUSE
- CAN communication malfunction
- Side radar LH

FAIL-SAFE
Function is not available anymore

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn the ignition switch ON.
   CAUTION:
   Never start the engine.
2. Perform self-diagnosis for “Side radar RH”.

Is DTC “U1504” detected?

YES >> Refer to DAS-171, "SIDE RADAR RH : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-56, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583458

1. CAN COMMUNICATION SYSTEM DIAGNOSIS

Perform the trouble diagnosis for CAN communication system. Refer to LAN-58, "Trouble Diagnosis Flow Chart".

Is the inspection result normal?

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

2. CHECK CONNECTOR AND TERMINAL

1. Turn the ignition switch OFF.
2. Disconnect the side radar LH harness connector.
3. Check the side radar LH harness connector for disconnection or looseness.
4. Check the side radar LH harness connector pin terminals for damage or loose connection with harness connector.
5. Disconnect the side radar RH harness connector.
6. Check the side radar RH harness connector for disconnection or looseness.
7. Check the side radar RH harness connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair/replace harness connector or terminal.

POWER SUPPLY AND GROUND CIRCUIT

FRONT CAMERA UNIT

FRONT CAMERA UNIT : Diagnosis Procedure

INFOID:0000000013583459

1.CHECK FUSES

Check if any of the following fuses are blown:

Signal name	Fuse No.
Battery power supply	106

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK FRONT CAMERA UNIT POWER SUPPLY CIRCUIT

Check voltage between front camera unit harness connector and ground.

Terminal			Condition	Voltage (Approx.)
(+)		(–)		
Front camera unit		Ground	Ignition switch	
Connector	Terminal			
M162	4		OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the front camera unit power supply circuit.

3.CHECK FRONT CAMERA UNIT GROUND CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect the front camera unit connector.
3. Check for continuity between front camera unit harness connector and ground.

Front camera unit		Ground	Continuity
Connector	Terminal		
M162	1		Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair the front camera unit ground circuit.

SIDE RADAR LH

SIDE RADAR LH : Diagnosis Procedure

INFOID:0000000013583460

1.CHECK FUSES

Check if any of the following fuses are blown:

Signal name	Fuse No.
Battery power supply	90

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.

2. Disconnect the side radar LH connector.
3. Check voltage between side radar LH harness connector and ground.

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
Side radar LH		Ground	Ignition switch	
Connector	Terminal			
M251	4		OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the side radar LH power supply circuit.

3.CHECK GROUND CIRCUIT

Check continuity between side radar LH harness connectors and ground.

Side radar LH		Ground	Continuity
Connector	Terminal		
M251	1		Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair the side radar LH ground circuit.

SIDE RADAR RH

SIDE RADAR RH : Diagnosis Procedure

INFOID:0000000013583461

1.CHECK FUSES

Check if any of the following fuses are blown:

Signal name	Fuse No.
Battery power supply	90

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the side radar RH connector.
3. Check voltage between side radar RH harness connector and ground.

Terminals			Condition	Voltage (Approx.)
(+)		(–)		
Side radar RH		Ground	Ignition switch	
Connector	Terminal			
M252	4		OFF	11.0 – 15.5 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the side radar RH power supply circuit.

3.CHECK GROUND CIRCUIT

Check continuity between side radar RH harness connectors and ground.

Side radar RH		Ground	Continuity
Connector	Terminal		
M252	1		Existed
	5		
	6		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair the side radar RH ground circuit.

REMOVAL AND INSTALLATION

FRONT CAMERA UNIT

Removal and Installation

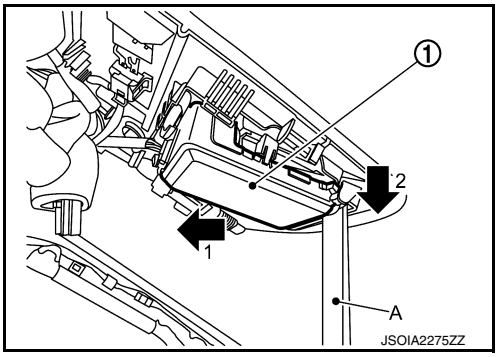
INFOID:0000000013583462

REMOVAL

CAUTION:

Always perform the camera calibration after the replacement, removal and installation of front camera unit. Refer to DAS-60, "Description".

1. Turn ignition switch OFF.
2. Remove light & rain sensor cover. Refer to WW-81, "Removal and Installation".
3. Push front camera unit ① backwards using the remover tool (A) and disengage the catch hook from bracket as shown in the figure.



CAUTION:

The lens of the front camera unit must not be touched. Otherwise dirt cause the front camera unit to malfunction.

4. Disconnect front camera unit connector.
5. Remove front camera unit.

INSTALLATION

Install in the reverse order of removal.

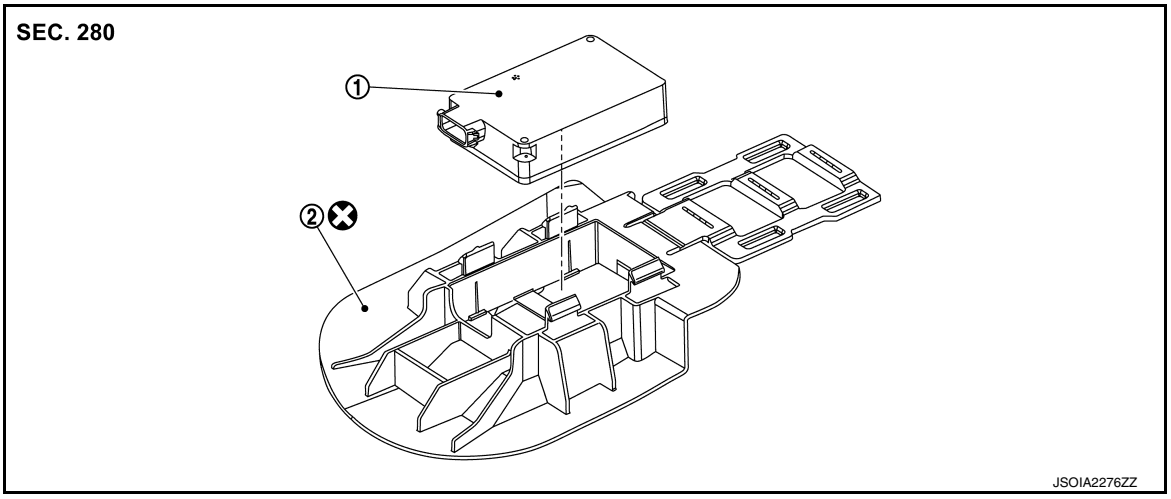
CAUTION:

- **The lens of the front camera unit must not be touched. Otherwise dirt cause the front camera unit to malfunction.**
- **Always perform the camera calibration after the replacement, removal and installation of front camera unit. Refer to DAS-60, "Description".**
- **After replacing front camera unit, perform additional service when front replace front camera unit. Refer to DAS-59, "Description".**

SIDE RADAR

Exploded View

INFOID:0000000013583463



① Side radar
② Bracket
: Always replace after every disassembly

Removal and Installation

INFOID:0000000013583464

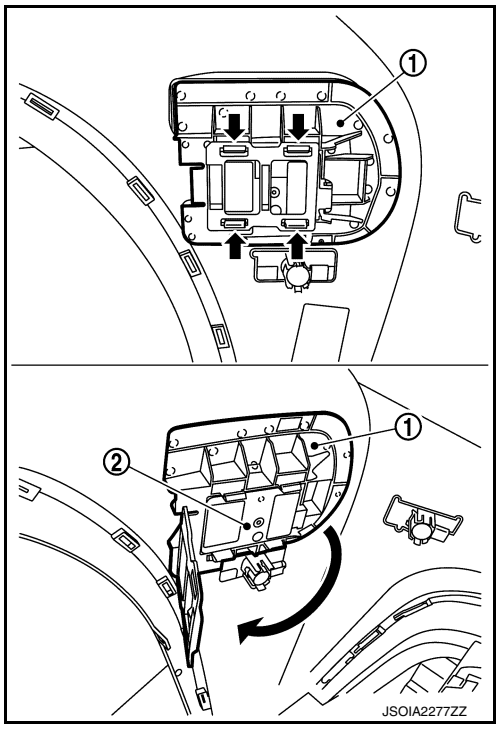
REMOVAL

CAUTION:

- **Never reuse bracket when remove side radar from bracket.**
- **Never reuse bracket when remove bracket from rear bumper.**

1. Remove the rear bumper fascia. Refer to EXT-29, "Removal and Installation".
2. Remove side radar ② from the bracket ① as follows.

a. Disengage the tubs.
b. Open the bracket cover.
c. Remove side radar.



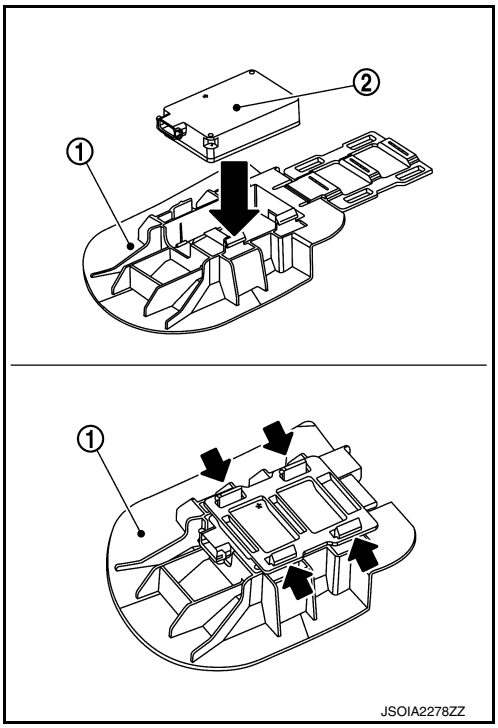
INSTALLATION

CAUTION:

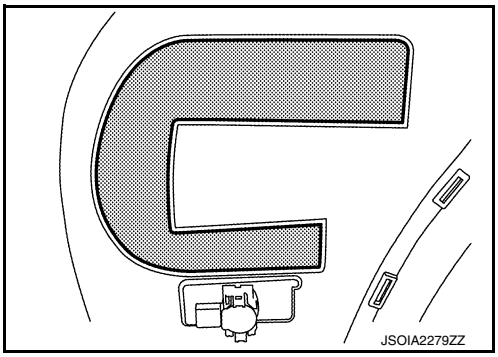
- **Never reuse bracket when remove side radar from bracket.**

- **Never reuse bracket when remove from rear bumper.**
- **When reuse rear bumper, completely clean side radar mounting area.**

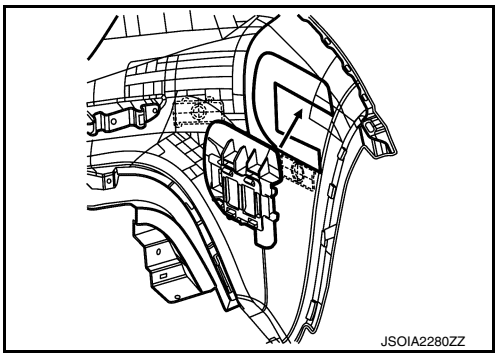
1. Set the side radar ② to the bracket ① then close the bracket cover.



2. Apply primer to side radar mounting area on the bumper.



3. Remove the film of double-sided tape affixed to bracket, and install the bracket to rear bumper by aligning the edge of bracket with the edge of the rear bumper reference line.



4. To secure installation, firmly press the bracket to the rear bumper.
5. Install rear bumper fascia. Refer to EXT-29, "Removal and Installation".

BSW INDICATOR

Removal and Installation

INFOID:0000000013583465

REMOVAL

1. Remove the door mirror corner cover. Refer to INT-14, "Removal and Installation".
2. Remove the BSW indicator.

INSTALLATION

Install in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000013583466

Risk of injury

There is a risk of injury caused by parts becoming projectiles if uncontrolled deployment of air bag or seat belt pre-tensioner occurs, or by storing air bag with the deployment side facing downwards. When scrapping air bag or seat belt pre-tensioner by means of controlled deployment, there is also a danger present if a sufficiently safe distance is not maintained, or if opening using cutting torches or other cutting tools, or due to smelting or if parts that are not yet triggered are exposed to a blaze or a smoldering fire at landfills.

Safety instructions/precautions

- Removed air bag must always be stored with deployment side facing up.
- Acquisition, transportation, storage, testing and assembly work should only be performed or supervised by properly trained personnel.
- Install air bag or seat belt pre-tensioner immediately following retrieval from storage.
- Air bag and seat belt pre-tensioner must be protected from flying sparks, open fires and temperature exceeding 100°C (212°F).
- Never transport air bag and seat belt pre-tensioner in the passenger compartment. Store them securely in the luggage room of the vehicle in their original replacement part packaging and secure them so that they cannot slip around.
- Never allow air bag and seat belt pre-tensioner to come into contact with grease, oil, or cleaning agents.
- Perform system tests using approved testing equipment only, and only when the units are properly installed and the vehicle is unoccupied.
- Before the initial hookup of the battery or an external power supply, the ignition must be switched on and the vehicle unoccupied.
- Air bag and seat belt pre-tensioner that fall from a height of more than 0.5 m must be replaced.
- When scrapping by means of controlled deployment of air bag and seat belt pre-tensioner, a safe distance of at least 10 m must be maintained.
- Before starting work on air bag and seat belt pre-tensioner and work on components that are connected to air bag and seat belt pre-tensioner or require and intervention in their electric circuit (e.g. when removing the steering wheel):
  - Disconnect any external power sources (e.g. charger).
  - Disconnect and insulate ground line of battery
- Before starting bodywork in combination with welding or retrofitting, during which work is performed on uninsulated, current-carrying lines or require an intervention in their electric circuit (e.g. when removing the steering wheel):
  - Disconnect any external power sources (e.g. charger).
  - Disconnect and insulate ground line of battery.
  - During welding, disconnect plug connection and from control unit of air bag.
- When the air bag deploys, the pyrofuse activates and the power source from the battery is disconnected. This prevents possible fires caused by electric leakage after an accident occurs.

Precautions for Removing Battery Terminal

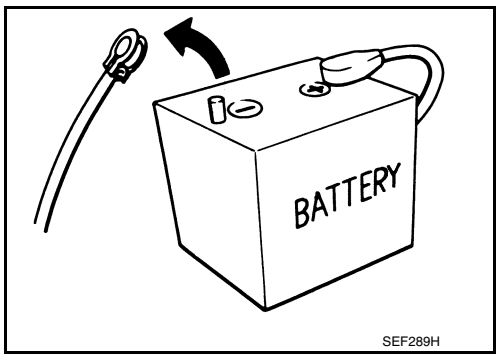
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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

BR08DE	: 4 minutes	YD25DDTi	: 2 minutes
D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		



NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:
- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

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

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

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

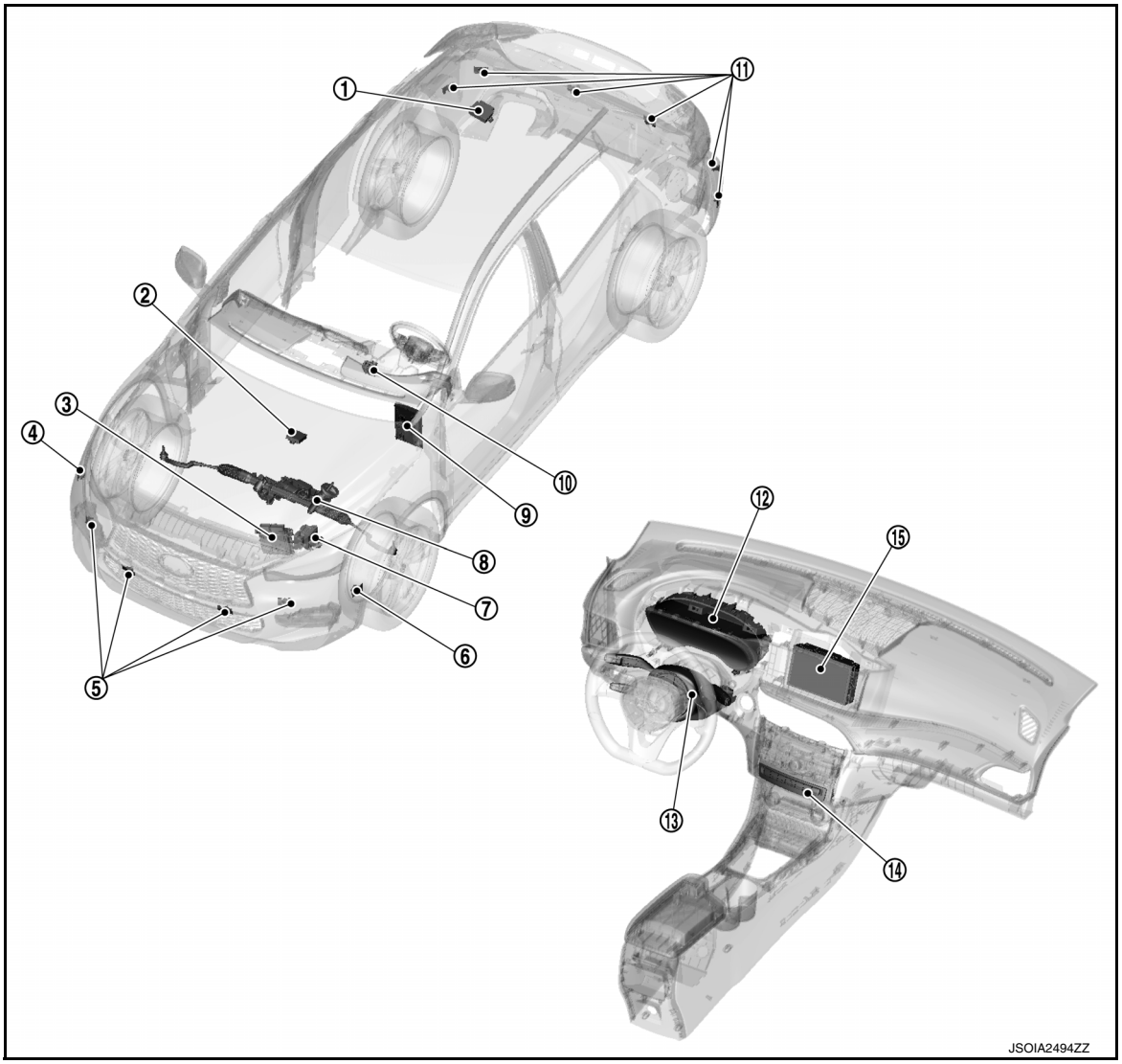
NOTE:
The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000013583468



No.	Component	Description
①	Electric parking brake control module	• Transmits parking brake signal to sonar control unit • For details of the installation position, refer to PB-7, "Component Parts Location".
②	Sonar control unit	Refer to DAS-183, "Sonar Control Unit"
③	ECM	• Transmits shift position signal to sonar control unit • For details of the installation position, refer to EC-27, "Component Parts Location".
④	Side sensor front RH	Refer to DAS-184, "Sonar Sensor"
⑤	Corner sensor front	Refer to DAS-184, "Sonar Sensor"
⑥	Side sensor front LH	Refer to DAS-184, "Sonar Sensor"
⑦	Electric stability program control unit	• Transmits wheel speed signal and wheel rotation signal to sonar control unit • For details of the installation position, refer to BRC-29, "Component Parts Location".
⑧	EPS control unit (Steering gear assembly)	• Transmits electric power steering torque sensor signal from sonar control unit • Receives electric power steering request from sonar control unit • For details of the installation position, refer to STC-5, "Component Parts Location".

No.	Component	Description
⑨	BCM	• Transmits dusk setting signal to sonar control unit • For details of the installation position, refer to BCS-8, "BODY CONTROL SYSTEM : Component Parts Location".
⑩	Electric ignition switch control unit	• Transmits signal to sonar control unit from each control unit. • Transmits Circuit 15 status ON signal to sonar control unit • For details of the installation position, refer to PCS-5, "Component Parts Location".
⑪	Corner sensor rear	Refer to DAS-184, "Sonar Sensor"
⑫	Combination meter	• Transmits park assist status signal and vehicle speed signal to sonar control unit • Receives meter display signal from sonar control unit • For details of the installation position, refer to MWI-7, "METER SYSTEM : Component Parts Location".
⑬	Steering column control module	• Transmits combination switch signal and steering wheel angle signal to sonar control unit • For details of the installation position, refer to BCS-9, "STEERING COLUMN CONTROL SYSTEM : Component Parts Location".
⑭	Upper control panel control unit (sonar system switch)	• Transmits parking system button status indicator signal to sonar control unit • Receives parking system status indicator request signal from sonar control unit • For details of the installation position, refer to BCS-8, "BODY CONTROL SYSTEM : Component Parts Location".
⑮	Display control unit	• Transmits sonar indicator display and buzzer output signal to sonar control unit • For details of the installation position, refer to the following. - Without BOSE system: AV-13, "WITHOUT BOSE SYSTEM : Component Parts Location" - With BOSE system: AV-14, "WITH BOSE SYSTEM : Component Parts Location"

Sonar Control Unit

INFOID:0000000013583469

LOCATION

The sonar control unit is located on the transmission tunnel below the A/C housing.

TASK

The sonar control unit actuates the sonar functions or Park Assist (IPA) and does the following:

- Reading in of sensors
- Evaluation of input factors
- Actuation of components
- Output of signals

READING IN OF SENSORS

The input factors are read in via the following connections:

- Direct line
- CAN communication

Direct Line

The signals from the following components are read via direct lines:

- Side sensor front LH
- Corner sensor front LH
- Center sensor front LH
- Center sensor front RH
- Corner sensor front RH
- Side sensor front RH
- Side sensor rear RH
- Center sensor rear RH
- Center sensor rear LH
- Side sensor rear LH
- Corner sensor rear LH
- Corner sensor rear RH

CAN Communication

The following information is read in over the CAN communication:

- Circuit 15 status

- Status of parking brake
- Status of reverse gear
- Data of rain/light sensor
- Status of sonar system switch
- Signals from left front axle rpm sensor
- Signals from right front axle rpm sensor
- Signals from left rear axle rpm sensor
- Signals from right rear axle rpm sensor
- Steering wheel angle sensor signals
- Combination switch position
- Signals of left multifunction steering wheel button group
- Steering gear toothed rack travel
- Active Parking Assist status

EVALUATION OF INPUT FACTORS

The input factors that have been read in are evaluated by the integrated microprocessor and the relevant components are then actuated.

ACTUATION OF COMPONENTS

The following components are actuated via direct lines:

- Sonar system distance sensors

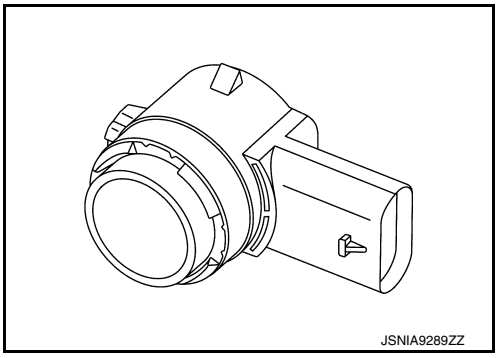
OUTPUT OF SIGNALS

The sonar control unit sends the following signals over the CAN communication:
Issue request message in combination meter
Issue acoustic warning request
Display parking system request status
Electric power steering request
Raise/lower brake pressure request.

Sonar Sensor

INFOID:0000000013583470

When a distance from an obstacle is detected, a distance signal is transmitted to the sonar control unit.

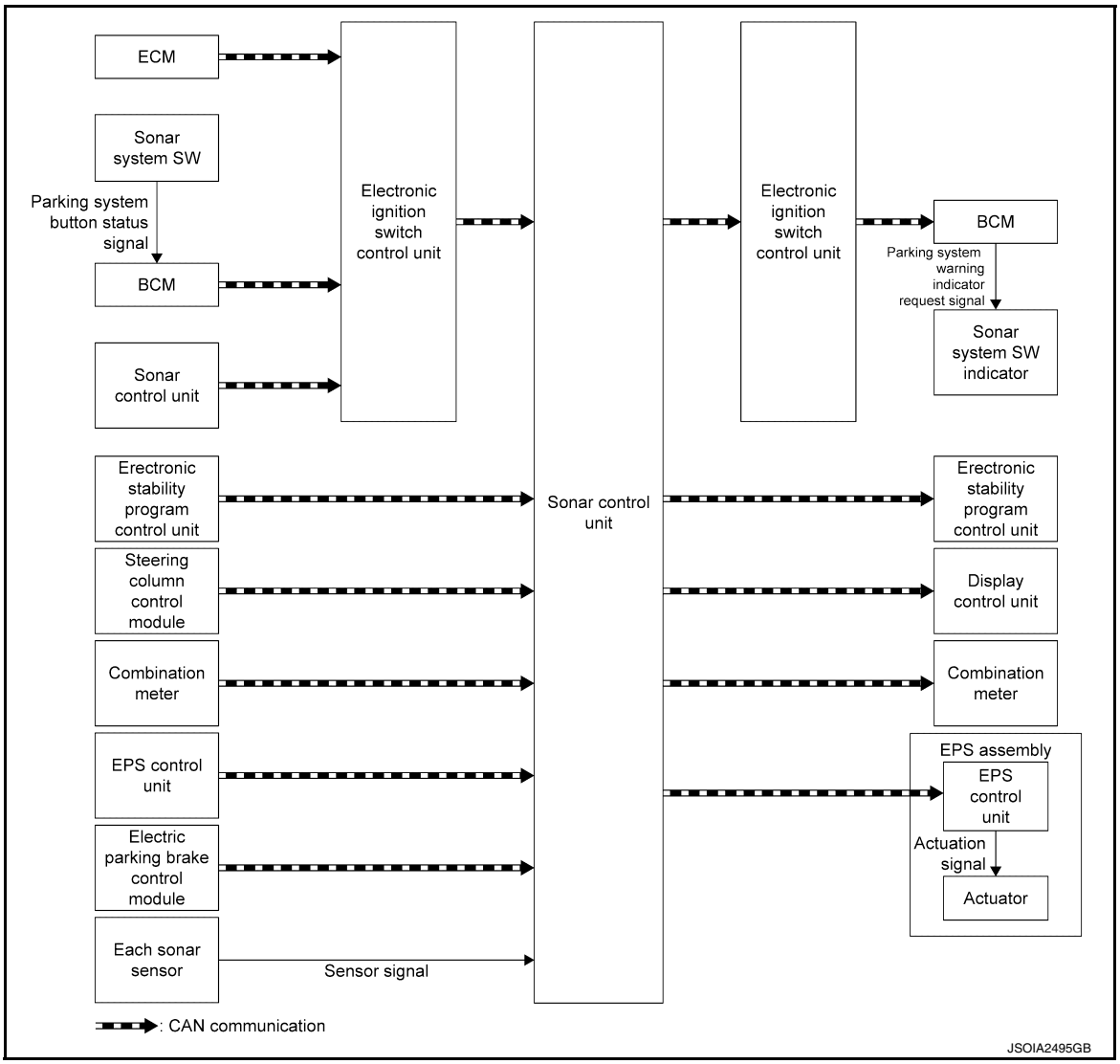


SYSTEM

System Description

INFOID:0000000013583471

SYSTEM DIAGRAM



SONAR CONTROL UNIT INPUT/OUTPUT SIGNAL ITEMS

Input Signal Item

Transmit unit	Signal name		Description
Electric parking brake control module	CAN	Parking brake signal	Receives parking brake status
ECM	CAN	Shift position signal	Receives shift position status
Electric stability program control unit	CAN	Wheel speed signal	Receives wheel speed
		Wheel rotation signal	Receives wheel rotation status
EPS control unit (Steering gear assembly)	CAN	Electric power steering torque sensor signal	Receives electric power steering torque status
BCM	CAN	Dusk setting signal	Receives dusk setting signal
Electric ignition switch control unit	CAN	Circuit 15 status ON signal	Receives circuit 15 status

Transmit unit	Signal name		Description
Combination meter	CAN	Park assist status signal	Receives park assist status
		Vehicle speed signal	Receives vehicle speed
Steering column control module	CAN	Combination switch signal	Receives combination switch status
		Steering wheel angle signal	Receives steering wheel angle status
Upper control panel control unit (sonar system switch)	CAN	Parking system button status signal	Receives parking system button status
Display control unit	CAN	Sonar indicator display signal	Receives sonar indicator display status
		Buzzer output signal	Receives buzzer output status
Side sensor front RH	Hard wire	Sensor signal	Detects distance to obstacle.
Corner sensor front			
Side sensor front LH			
Corner sensor rear			

Output Signal Item

Transmit unit	Signal name		Description
EPS control unit (Steering gear assembly)	CAN	Electric power steering request	Transmits electric power steering request
Combination meter	CAN	Meter display signal	Transmits meter display signal
Upper control panel control unit (sonar system switch)	CAN	Parking system status indicator request signal	Transmits parking system status indicator request signal

FUNCTION REQUIREMENTS, GENERAL

- Circuit 15 ON

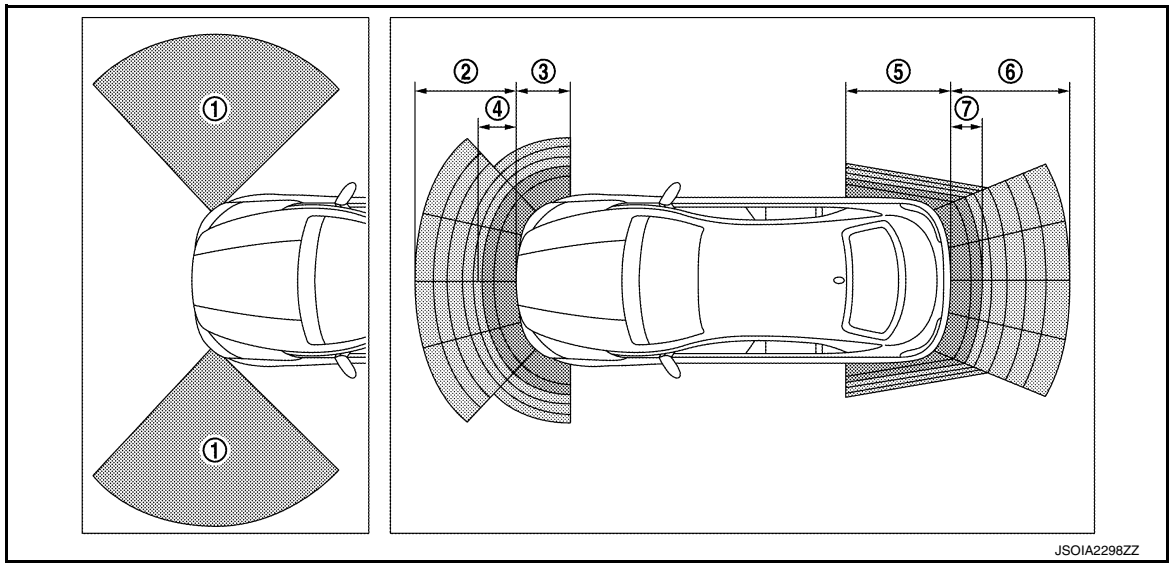
NOTE:
The electronic ignition lock control unit sends the status of circuit 15 via the CAN communication to the sonar control unit.

PARKING SYSTEM, GENERAL

The parking system consists of the sonar system and the Park Assist (IPA) which assist the driver when maneuvering and parking, for example. Sonar system uses an ultrasonic measuring procedure to record the distance between the vehicle and an obstacle. On the basis of the distance values determined in this way, it warns the driver of obstacles during a parking space entry procedure or supports him when maneuvering in a small area, for example.
When traveling at speeds of more than 36 km/h (22.3 MPH), parallel and perpendicular parking spaces on both sides of the vehicle in the direction of travel are also measured and saved. The vehicle enters/exits the parking space semi-automatically at the request of the driver.
NOTE:
Semi-automatic exiting of perpendicular parking spaces is not available.
The Park Assist is based on the functionality of the sonar system but its sensor system has extended detection ranges.
The parking system includes the following sub functions:

- Measuring procedure function sequence. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".
- Self-test function sequence. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".
- Behavior in the event of over voltage and under voltage function sequence. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".
- Activate and deactivate function sequence. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".
- Function sequence for monitoring reverse travel. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".
- Function sequence for monitoring forward travel. Refer to SN-19, "SONAR SYSTEM (FRONT 6 & REAR 6 SENSORS WITH PARK ASSIST) : System Description".

- Function sequence for parking space detection.
- Function sequence for display of possible parking spaces on information display.
- Function sequence for semi-automatic parking space entry.
- Function sequence for semi-automatic parking space exit.



① Parking space detection range	② Front monitoring range	③ Corner safeguarding, front monitoring range
④ Distance of the vehicle to an obstacle (Front)	⑤ Corner safeguarding, rear monitoring range	⑥ Rear monitoring range
⑦ Distance of the vehicle to an obstacle (Rear)		

The distance sensors are activated according to the direction of travel.
During forward travel, the distance sensors for the following monitoring ranges are activated:
- Front monitoring range ②
- Corner safeguarding, front monitoring range ③

During reverse travel, the distance sensors for the following monitoring ranges are activated:
- Front monitoring range ②
- Corner safeguarding, front monitoring range ③
- Corner safeguarding, rear monitoring range ⑤
- Rear monitoring range ⑥

Detection of parking spaces:
Below a speed of 36 km/h (22.3 MPH), the parking space detection range ① to the left and right of the vehicle is surveyed. The values are stored for 15 m (49.2 ft) in the sonar control unit.
The monitoring ranges are defined as follows:
- Monitored range, front: 100 cm (39.4 in)
- Monitored range, rear: 120 cm (47.2 in)
- Monitored range for parking space detection: 400 to 450 cm (157.5 to 177.1 in) [speed 36 km/h (22.3 MPH) or more]

If the distance of the vehicle to an obstacle is less than 20 cm (7.9 in) (④, ⑦), the parking system will not obtain any more defined data for technical reasons.

ADDITIONAL FUNCTION REQUIREMENTS FOR PARKING SPACE DETECTION

- Anti-lock braking system (ABS) and Vehicle dynamics control (VDC) have not intervened for 5 s
- Vehicle speed more than 36 km/h (22.3 MPH) (calculated from the wheel speed)

FUNCTION SEQUENCE FOR PARKING SPACE DETECTION

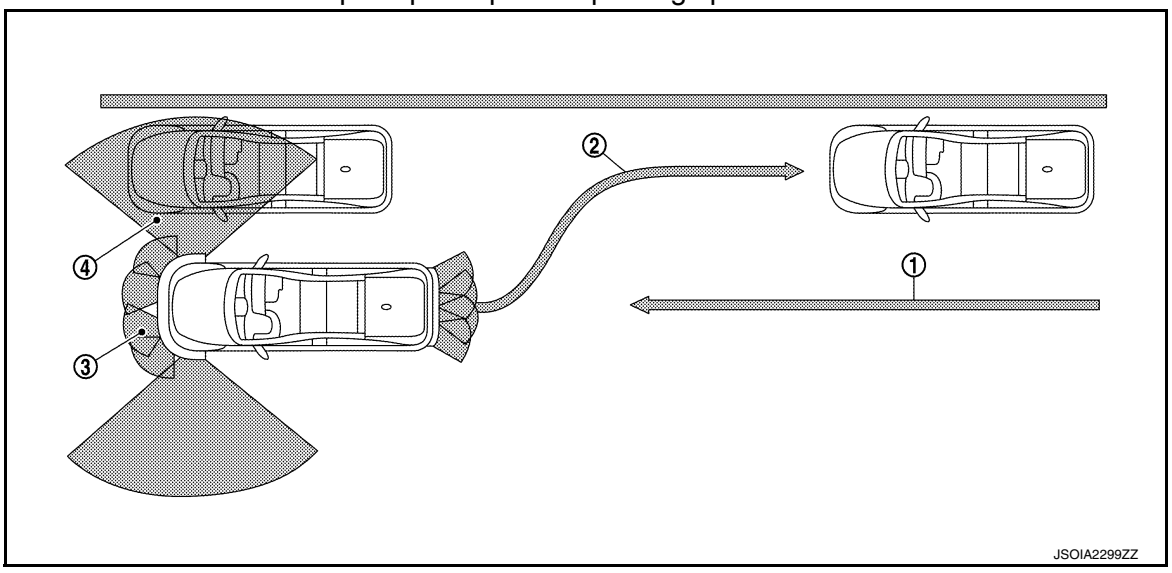
The parking space detection function is used for simple locating of suitable parallel parking spaces. Perpendicular parking spaces can also be detected. The parking space detection function is implemented via the outer front distance sensors. These monitor the area to the left and right of the vehicle and therefore have a larger range than the other distance sensors.
NOTE:

In a vehicle speed range of 0 to 18 km/h (0 to 11.2 MPH), the Park Assist operates in mixed mode, switching between obstacle and parking space detection. As of 18 km/h (11.2 MPH), the parking system changes to the parking space detection function and is active until 36 km/h (22.3 MPH).
The outer front distance sensors have a maximum range of between 400 to 450 cm (157.5 to 177.1 in) depending on environmental influences (e.g. rain, snowfall, air humidity, extreme temperatures of e.g. –40 or 85°C, air pressure, hot engine air). Data from the outer front distance sensors are read in and evaluated by the sonar control unit directly. It is calculated whether the parking space is suitable for the vehicle from the stored vehicle dimensions and deviations of the recorded parking space.
In order for the Park Assist to recognize an empty space as a suitable parallel parking space, it must be:
- Parallel to the direction of travel [curve radius 40 m (131 ft)]
- At least 150 cm (59.0 in) wide
- Minimum 100 cm (39.4 in) longer than the vehicle

In order for the Park Assist to recognize an empty space as a suitable perpendicular parking space, it must:
- Have a minimum width of vehicle width + 100 cm (39.4 in)
- Have a maximum width of vehicle width + 250 cm (98.4 in)

Two boundary points are always required for parallel and perpendicular parking.
The “Start Park Assist?” message appears in the information display of the combination meter. Alongside the “Pay attention to surroundings” warning message, the option to activate the Park Assist is also shown in the lower part of the information display. For this purpose, the sonar control unit sends the request to output the message in the information display to the combination meter via the CAN communication. The driver can then activate the Park Assist function using the left multifunction steering wheel button group. The symbols shown in the information display correspond to the OK button for “Yes” (activate) or the “Back” and voice control system OFF button for “No” (do not activate).
The steering column control module reads in the control signals from the left steering switch via the steering LIN and steering wheel electronics and sends these signals via the CAN communication, the electronic ignition lock control unit and CAN communication to the combination meter. Depending on the response to the message, the combination meter sends the appropriate status of the Park Assist to the sonar control unit via the CAN communication.
NOTE:
The parking system detects an empty space which is geometrically suitable for parking. However, it cannot detect whether the empty space is actually a parking space.

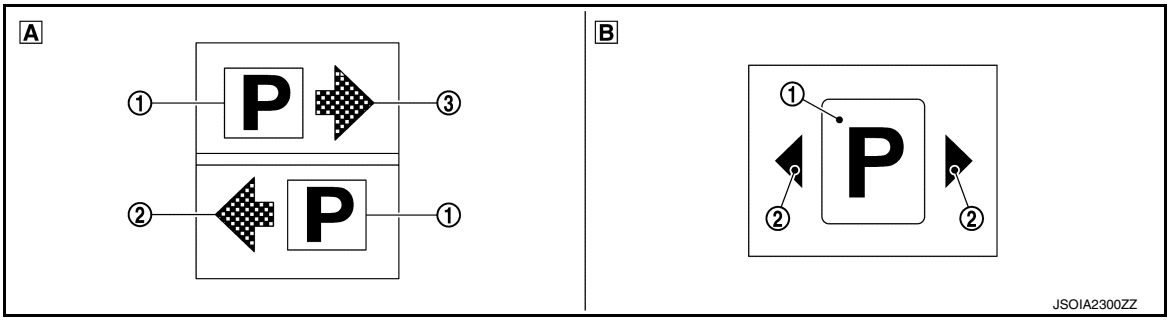
Illustration of the principle of parallel parking space detection Park Assist



① Driving past ② Trajectory into the parking space ③ Front monitoring range
④ Range for parking space detection

NOTE:
The trajectory, which consists of two arcs, forms the path to be taken into the parking space.

FUNCTION SEQUENCE FOR DISPLAY OF POSSIBLE PARKING SPACES ON INFORMATION DISPLAY



① P icon ② Left directional arrow ③ Right directional arrow

A Information display (Black - white) B Information display (Color)

While the Park Assist is searching for a parking space, a P icon appears in the information display of the combination meter.
As soon as a suitable parking space is detected by the Park Assist, a left directional arrow or a right directional arrow also appears alongside this icon. This arrow indicates on which side of the vehicle the parking space is located. Parking spaces are always looked for on both sides of the vehicle. However, only parking spaces on the passenger side are pointed out by default. To also allow parking spaces on the driver side to be displayed, the driver must actuate the turn signal in the appropriate direction. The request to activate the display in the information display of the combination meter is sent by the sonar control unit via the CAN communication to the combination meter. The switch position of the combination switch is read in by the steering column tube module control unit directly and is sent via the CAN communication, electronic ignition lock control unit and CAN communication to the sonar control unit.
NOTE:
Changes to the parking situation after parking space detection are not considered by the parking system.

ADDITIONAL FUNCTION REQUIREMENTS FOR SEMI-AUTOMATIC PARKING SPACE ENTRY

- Transmission not in gear range “D” or “R” engaged
- Speed more than 10 km/h (6.2 MPH)

FUNCTION SEQUENCE FOR SEMI-AUTOMATIC PARKING SPACE ENTRY

Semi-automatic parking in parallel and perpendicular parking spaces is possible. Insofar as the Park Assist has been activated, a message appears in the information display prompting the driver to operate the accelerator and brake pedals. The driver can now take the hands off the steering wheel.The Park Assist is responsible for braking the vehicle during the parking space entry procedure. Braking takes place at the required maneuvering points as well as in the target parking position.
The sonar control unit calculates the required steering angle based on the size of the calculated parking space and the data from the steering wheel angle sensor.
The calculation of the required brake pressure for decelerating the vehicle also takes the vehicle speed into account. The steering column tube module control unit reads in the data from the steering wheel angle sensor directly and sends information about the steering wheel angle via the CAN communication, electronic ignition lock control unit and CAN communication to the sonar control unit. The sonar control unit then sends corresponding steering commands via the CAN communication to the electrical power steering control unit. The electrical power steering control unit actuates the electric power steering actuator motor directly according to the requests. The steering gear is used to mechanically convert the electric power steering actuator motor actuation into corresponding steering movements. The sonar control unit monitors the gear rack travel on the steering gear. For this purpose, the electrical power steering control unit sends the corresponding information via the CAN communication to the sonar control unit.
- “Please engage gear range D”
- “Please engage gear range R”

After each gear range change, the driver is required to continue controlling vehicle movement until the end position has been reached.
At a speed of 7 km/h (4.3 MPH), the information display shows the “Park Assist only up to 10 km/h” note. If the vehicle (forwards or backwards) reaches a distance of more than 30 cm (11.8 in) to the parking space boundary, this is notified to the driver by the first red LED lighting up in the corresponding sonar system warning indicator. In addition, a warning tone is output from the sound generators integrated in the corresponding sonar system warning indicator. Delimitation at the side of the parking space is defined by a recognized obstacle (e.g. a curb or pole). If an obstacle is not detected at the side, the vehicle is aligned flush to the front or rear

obstacle. If the vehicle is not positioned straight in the parking space, this is corrected by the Park Assist in a maximum of seven maneuvers.The wheels are straightened once the parking procedure has been completed. As soon as this end position is reached, the “Parking assistance completed - Take over vehicle” message is shown for a period of 5 s on the information display. The warning buzzer in the combination meter additionally issues a warning tone. The target parking position of the vehicle is generally as far back and deep into the parking space as possible.

The vehicle is automatically braked when approaching the target parking position, a maneuvering point or an obstacle without any driver intervention. In principle a distinction is made between two types of deceleration:

- Comfort stop
- Emergency stop

A comfort stop is made at the end of a regular parking maneuver as soon as the vehicle approaches the target parking position or maneuvering points. Deceleration is performed proportionally. If an unforeseeable situation arises which requires immediate braking of the vehicle (e.g. a person enters the sensing range, the door of an adjacent vehicle is opened), an emergency stop is made. The level of deceleration is as strong as possible to avoid any collision. The sonar control unit sends the braking request via the CAN communication, electronic ignition lock control unit and CAN communication to the electronic stability program control unit. The electronic stability program control unit then actuates the traction system hydraulic unit to match the level of deceleration required.

The parking space entry procedure and the Park Assist are aborted in the following situations:

- If the permissible speed of 10 km/h (6.2 MPH) is exceeded
- Active intervention in steering wheel movement (“hands-on detection”)
  In this case, the electrical power steering control unit reads in the torque values from the electric power steering torque sensor directly and detects whether the steering wheel is being actively turned based on the difference in torque. The electrical power steering control unit sends this information via the CAN communication to the sonar control unit.
- Malfunction on an electrical component in the power steering
- Malfunction CAN signals
- Driver’s door and driver seat-belt buckle open at same time
- Deactivating the system by pressing the parking system button

  NOTE:

  In the event of deactivation of the parking system due to the circumstances listed, reactivation requires a change of gear or gear range. If the vehicle is out of the previously calculated trajectory, then the vehicle must be manually returned to the starting position, from which a new trajectory can then be calculated.

The following messages are also shown in the information display:

- “Park Assist Active - Please engage gear range D”
- “Park Assist Active - Please engage gear range R”
- “Park Assist terminated - Please take over”
- “Park Assist terminated”
- “Park Assist nonfunctional”
- “Park Assist only up to 10 km/h”

ADDITIONAL FUNCTION REQUIREMENTS FOR SEMI-AUTOMATIC PARKING SPACE EXIT

- Vehicle is situated in a parallel parking space
- Vehicle has been parked semi-automatically
- Semi-automatic parking space exit function is activated in “Park Assist” menu of combination meter
- Gear range is not “P”
- Turn signal set (turn signaling)

NOTE:

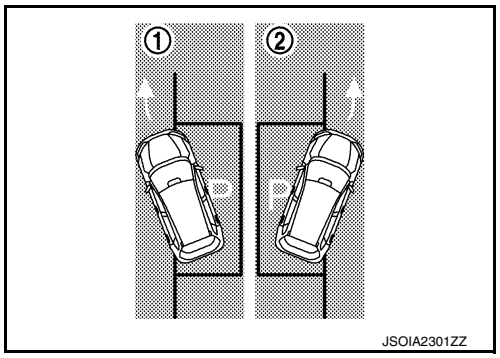
The combination meter sends the status of the Park Assist to the sonar control unit via the CAN communication.

FUNCTION SEQUENCE FOR SEMI-AUTOMATIC PARKING SPACE EXIT

The semi-automatic parking space exit function must be preceded by semi-automatic parking of the vehicle in a parallel parking space. This ensures that the vehicle is positioned parallel to the curb, if applicable. This information is required as the Active Park Assist first requests “straight to the rear” vehicle movement to exit the parking space. If the vehicle was positioned in the parking space at an angle, the rims could be damaged by the curb. The semi-automatic parking space exit function is activated by actuating the turn signal indicator in the direction (left or right) in which the parking space is to be exited. The steering column tube module control unit reads in the switch position from the combination switch directly and sends this information via the CAN communication, electronic ignition lock control unit and CAN communication to the sonar control unit. The sonar control unit evaluates the gear range status. If the gear range is not “P”, the sonar control unit sends the query “Start Parking Assist?” via the CAN communication to the combination meter.

NOTE:
Semi-automatic parking is only possible in the direction in which the vehicle was originally parked.

Parking space exit procedure



① : Exit space to left

② : Exit space to right

This process is visualized in the combination meter in accordance with the driver request (exit space to left or right). The driver can then activate the semiautomatic parking space exit function via the left multifunction steering wheel button group. The symbols shown in the information display correspond to the OK button for “Yes” (activate) or the “Back” and voice control system OFF button for “No” (do not activate). The steering column tube module control unit reads in the control signals from the left multifunction steering wheel button group via the steering LIN and steering wheel electronics and sends these signals via the CAN communication, the electronic ignition lock control unit and CAN communication to the combination meter. Depending on the response to the message, the combination meter sends the appropriate status of the Park Assist to the sonar control unit via the CAN communication. The sonar control unit then initiates the parking space exit process. Exiting the parking space begins with the “Please engage gear range R” request in the combination meter. Once the driver has moved the vehicle back, the sonar control unit sends corresponding steering commands via the CAN communication to the electrical power steering control unit. The electrical power steering control unit actuates the electric power steering actuator motor directly according to the requests (full steering wheel lock). The steering gear is used to mechanically convert the actuator motor actuation into corresponding steering movements. The sonar control unit monitors the gear rack travel on the steering gear. For this purpose, the electrical power steering control unit sends the corresponding information via the CAN communication to the sonar control unit.
According to the required maneuvering movements, the sonar control unit sends the request to display one of the following messages in the information display to the combination meter via the CAN communication):
- “Please engage gear range D”
- “Please engage gear range R”

If the vehicle (forwards or backwards) reaches a distance of more than 30 cm (11.8 in) to the parking space boundary, this is notified to the driver by the first red LED lighting up in the corresponding sonar system warning indicator.
The vehicle is automatically braked at the corresponding maneuvering points. The Electronic Stability Program control unit receives the brake requests from the sonar control unit, and actuates the traction system hydraulic unit accordingly. Once the Active Park Assist has positioned the vehicle such that the driver is able to drive straight out of the parking space, the sonar control unit sends the request to display the message “Parking assist. completed - Please take over” to the combination meter via the CAN communication.
The parking space exit procedure and the Park Assist are aborted in the following situations:
- If the permissible speed of 10 km/h (6.2 MPH) is exceeded
- Active intervention in steering wheel movement (“hands-on detection”)
  In this case, the electrical power steering control unit reads in the torque values from the electric power steering torque sensor directly and detects whether the steering wheel is being actively turned based on the difference in torque. The electrical power steering control unit sends this information via the CAN communication to the sonar control unit.
- Malfunction on an electrical component in the power steering
- Malfunction CAN signals
- Driver’s door and driver seat-belt buckle open at same time
- Deactivating the system by pressing the parking system button

NOTE:

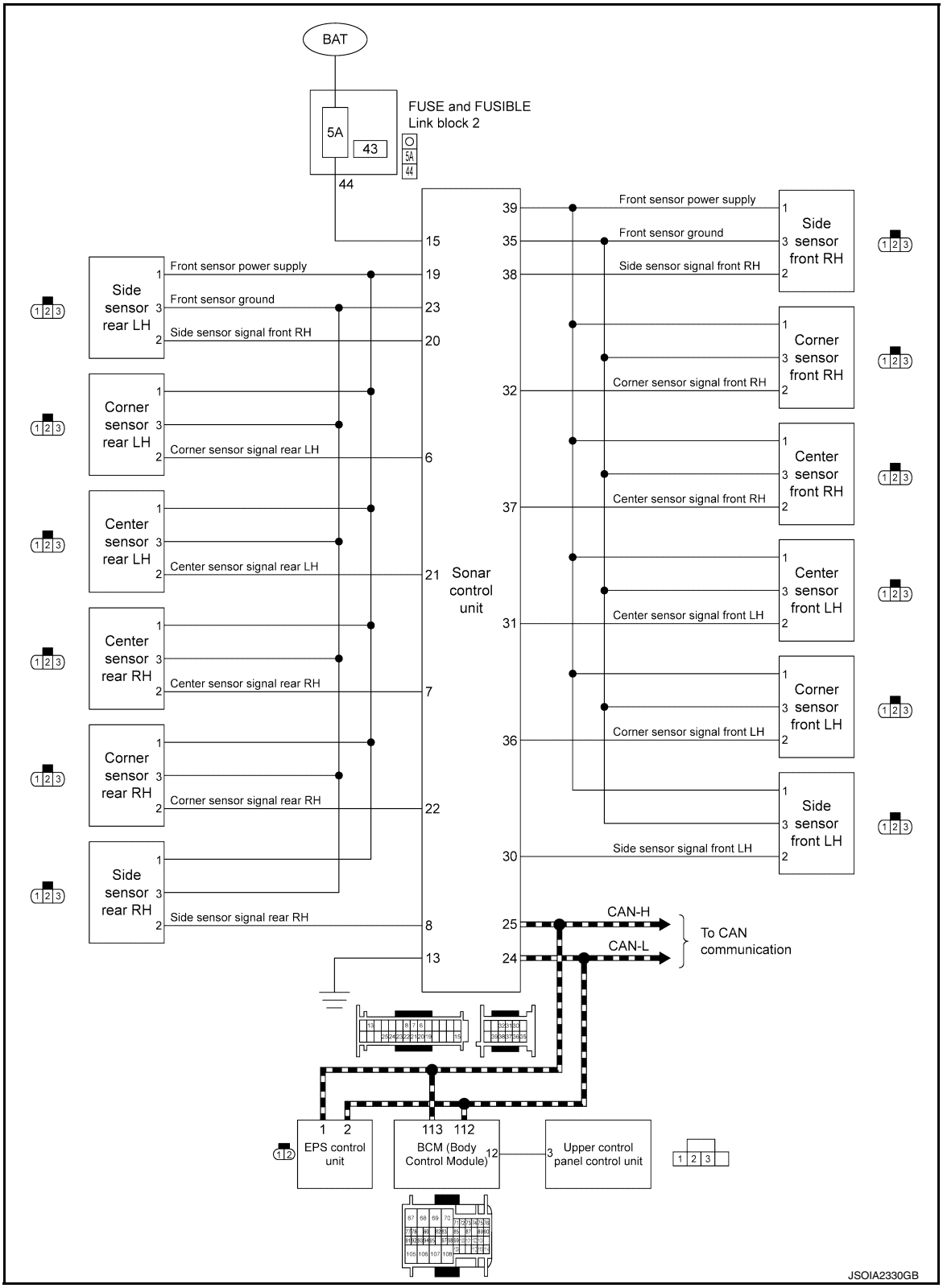
In the event of deactivation of the parking system due to the circumstances listed, reactivation requires a change of gear or gear range. If the vehicle is out of the previously calculated trajectory, then the vehicle must be manually returned to the starting position, from which a new trajectory can then be calculated.

The following messages are also shown in the information display:

- “Park Assist Active - Please engage gear range D”
- “Park Assist Active - Please engage gear range R”
- “Park Assist terminated - Please take over”
- “Park Assist terminated”
- “Park Assist nonfunctional”

Circuit Diagram

INFOID:0000000013583472



INFORMATION DISPLAY (COMBINATION METER)

INFORMATION DISPLAY (COMBINATION METER) : Warning/Indicator (On Information Display)

INFOID:0000000013583473

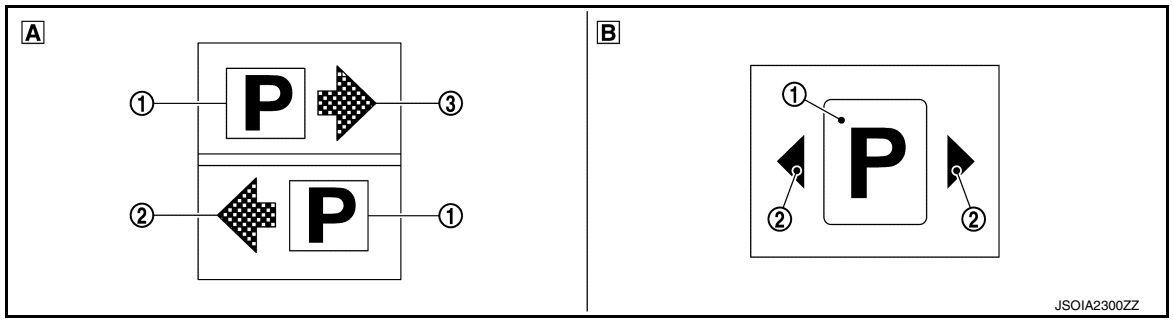
System name	Design	Warning message	Description
Park Assist	—	Parking Assist cancelled	Parking Assist is cancelled
	—	Parking Assist inoperative	Park Assist is not available due to a malfunction
	—	Parking Assist switched off	The vehicle is parked.

OPERATION

Menu Displayed by Pressing Each Switch

INFOID:0000000013583474

SYSTEM DISPLAY



A With monochrome display (Information display)

B With color display (Information display)

No.	Name	Function
①	P icon	Displays Park Assist is available
②	Directional arrow	Indicates direction of detected parking space

HANDLING PRECAUTION

Precautions for Park Assist

INFOID:0000000013583475

- IPA is only an aid. It is not a substitute for attention to the immediate surroundings. The responsibility for safe manoeuvring and parking remains with driver.
- Make sure that no persons, animals or objects are in the manoeuvring range
- When the parking sensor system is deactivated, IPA is also unavailable.
- While parking or pulling out of a parking space, the vehicle swings out and can drive onto areas of the oncoming lane. This could cause driver to collide with other road users. There is a risk of an accident.
- Pay attention to other road users. Stop the vehicle if necessary or cancel the IPA parking procedure.

If unavoidable, driver should drive over obstacles such as kerbs slowly and not at a sharp angle. Otherwise, driver may damage the wheels or tires.

If there are objects above the detection range, IPA may steer too early. This could cause a collision. There is a risk of an accident.
If objects are located above the detection range, stop and switch off the IPA.

DIAGNOSIS SYSTEM (SONAR CONTROL UNIT)

CONSULT Function

INFOID:0000000013759114

APPLICATION ITEMS

CONSULT perform the following functions via communication with sonar control unit.

Test mode	Function
Self Diagnostic Results	Sonar control unit checks the conditions and displays memorized error.
Data Monitor	Sonar control unit input/output data in real time.
Work support	Sonar system function can be confirmed.
Ecu Identification	Sonar control unit part number can be read.
Configuration	Automatically writes the vehicle specification when replacing sonar control unit.

SELF-DIAGNOSTIC RESULTS

For details, refer to DAS-206, "DTC Index".

Freeze Frame Data (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Item name	Display content
Original Odometer Value	Total driving distance (odometer value) upon DTC detection is displayed.
Most Recent Odometer Value	—
Frequency Counter	—
Ignition Cycle Counter	Numerical value is displayed indicating the number of times that ignition switch is turned ON after the DTC is detected.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Display/ UNIT	Description
OUTER F/L PARK SENSOR	cm	Displays the detection distance of the side sensor front LH.
CENTER F/L PARK SENSOR	cm	Displays the detection distance of the corner sensor front LH.
INNER F/L PARK SENSOR	cm	Displays the detection distance of the center sensor front LH.
INNER F/R PARK SENSOR	cm	Displays the detection distance of the center sensor front RH.
CENTER F/R PARK SENSOR	cm	Displays the detection distance of the corner sensor front RH.
OUTER F/R PARK SENSOR	cm	Displays the detection distance of the side sensor front RH.
OUTER R/R PARK SENSOR	cm	Displays the detection distance of the side sensor rear RH.
CENTER R/R PARK SENSOR	cm	Displays the detection distance of the corner sensor rear RH.
INNER R/R PARK SENSOR	cm	Displays the detection distance of the center sensor rear RH.
INNER R/L PARK SENSOR	cm	Displays the detection distance of the center sensor rear LH.
CENTER R/L PARK SENSOR	cm	Displays the detection distance of the corner sensor rear LH.
OUTER R/L PARK SENSOR	cm	Displays the detection distance of the side sensor rear LH.
BATTERY VOLTAGE CAN	V	Display the battery voltage.
Selector Lever Position	P/R/N/D/ SNA	Displays the status of shift position
BUTTON PARKING SYSTEM	NOT ACT/AC-TUAT	Displays the sonar system switch condition.

Monitor Item	Display/ UNIT	Description
PARKING BRAKE	NO END/ INCRSE/ DE-CRSE/ ACTUAT/ RE-LESE/ SNA	Displays the parking brake condition.
PARK BUTTON LED	Off/On	Displays the illuminate status of the sonar system switch LED.
BATT VOLT PARKING SYSTEM	V	Displays the battery voltage of sonar control unit.
PWR SUP WARN ELEMENTS	V	**NOTE:** This item is displayed, but it is not monitored.
ECM	PLAUBL/ IMPLBL	—
TRANSMISSION	PLAUBL/ IMPLBL	—
TRACTION SYSTEM	PLAUBL/ IMPLBL	—
ELECTRIC PARKING BRAKE	PLAUBL/ IMPLBL	—
POWER STEERING	PLAUBL/ IMPLBL	—
COMBINATION METER	PLAUBL/ IMPLBL	—
ELECTRONIC IGNITION LOCK	PLAUBL/ IMPLBL	—
STEERING COLUMN MODULE	PLAUBL/ IMPLBL	—
FRONT SIGNAL AND MODULE	PLAUBL/ IMPLBL	—
REAR SIGNAL AND MODULE	PLAUBL/ IMPLBL	—
CENTRAL GATEWAY	PLAUBL/ IMPLBL	—
SUPPLEMENTAL RESTRAINT	PLAUBL/ IMPLBL	—

WORK SUPPORT

Work support item	Function
ELECTRICAL CONTACTING OF SENSORS	Can check each sonar sensor.

ECU IDENTIFICATION

Displays the part number of the sonar control unit.

CONFIGURATION

For details, refer to SN-61, "Description".

ECU DIAGNOSIS INFORMATION

SONAR CONTROL UNIT

Reference Value

INFOID:0000000013759115

VALUES ON THE DIAGNOSIS TOOL

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

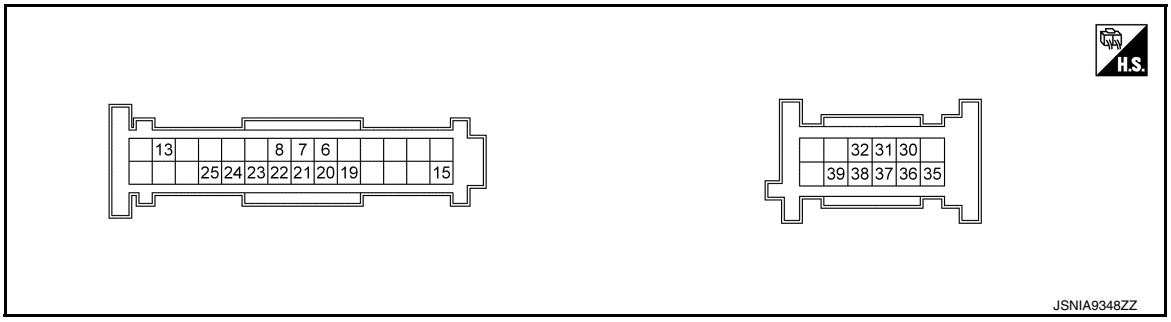
CONSULT MONITOR ITEM

Monitor Item	Condition		Value/Status
OUTER F/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
CENTER F/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
INNER F/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
INNER F/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
CENTER F/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
OUTER F/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to front bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
OUTER R/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
CENTER R/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
INNER R/R PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)
INNER R/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity	Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity	510 cm (200.79 in)

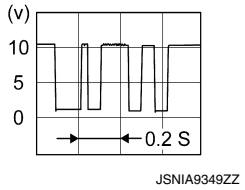
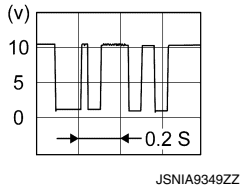
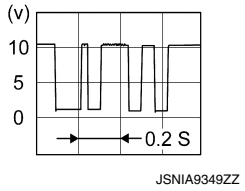
Monitor Item	Condition			Value/Status
CENTER R/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity		Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity		510 cm (200.79 in)
OUTER R/L PARK SENSOR	Ignition switch ON	An obstacle exists in the vicinity		Almost agree with the distance from the closest obstacle to rear bumper.
		No obstacle exists in the vicinity		510 cm (200.79 in)
BATTERY VOLTAGE CAN	Ignition switch ON	An obstacle exists in the vicinity		Approx. 12.0 V
Selector lever position	Ignition switch ON	7DCT models	Selector lever in P position	P
			Selector lever in R position	R
			Selector lever in N position	N
			Selector lever in D position	D
		M/T models	—	SNA
BUTTON PARKING SYSTEM	Ignition switch ON	Press sonar system switch		ACTUAT
		Other than the above		NOT ACT
		—		SNA
PARKING BRAKE	Ignition switch ON	—		NO END
		During the parking brake applied operation		INCRSE
		During the parking brake release operation		DECRSE
		Parking brake is applied		ACTUAT
		Parking brake is released		RELESE
		—		SNA
PARK BUTTON LED	Ignition switch ON	When LED is OFF		OFF
		When LED is ON		On
BATT VOLT PARKING SYSTEM	Ignition switch ON			Approx. 12.0 V
PWR SUP WARN ELEMENTS	**NOTE:** This item is displayed, but cannot be monitored.			
ECM	—			PLAUBL
				IMPLBL
TRANSMISSION	—			PLAUBL
				IMPLBL
TRACTION SYSTEM	—			PLAUBL
				IMPLBL
ELECTRIC PARKING BRAKE	—			PLAUBL
				IMPLBL
POWER STEERING	—			PLAUBL
				IMPLBL
COMBINATION METER	—			PLAUBL
				IMPLBL
ELECTRONIC IGNITION LOCK	—			PLAUBL
				IMPLBL
STEERING COLUMN MODULE	—			PLAUBL
				IMPLBL

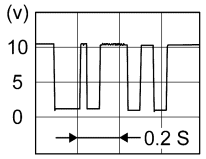
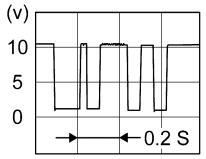
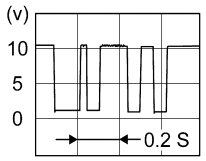
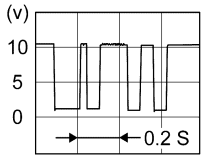
Monitor Item	Condition	Value/Status
FRONT SIGNAL AND MODULE	—	PLAUBL
		IMPLBL
REAR SIGNAL AND MODULE	—	PLAUBL
		IMPLBL
CENTRAL GATEWAY	—	PLAUBL
		IMPLBL
SUPPLEMENTAL RESTRAINT	—	PLAUBL
		IMPLBL

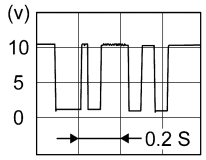
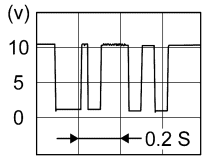
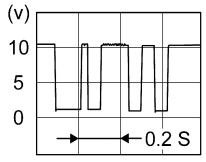
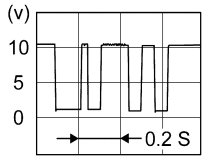
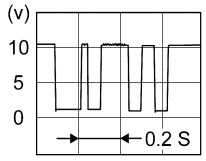
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
6 (L)	23 (B)	Corner sensor signal rear LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
7 (R)	23 (B)	Center sensor signal rear RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
8 (Y)	23 (B)	Side sensor signal rear RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
13 (BR)	Ground	Ground	—	Ignition switch ON	—	—	0 V

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
15 (R)	13 (BR)	Battery power supply	Input	Ignition switch ON	—	9.0 - 16.0 V	Battery voltage
19 (BR)	23 (B)	Rear sensor power supply	Output	Ignition switch ON	—	—	12.5 V
20 (V)	23 (B)	Side sensor signal rear LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
21 (W)	23 (B)	Center sensor signal rear LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
22 (Y)	23 (B)	Corner sensor signal rear RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
23 (B)	Ground	Rear sensor ground	—	Ignition switch ON	—	—	0 V
24 (G)	—	CAN–L	Input/ Output	—	—	—	—
25 (W)	—	CAN–H	Input/ Output	—	—	—	—
30 (P)	35 (BR)	Side sensor signal front LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ

Terminal (Wire color)		Description		Condition		Standard	Reference value (Approx.)
+	–	Signal name	Input/ Output				
31 (Y)	35 (BR)	Center sensor signal front LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
32 (O)	35 (BR)	Corner sensor signal front RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
35 (BR)	Ground	Front sensor ground	—	Ignition switch ON	—	—	0 V
36 (R)	35 (BR)	Corner sensor signal front LH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
37 (V)	35 (BR)	Center sensor signal front RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
38 (L)	35 (BR)	Side sensor signal front RH	Input	Ignition switch ON	Shift position is in R position.	Waveform according to sensor signal is input	 JSNIA9349ZZ
39 (GR)	35 (BR)	Front sensor power supply	Output	Ignition switch ON	—	—	12.5 V

Fail-Safe

INFOID:0000000013759116

DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Fail-safe condition
B122B	09	Outer RR distance sen has malf	[COMPONENT MALFUNCTION]	The LED on the sonar system switch will illuminate (red) and cancellation tone will be heard for less than 2 seconds.
B122B	12		[CIRC SHORT TO BATTERY]	
B122B	14		[CIRC SHORT TO GROUND OR OPEN]	
B122B	23		[SIGNAL STUCK LOW]	
B122B	95		[INCORRECT ASSEMBLY]	
B1230	09	Center RR distance sen has malf	[COMPONENT MALFUNCTION]	
B1230	12		[CIRC SHORT TO BATTERY]	
B1230	14		[CIRC SHORT TO GROUND OR OPEN]	
B1230	23		[SIGNAL STUCK LOW]	
B1230	95		[INCORRECT ASSEMBLY]	
B1235	09	Inner RR distance sen has malf	[COMPONENT MALFUNCTION]	
B1235	12		[CIRC SHORT TO BATTERY]	
B1235	14		[CIRC SHORT TO GROUND OR OPEN]	
B1235	23		[SIGNAL STUCK LOW]	
B1235	95		[INCORRECT ASSEMBLY]	
B123A	09	Inner RL distance sen has malf	[COMPONENT MALFUNCTION]	
B123A	12		[CIRC SHORT TO BATTERY]	
B123A	14		[CIRC SHORT TO GROUND OR OPEN]	
B123A	23		[SIGNAL STUCK LOW]	
B123A	95		[INCORRECT ASSEMBLY]	
B1244	09	Outer FL distance sen has malf	[COMPONENT MALFUNCTION]	
B1244	12		[CIRC SHORT TO BATTERY]	
B1244	14		[CIRC SHORT TO GROUND OR OPEN]	
B1244	23		[SIGNAL STUCK LOW]	
B1244	95		[INCORRECT ASSEMBLY]	
B1249	09	Center FL distance sen has malf	[COMPONENT MALFUNCTION]	
B1249	12		[CIRC SHORT TO BATTERY]	
B1249	14		[CIRC SHORT TO GROUND OR OPEN]	
B1249	23		[SIGNAL STUCK LOW]	
B1249	95		[INCORRECT ASSEMBLY]	
B124E	09	Inner FL distance sen has malf	[COMPONENT MALFUNCTION]	
B124E	12		[CIRC SHORT TO BATTERY]	
B124E	14		[CIRC SHORT TO GROUND OR OPEN]	
B124E	23		[SIGNAL STUCK LOW]	
B124E	95		[INCORRECT ASSEMBLY]	
B1253	09	Inner FR distance sen has malf	[COMPONENT MALFUNCTION]	
B1253	12		[CIRC SHORT TO BATTERY]	
B1253	14		[CIRC SHORT TO GROUND OR OPEN]	
B1253	23		[SIGNAL STUCK LOW]	
B1253	95		[INCORRECT ASSEMBLY]	

DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Fail-safe condition
B1258	09	Center FR distance sen has malf	[COMPONENT MALFUNCTION]	The LED on the sonar system switch will illuminate (red) and cancellation tone will be heard for less than 2 seconds.
B1258	12		[CIRC SHORT TO BATTERY]	
B1258	14		[CIRC SHORT TO GROUND OR OPEN]	
B1258	23		[SIGNAL STUCK LOW]	
B1258	95		[INCORRECT ASSEMBLY]	
B125D	09	Outer FR distance sen has malf	[COMPONENT MALFUNCTION]	
B125D	12		[CIRC SHORT TO BATTERY]	
B125D	14		[CIRC SHORT TO GROUND OR OPEN]	
B125D	23		[SIGNAL STUCK LOW]	
B125D	95		[INCORRECT ASSEMBLY]	
B127B	09	Center RL distance sen has malf	[COMPONENT MALFUNCTION]	
B127B	12		[CIRC SHORT TO BATTERY]	
B127B	14		[CIRC SHORT TO GROUND OR OPEN]	
B127B	23		[SIGNAL STUCK LOW]	
B127B	95		[INCORRECT ASSEMBLY]	
B1280	09	Outer RL distance sen has malf	[COMPONENT MALFUNCTION]	
B1280	12		[CIRC SHORT TO BATTERY]	
B1280	14		[CIRC SHORT TO GROUND OR OPEN]	
B1280	23		[SIGNAL STUCK LOW]	
B1280	95		[INCORRECT ASSEMBLY]	
B1285	1C	Fr distance sens have malf	[CIRC VOLTAGE OUT OF RANGE]	
B1286	1C	Rr distance sens have malf	[CIRC VOLTAGE OUT OF RANGE]	
B210A	00	Power Supply circuit	[NO SUBTYPE INFORMATION]	Sonar system and park assist do not operate.
B210B	00	Power Supply circuit	[NO SUBTYPE INFORMATION]	
B210C	16	Power supply is outside valid range	[CIRC VOLT BELOW THRESHOLD]	The LED on the sonar system switch will illuminate (red) and cancellation tone will be heard for less than 2 seconds.
B210C	17	Power supply is outside valid range	[CIRC VOLT ABOVE THRESHOLD]	
B2232	47	Control unit parking system has malf	[WATCHDOG/SAFETY UC FAILURE]	
B2232	55		[NOT CONFIURED]	
B2232	96		[CMPNENT INTERNAL MLFNCTN]	
U0037	88	Vehicle communication bus B	[BUS OFF]	
U0100	87	Communication error	[MISSING MESSAGE]	Sonar system and park assist do not operate.
U0101	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	The LED on the sonar system switch will illuminate (red) and cancellation tone will be heard for less than 2 seconds.
U0122	87	Lost Communication With VDCM	[MISSING MESSAGE]	Sonar system and park assist do not operate.
U0128	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	Sonar system and park assist do not operate.

DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Fail-safe condition
U0131	87	No CAN message EPS C/U	[MISSING MESSAGE]	Sonar system and park assist do not operate.
U0155	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	
U0168	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	
U0212	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	Sonar system and park assist do not operate.

DTC Index

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DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Reference
B122B	09	Outer RR distance sen has malf	[COMPONENT MALFUNCTION]	SN-62, "DTC Description"
B122B	12		[CIRC SHORT TO BATTERY]	
B122B	14		[CIRC SHORT TO GROUND OR OPEN]	
B122B	23		[SIGNAL STUCK LOW]	
B122B	95		[INCORRECT ASSEMBLY]	
B1230	09	Center RR distance sen has malf	[COMPONENT MALFUNCTION]	SN-70, "DTC Description"
B1230	12		[CIRC SHORT TO BATTERY]	
B1230	14		[CIRC SHORT TO GROUND OR OPEN]	
B1230	23		[SIGNAL STUCK LOW]	
B1230	95		[INCORRECT ASSEMBLY]	
B1235	09	Inner RR distance sen has malf	[COMPONENT MALFUNCTION]	SN-79, "DTC Description"
B1235	12		[CIRC SHORT TO BATTERY]	
B1235	14		[CIRC SHORT TO GROUND OR OPEN]	
B1235	23		[SIGNAL STUCK LOW]	
B1235	95		[INCORRECT ASSEMBLY]	
B123A	09	Inner RL distance sen has malf	[COMPONENT MALFUNCTION]	SN-88, "DTC Description"
B123A	12		[CIRC SHORT TO BATTERY]	
B123A	14		[CIRC SHORT TO GROUND OR OPEN]	
B123A	23		[SIGNAL STUCK LOW]	
B123A	95		[INCORRECT ASSEMBLY]	
B1244	09	Outer FL distance sen has malf	[COMPONENT MALFUNCTION]	SN-97, "DTC Description"
B1244	12		[CIRC SHORT TO BATTERY]	
B1244	14		[CIRC SHORT TO GROUND OR OPEN]	
B1244	23		[SIGNAL STUCK LOW]	
B1244	95		[INCORRECT ASSEMBLY]	
B1249	09	Center FL distance sen has malf	[COMPONENT MALFUNCTION]	SN-105, "DTC Description"
B1249	12		[CIRC SHORT TO BATTERY]	
B1249	14		[CIRC SHORT TO GROUND OR OPEN]	
B1249	23		[SIGNAL STUCK LOW]	
B1249	95		[INCORRECT ASSEMBLY]	

DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Reference
B124E	09	Inner FL distance sen has malf	[COMPONENT MALFUNCTION]	SN-114, "DTC Description"
B124E	12		[CIRC SHORT TO BATTERY]	
B124E	14		[CIRC SHORT TO GROUND OR OPEN]	
B124E	23		[SIGNAL STUCK LOW]	
B124E	95		[INCORRECT ASSEMBLY]	
B1253	09	Inner FR distance sen has malf	[COMPONENT MALFUNCTION]	SN-123, "DTC Description"
B1253	12		[CIRC SHORT TO BATTERY]	
B1253	14		[CIRC SHORT TO GROUND OR OPEN]	
B1253	23		[SIGNAL STUCK LOW]	
B1253	95		[INCORRECT ASSEMBLY]	
B1258	09	Center FR distance sen has malf	[COMPONENT MALFUNCTION]	SN-132, "DTC Description"
B1258	12		[CIRC SHORT TO BATTERY]	
B1258	14		[CIRC SHORT TO GROUND OR OPEN]	
B1258	23		[SIGNAL STUCK LOW]	
B1258	95		[INCORRECT ASSEMBLY]	
B125D	09	Outer FR distance sen has malf	[COMPONENT MALFUNCTION]	SN-141, "DTC Description"
B125D	12		[CIRC SHORT TO BATTERY]	
B125D	14		[CIRC SHORT TO GROUND OR OPEN]	
B125D	23		[SIGNAL STUCK LOW]	
B125D	95		[INCORRECT ASSEMBLY]	
B127B	09	Center RL distance sen has malf	[COMPONENT MALFUNCTION]	SN-149, "DTC Description"
B127B	12		[CIRC SHORT TO BATTERY]	
B127B	14		[CIRC SHORT TO GROUND OR OPEN]	
B127B	23		[SIGNAL STUCK LOW]	
B127B	95		[INCORRECT ASSEMBLY]	
B1280	09	Outer RL distance sen has malf	[COMPONENT MALFUNCTION]	SN-158, "DTC Description"
B1280	12		[CIRC SHORT TO BATTERY]	
B1280	14		[CIRC SHORT TO GROUND OR OPEN]	
B1280	23		[SIGNAL STUCK LOW]	
B1280	95		[INCORRECT ASSEMBLY]	
B1285	1C	Fr distance sens have malf	[CIRC VOLTAGE OUT OF RANGE]	SN-166, "DTC Description"
B1286	1C	Rr distance sens have malf	[CIRC VOLTAGE OUT OF RANGE]	SN-169, "DTC Description"
B210A	00	Power Supply circuit	[NO SUBTYPE INFORMATION]	SN-172, "DTC Description"
B210B	00	Power Supply circuit	[NO SUBTYPE INFORMATION]	SN-174, "DTC Description"
B210C	16	Power supply is outside valid range	[CIRC VOLT BELOW THRESHOLD]	SN-176, "DTC Description"
B210C	17	Power supply is outside valid range	[CIRC VOLT ABOVE THRESHOLD]	
B2232	47	Control unit parking system has malf	[WATCHDOG/SAFETY UC FAILURE]	SN-179, "DTC Description"
B2232	55		[NOT CONFIURED]	
B2232	96		[CMPNENT INTERNAL MLFNCTN]	
U0037	88	Vehicle communication bus B	[BUS OFF]	SN-182, "DTC Description"
U0100	87	Communication error	[MISSING MESSAGE]	SN-184, "DTC Description"
U0101	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	SN-186, "DTC Description"
U0122	87	Lost Communication With VDCM	[MISSING MESSAGE]	SN-188, "DTC Description"
U0128	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	SN-190, "DTC Description"

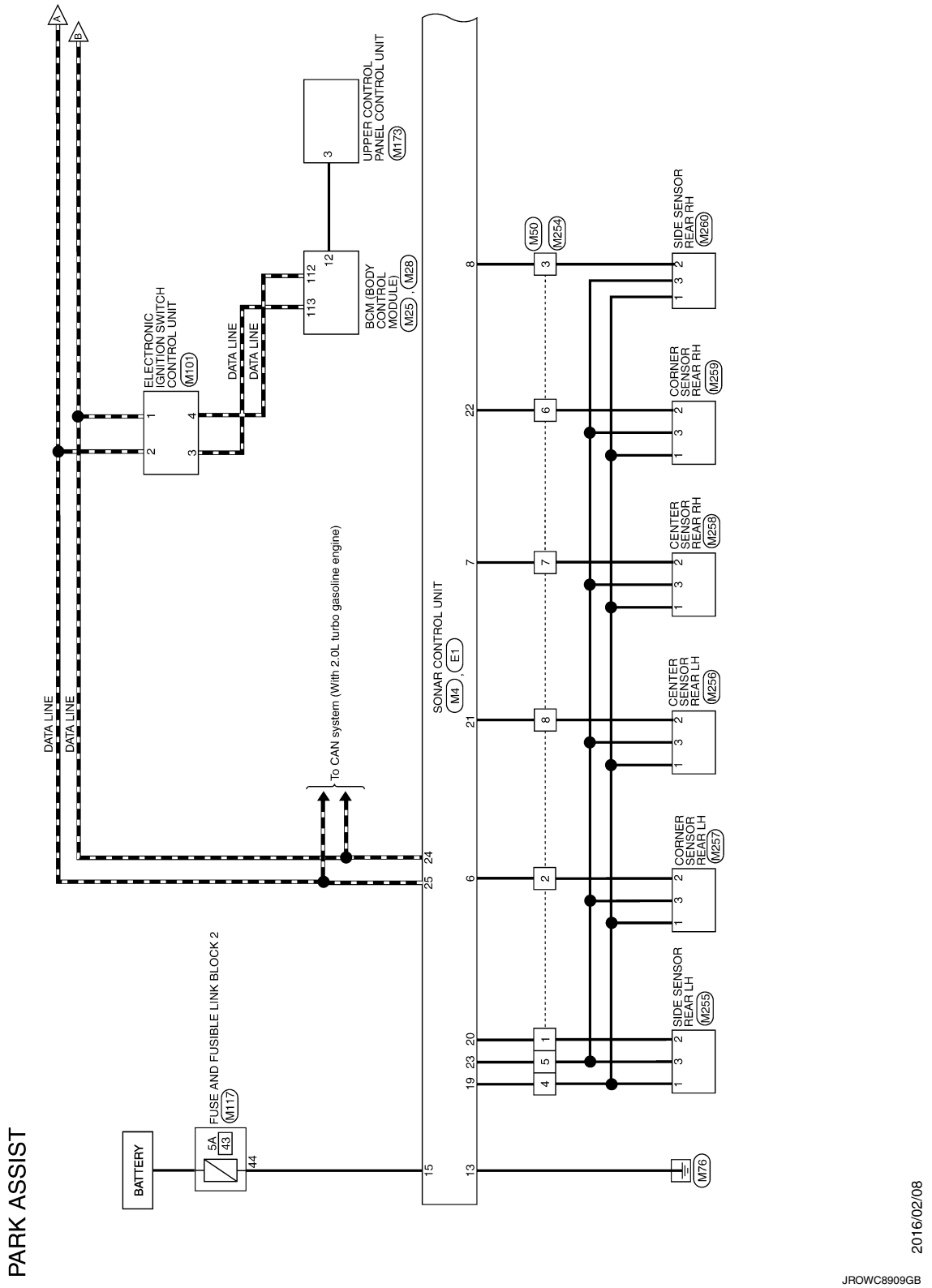
DTC		Items (CONSULT screen terms)	Sub type (CONSULT screen terms)	Reference
U0131	87	No CAN message EPS C/U	[MISSING MESSAGE]	SN-192, "DTC Description"
U0155	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	SN-194, "DTC Description"
U0168	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	SN-196, "DTC Description"
U0212	87	COMMUNICATION ERROR (LOST)	[MISSING MESSAGE]	SN-198, "DTC Description"

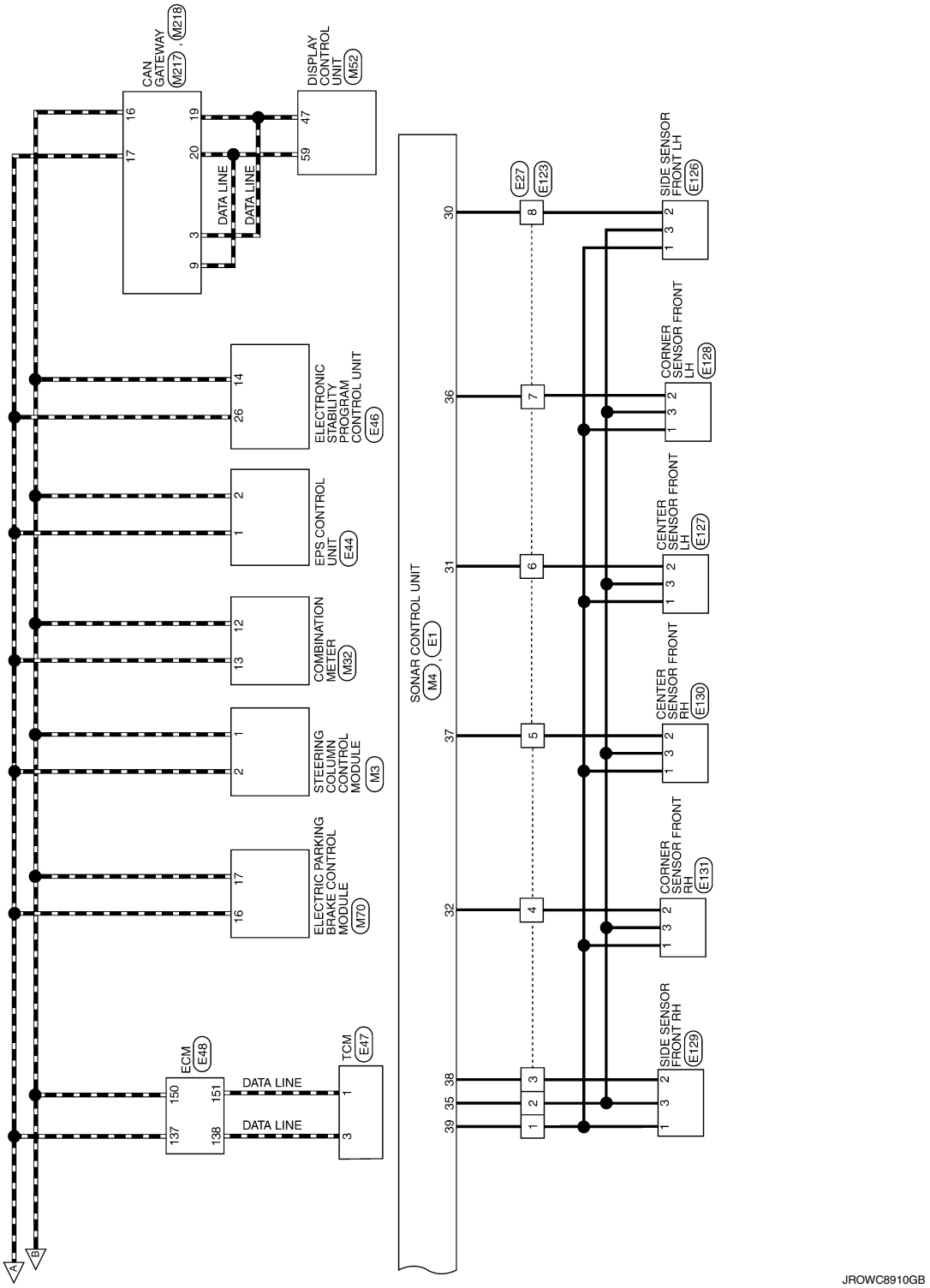
WIRING DIAGRAM

PARK ASSIST

Wiring Diagram

INFOID:0000000013583480





JROWC8910GB

PARK ASSIST

Connector No.	E1
Connector Name	SONAR CONTROL UNIT
Connector Type	MB_A0525451626

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
30	P	SIDE SENSAR SIGNAL FRONT LH
31	Y	CENTER SENSAR SIGNAL FRONT LH
32	O	CORNER SENSAR SIGNAL FRONT RH
35	BR	FRONT SENSOR GROUND
36	R	CORNER SENSAR SIGNAL FRONT LH
37	V	CENTER SENSAR SIGNAL FRONT RH
38	L	SIDE SENSAR SIGNAL FRONT RH
39	GR	FRONT SENSOR POWER SUPPLY

Connector No.	E27
Connector Name	WIRE TO WIRE
Connector Type	RH12MB

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	-
2	BR	-
3	L	-
4	O	-
5	V	-
6	Y	-
7	R	-
8	P	-

Connector No.	E44
Connector Name	EPS CONTROL UNIT
Connector Type	MB_A0065401981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	CAN-H
2	G	CAN-L

Connector No.	E46
Connector Name	ELECTRONIC STABILITY PROGRAM CONTROL UNIT
Connector Type	MB_A2465400581

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	MOTOR POWER SUPPLY
2	W	BRAKE PEDAL
4	P	RIGHT FRONT AXLE RPM SENSOR SIGNAL
5	GR	BRAKE VACUUM SENSOR POWER SUPPLY
6	B	BRAKE LIGHT SWITCH-L
7	R	BATTERY POWER SUPPLY
8	Y	LFET FRONT AXLE RPM SENSOR SIGNAL
10	O	STANDSTILL CONTROL (SSC) STATUS
12	P	BRAKE VACUUM SENSOR SIGNAL
13	BR	GROUND (MOTOR)
14	G	CAN-L
16	B	RIGHT FRONT AXLE RPM SENSOR POWER SUPPLY
17	Y	RIGHT REAR AXLE RPM SENSOR POWER SUPPLY
18	BR	LFET REAR AXLE RPM SENSOR SIGNAL
19	W	LFET FRONT AXLE RPM SENSOR POWER SUPPLY
23	B	BRAKE VACUUM SENSOR GROUND
25	P	VALVE RELAY POWER SUPPLY

26	W	CAN-H
28	R	BATTERY POWER SUPPLY
29	P	RIGHT REAR AXLE RPM SENSOR SIGNAL
30	V	BRAKE LIGHT SWITCH-H
31	GR	LFET REAR AXLE RPM SENSOR POWER SUPPLY
32	L	BRAKE LIGHT SWITCH GROUND
35	R	BRAKE LIGHT SWITCH POWER SUPPLY
38	B	GROUND (VALVE)

Connector No.	E47
Connector Name	TCM
Connector Type	MB_A2465450026

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	CAN-L
2	V	NOT P
3	GR	CAN-H
5	W	BATTERY POWER SUPPLY

Connector No.	E48
Connector Name	ECM
Connector Type	MB_A0075406981

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
97	R	POWER SUPPLY (ECM)
98	BR	ECM GROUND
99	V	POWER SUPPLY (ECM)
100	BR	ECM GROUND
101	R	POWER SUPPLY (ECM)

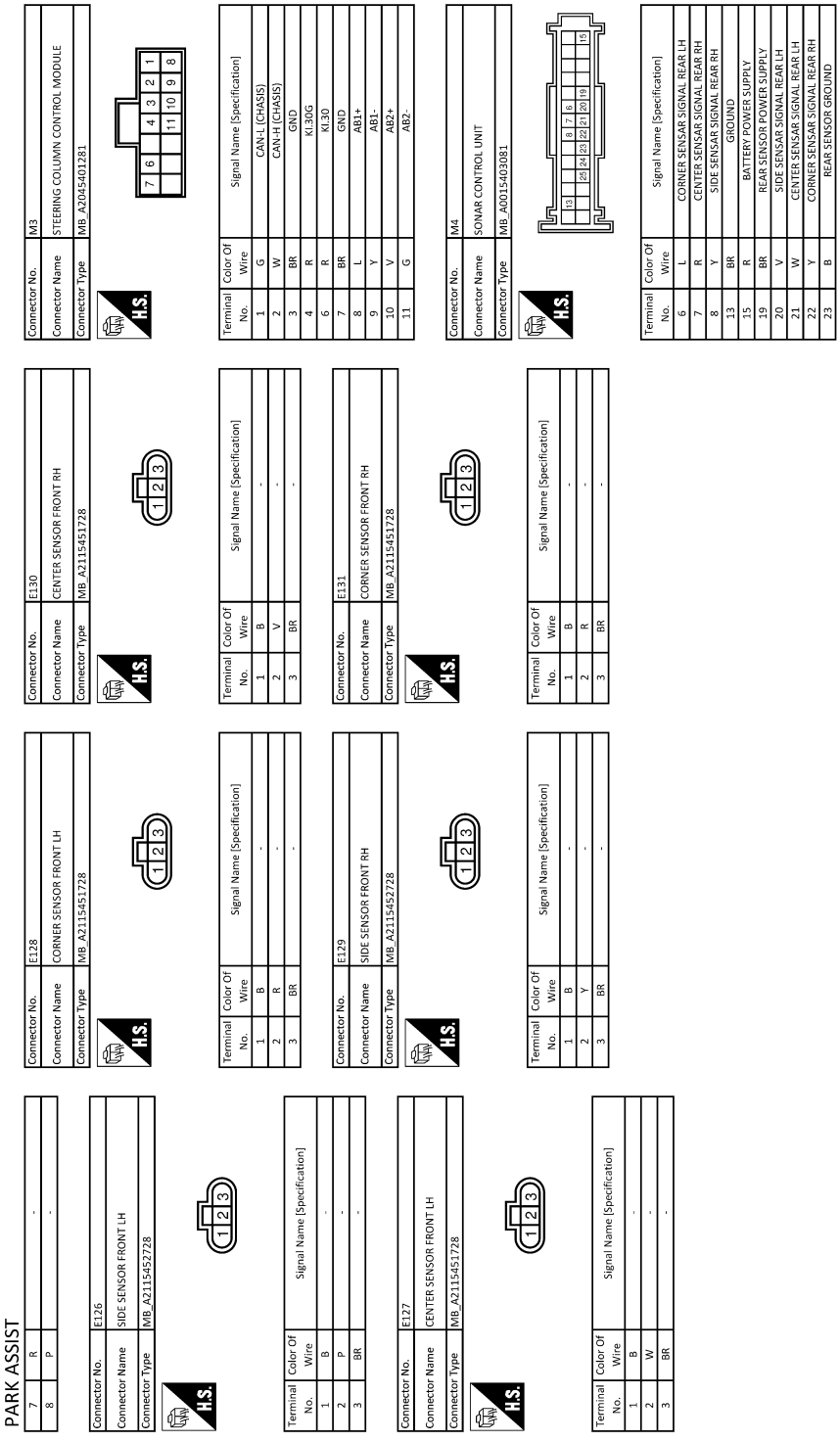
102	B	ECM GROUND
103	L	COOLING FAN CONTROL SIGNAL
104	R	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 1)
105	G	SENSOR POWER SUPPLY (ACCELERATOR PEDAL POSITION SENSOR 2)
106	BR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR1)
111	B	IGNITION SIGNAL
112	Y	POWER SUPPLY (BATTERY)
116	W	STARTER RELAY-L
119	GR	SENSOR GROUND (ACCELERATOR PEDAL POSITION SENSOR 2)
120	O	SENSOR GROUND
122	R	HOT START SIGNAL
123	GR	MOTOR RELAY CONTROL SIGNAL
127	O	FUEL PUMP ON SIGNAL
132	G	ACCELERATOR PEDAL POSITION SENSOR 1
136	Y	POWERTRAIN SENSOR CAN-H
137	W	CAN-H
138	GR	POWERTRAIN CAN-H
141	B	WATER PUMP RELAY CONTROL SIGNAL
145	W	ACCELERATOR PEDAL POSITION SENSOR 2
146	G	FUEL TANK PRESSURE SENSOR
147	L	CRASH SIGNAL
148	W	STARTER RELAY-H
149	B	POWERTRAIN SENSOR CAN-L
150	G	CAN-L
151	L	POWERTRAIN CAN-L
152	V	EVAP CANISTER VENT CONTROL VALVE
153	BR	EVAP PURGE CONTROL VALVE

Connector No.	E123
Connector Name	WIRE TO WIRE
Connector Type	RH12FB

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	BR	-
3	Y	-
4	R	-
5	V	-
6	W	-

JROWC8911GB



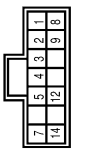
JROWC8912GB

PARK ASSIST

24	G	CAN-L
25	W	CAN-H

Connector No.	M25
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A0075405081

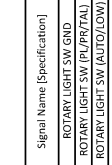
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	ROTARY LIGHT SW GND
2	O	ROTARY LIGHT SW (PU/PR/TAIL)
3	R	ROTARY LIGHT SW (AUTO/LOW)
4	G	ROTARY LIGHT SW (FR FOG)
5	Y	-
7	GR	SWITCH INDICATOR
8	R	CAN-H (BODY 2)
9	BR	CAN-L (BODY 2)
12	O	LIN (IBS)
14	G	FOOT LAMP

Connector No.	M28
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	MB_A1665400481

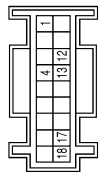
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
67	V	BACK DOOR UNLOCK
69	GR	STOP LAMP (BODY RH)
70	B	REAR TURN SIGNAL LH
71	GR	BACK-UP LAMP RH
72	Y	LICENSE PLATE LAMP RH
73	L	RR POWER WINDOW SW RH UP
74	B	RR POWER WINDOW SW RH DOWN
75	L	RR POWER WINDOW SW RH GND
76	GR	HALL SENSOR RH POWER SUPPLY
77	R	SUB BAT-
78	B	TERMINAL RELAY 15R1 CONT
80	B	REAR WIPER RELAY CONT
82	GR	TAIL LAMP (BODY LH)
83	P	TERMINAL RELAY 15R2 CONT
85	B	TAIL LAMP (BK LH)
87	R	BAT (VIA LATCHING TERMINAL RELAY 30G)
89	O	HALL SENSOR RH GND
90	V	HALL SENSOR RH SIGNAL
91	P	FUEL LEVEL SENSOR GND
92	L	FUEL LEVEL SENSOR
93	GR	FUEL LEVEL SENSOR
94	Y	FUEL FILLER LID STATUS
97	G	LATCHING TERMINAL RELAY 30G CONT 1
98	B	LATCHING TERMINAL RELAY 30G GND 1
99	W	LATCHING TERMINAL RELAY 30G GND 2
100	V	LATCHING TERMINAL RELAY 30G CONT 2
101	Y	REAR DOOR INSIDE HANDLE LAMP CONT
102	GR	AMBIENT LAMP CONT
103	V	SUB BAT RELAY CONT
105	G	RR DOOR LH UNLOCK
106	W	FUEL FILLER LID UNLOCK
107	L	RR DOOR LH LOCK
108	R	SUB BAT+
109	O	LIN (ROOF)
112	BR	CAN-L (BODY 1)
113	R	CAN-H (BODY 1)
114	B	INJECTION RELAY CONT

Connector No.	M32
Connector Name	COMBINATION METER
Connector Type	MB_A0525452726

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
4	R	BATTERY POWER SUPPLY
12	GR	CAN-L
13	W	CAN-H
17	BR	CAN-L
18	R	CAN-H

Connector No.	M50
Connector Name	WIRE TO WIRE
Connector Type	MB_A0565451928

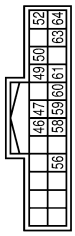
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	-
2	L	-
3	Y	-
4	BR	-
5	B	-
6	Y	-
7	R	-
8	W	-

Connector No.	M52
Connector Name	DISPLAY CONTROL UNIT
Connector Type	TH24FW-NH

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
46	G	AV COMMUNICATION SIGNAL (L)
47	P	CAN-L
49	R	DIMMER SIGNAL
50	BR	REVERSE SIGNAL
52	B	GROUND
56	BR	CAMERA SWITCH SIGNAL
58	Y	AV COMMUNICATION SIGNAL (H)
59	L	CAN-H
60	W	IGNITION SIGNAL
61	R	VEHICLE SPEED SIGNAL (8-PULSE)
63	L	ACC POWER SUPPLY
64	Y	BATTERY POWER SUPPLY

Connector No.	M70
Connector Name	ELECTRIC PARKING BRAKE CONTROL MODULE
Connector Type	MB_A0085409281

H.S.

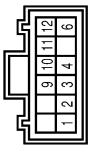
Terminal No.	Color Of Wire	Signal Name [Specification]
9	G	ELECTRIC PARKING BRAKE SWITCH 1
10	P	ELECTRIC PARKING BRAKE SWITCH 2
12	R	MOTOR RH (+)
13	W	MOTOR POWER SUPPLY (RH)
14	R	MOTOR LH (+)
15	R	MOTOR POWER SUPPLY (LH)
16	W	CAN-H
17	G	CAN-L
18	O	ELECTRIC PARKING BRAKE SWITCH 3
19	G	ELECTRIC PARKING BRAKE SWITCH 4
22	B	POWER SUPPLY
27	Y	MOTOR RH (-)
28	BR	GROUND (MOTOR RH)
29	V	MOTOR LH (-)
30	BR	GROUND (MOTOR LH)

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PARK ASSIST

Connector No.	M101
Connector Name	ELECTRONIC IGNITION SWITCH CONTROL UNIT
Connector Type	MB_A0265458426

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	CHASSIS CAN-L
2	W	CHASSIS CAN-H
3	R	BODY CAN 1-H
4	BR	BODY CAN 1-L
6	W	STEERING LOCK OPERATION
9	GR	REMOTE KEYLESS
10	W	POWER SUPPLY
11	BR	DIAGNOSTIC CAN-L
12	L	DIAGNOSTIC CAN-H

Connector No.	M117
Connector Name	FUSE AND FUSIBLE LINK BLOCK 2
Connector Type	MB_A0065451101

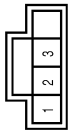
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
44	R	-

Connector No.	M173
Connector Name	UPPER CONTROL PANEL CONTROL UNIT
Connector Type	MB_A0385451228

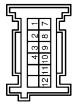
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	PWR SPLY
2	BR	GND
3	O	LIN

Connector No.	M217
Connector Name	CAN GATEWAY
Connector Type	MB_A0225400481

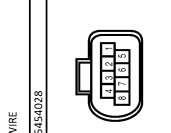
H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	SOS SWITCH LED SIGNAL
2	R	DIMMER SIGNAL
3	P	MULTIFUNCTION MEDIA CAN-L
4	O	ENGINE SPEED SIGNAL
7	BR	REVERSE SIGNAL
8	V	ACC POWER SUPPLY
9	L	MULTIFUNCTION MEDIA CAN-H
10	W	SOS CALL SWITCH SIGNAL
11	Y	VEHICLE SPEED SIGNAL
12	W	ILLUMINATION CONTROL SIGNAL

Connector No.	M218
Connector Name	CAN GATEWAY
Connector Type	MB_A0225400581

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
13	B	GROUND
14	G	AV COMMUNICATION-L
15	L	AV COMMUNICATION-H
16	G	CHASSIS CAN-L
17	W	CHASSIS CAN-H
18	O	BATTERY POWER SUPPLY
19	P	MULTIFUNCTION MEDIA CAN-L
20	L	MULTIFUNCTION MEDIA CAN-H
21	BR	BODY CAN 1-L
22	R	BODY CAN 1-H
23	L	DIAGNOSTIC CAN-L
24	V	DIAGNOSTIC CAN-H

Connector No.	M254
Connector Name	WIRE TO WIRE
Connector Type	MB_A0485454028

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	V	-
2	L	-
3	Y	-
4	B	-
5	BR	-
6	G	-
7	R	-
8	W	-

Connector No.	M255
Connector Name	SIDE SENSOR REAR LH
Connector Type	MB_A2115451728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	V	-
3	BR	-

Connector No.	M256
Connector Name	CENTER SENSOR REAR LH
Connector Type	MB_A2115451728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	W	-
3	BR	-

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PARK ASSIST

Connector No.	M257
Connector Name	CORNER SENSOR REAR LH
Connector Type	MB_A2115451728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	L	-
3	BR	-

Connector No.	M259
Connector Name	CORNER SENSOR REAR RH
Connector Type	MB_A2115451728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	G	-
3	BR	-

Connector No.	M258
Connector Name	CENTER SENSOR REAR RH
Connector Type	MB_A2115451728

H.S.



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	R	-
3	BR	-

Connector No.	M260
Connector Name	SIDE SENSOR REAR RH
Connector Type	MB_A2115451728

H.S.

Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	-
2	Y	-
3	BR	-

JROWC8915GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000013583481

1.INTERVIEW FOR MALFUNCTION

It is also important to clarify the customer concerns before starting the inspection. Interview the customer about their concerns carefully and understand the symptoms fully.

NOTE:

The customers are not professionals. Never assume that “maybe the customer means···” or “maybe the customer mentioned this symptom”.

>> GO TO 2.

2.SELF-DIAGNOSIS WITH CONSULT

1. Perform “All DTC Reading” with CONSULT.
2. Check if the DTC is detected on the self-diagnosis results of “Park Assist”.

Is any DTC detected?

YES >> Record or print self-diagnosis results and freeze frame data (FFD). GO TO 3.
NO >> GO TO 5.

3.TROUBLE DIAGNOSIS BY DTC

1. Check the DTC in the self-diagnosis results.
2. Perform trouble diagnosis for the detected DTC. Refer to DAS-206, "DTC Index"

NOTE:

If “DTC: U1000” is detected, first diagnose the CAN communication system.

>> GO TO 4.

4.MALFUNCTIONING PART REPAIR

Repair or replace the identified malfunctioning parts.

>> GO TO 5.

5.REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT)

1. Erases self-diagnosis results.
2. Perform “All DTC Reading” again after repairing or replacing the specific items.
3. Check if any DTC is detected in self-diagnosis results of “Park Assist”.

Is any DTC detected?

YES >> GO TO 3.
NO >> INSPECTION END