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SECTION **SBC**
SEAT BELT CONTROL SYSTEM

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PRECAUTIONS

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PRECAUTION

PRECAUTIONS

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

INFOID:000000008139977

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

Precaution for Seat Belt Service

INFOID:000000008139978

CAUTION:

Always observe the following items for preventing accidental activation.

- Before removing the seat belt pre-tensioner assembly, turn the ignition switch off, disconnect the both battery cables and wait at least 3 minutes.
- Do not use electrical test equipment for seat belt pre-tensioner connector.
- After replacing or reinstalling seat belt pre-tensioner assembly, or reconnecting front seat belt pre-tensioner connector, check the system function. Refer to [SRC-12, "Description"](#).
- Do not use disassemble buckle or seat belt assembly.
- Replace anchor bolts if they are deformed or worn out.
- Never oil tongue and buckle.
- If any component of seat belt assembly is questionable, do not repair. Replace the whole seat belt assembly.
- If webbing is cut, frayed, or damaged, replace seat belt assembly.
- When replacing seat belt assembly, use a genuine NISSAN seat belt assembly.

AFTER A COLLISION

WARNING:

Inspect all seat belt assemblies including retractors and attaching hardware after any collision.

NISSAN recommends that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Failure to do so could result in serious personal injury in an accident. Seat belt assemblies not in use during a collision should also be replaced if either damage or improper operation is noted. Seat belt pre-tensioner

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should be replaced even if the seat belts are not in use during a frontal collision in which the air bags are deployed.

Replace any seat belt assembly (including anchor bolts) if:

- The seat belt was in use at the time of a collision (except for minor collisions and the belts, retractors and buckles show no damage and continue to operate properly).
- The seat belt was damaged in an accident. (i.e. torn webbing, bent retractor or guide).
- The seat belt attaching point was damaged in an accident. Inspect the seat belt attaching area for damage or distortion and repair as necessary before installing a new seat belt assembly.
- Anchor bolts are deformed or worn out.
- The seat belt pre-tensioner should be replaced even if the seat belts are not in use during the collision in which the air bags are deployed.

COMPONENT PARTS

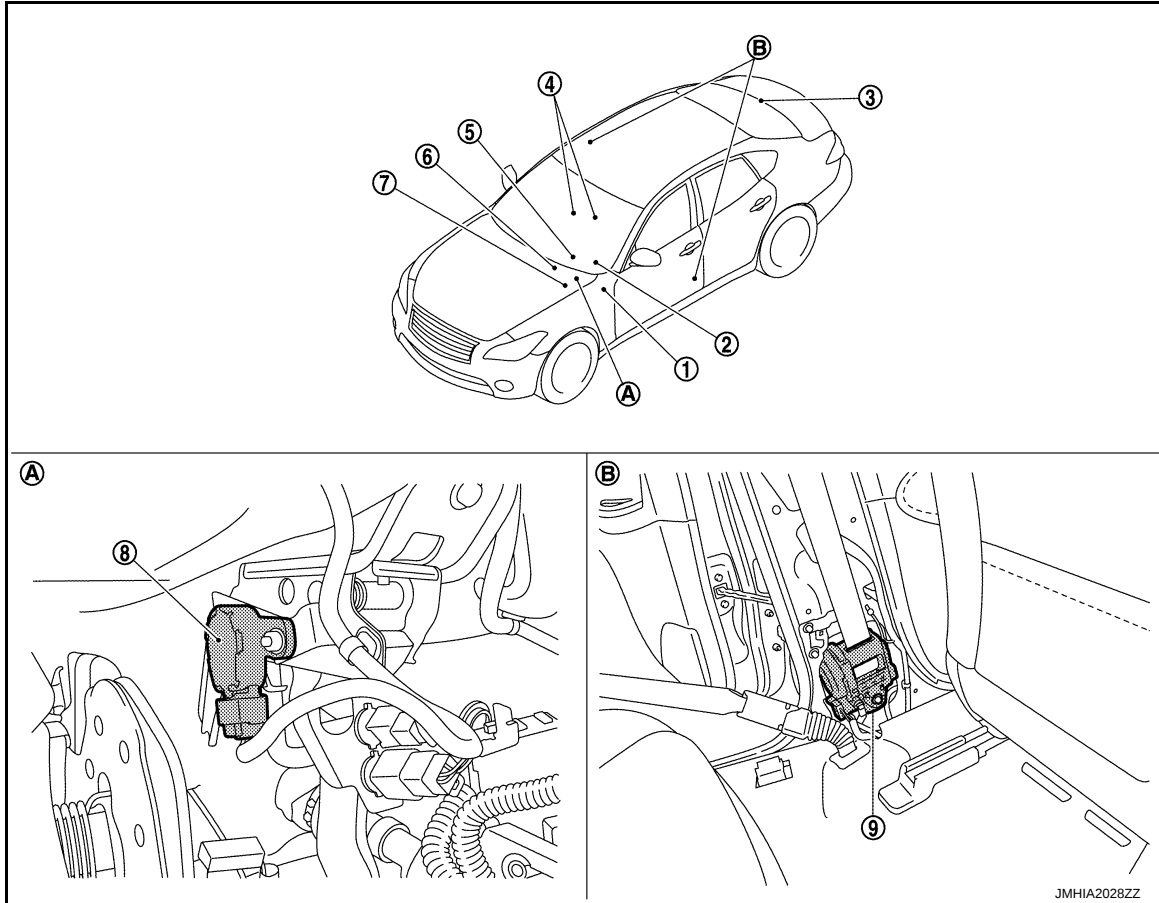
< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000008139979



- | | | |
|--|--|---|
| 1. BCM | 2. Combination meter | 3. ADAS control unit |
| 4. Seat belt buckle switch | 5. Steering angle sensor | 6. ABS actuator and electric unit (control unit) |
| 7. Electrically-driven intelligent brake unit | 8. Stroke sensor | 9. Pre-crash seat belt control unit (driver side) |
| A. View with instrument driver lower cover removed | B. View with center pillar lower garnish removed (driver side) | |

Component Description

INFOID:0000000008139980

Component	Function
Pre-crash seat belt control unit (driver side)	• Total control of pre-crash seat belt system is operated according to transmit signal. • Driver seat belt retractor integrates pre-crash seat belt control unit (driver side), driver seat belt motor, and tension reducer. • Seat belt motor operates each operation of pull, return, and hold.
Pre-crash seat belt control unit (passenger side)	• Control of passenger pre-crash seat belt is operated according to transmit signal. • Passenger seat belt retractor integrates pre-crash seat belt control unit (driver seat), driver seat belt motor, and tension reducer. • Seat belt motor operates each operation of pull, return, and hold.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

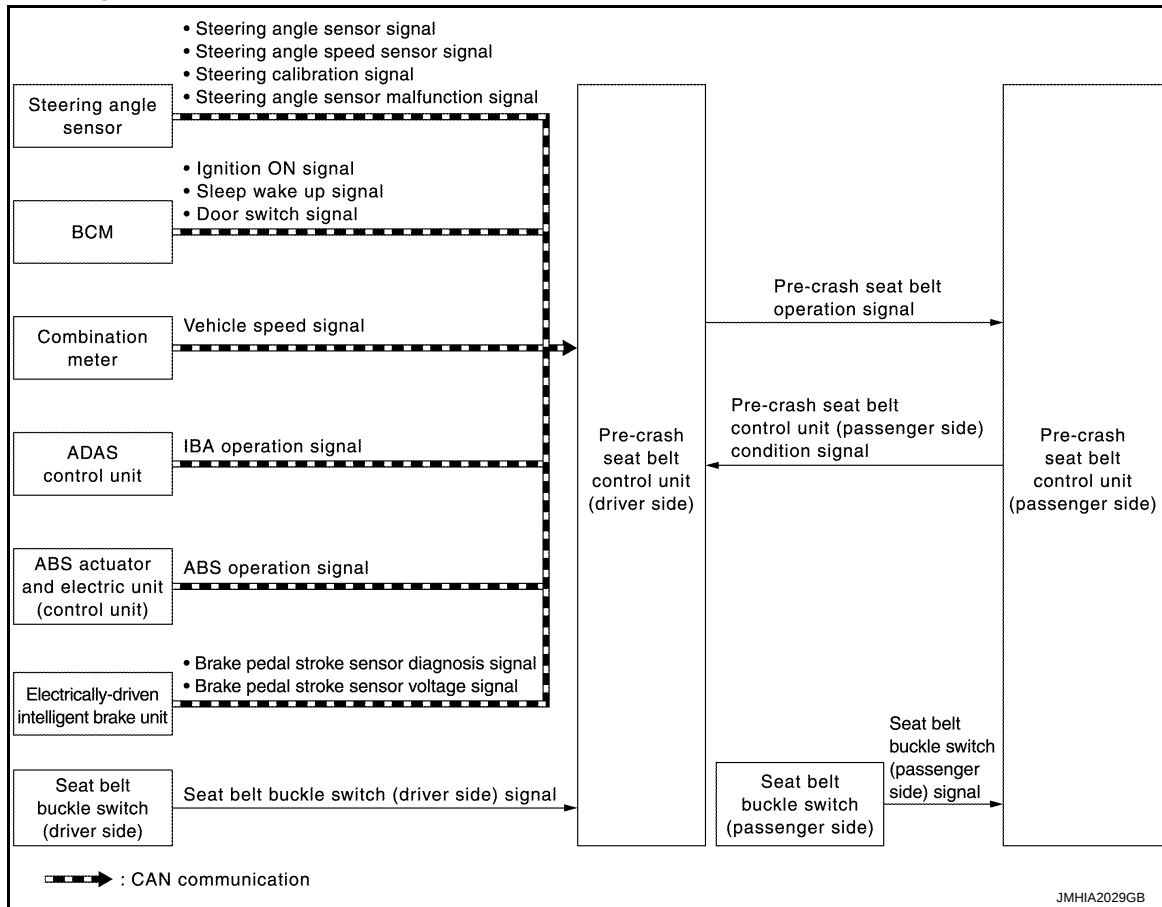
Component	Function
Stroke sensor	It changes voltage according to brake pedal depressed amount and sends the signal to electrically-driven intelligent brake unit.
Seat belt buckle switch (driver side)	• Fastening or not fastening of seat belt is judged. This judgment is used for control of driver pre-crash seat belt system. • Seat belt warning lamp on combination meter turns ON when seat belt is not fastened while ignition switch is ON. • The seat belt buckle switch is installed in the seat belt buckle.
Seat belt buckle switch (passenger side)	• Fastening or not fastening of seat belt is judged. This judgment is used to control passenger pre-crash seat belt system. • Control of passenger seat tension reducer is operated by ON/OFF of seat belt buckle switch. • The seat belt buckle switch is installed in the seat belt buckle.
Combination meter	• Transmits vehicle speed signal to pre-crash seat belt control unit (driver side). • Turns the seat belt warning lamp ON when the seat belt is unfastened.
ADAS control unit	Intelligent brake assistance operation signal is received from ADAS control unit via CAN communication.
Steering angle sensor	Steering angle sensor signal, steering angle speed signal, steering angle sensor neutral position adjustment completion signal, and steering angle sensor malfunction signal are received via CAN communication.
BCM	Ignition ON signal, sleep/wake up signal, and door switch signal are received from BCM via CAN communication.
ABS actuator and electric unit (control unit)	ABS operation signal is received from ABS actuator and electric unit (control unit) via CAN communication.
Electrically-driven intelligent brake unit	Electrically-driven intelligent brake unit measures brake pedal depressed amount by stroke sensor, and then transmits brake pedal stroke sensor diagnosis signal and brake pedal stroke sensor voltage signal to pre-crash seat belt control unit (driver side) via CAN communication.

SYSTEM

< SYSTEM DESCRIPTION >

SYSTEM

System Diagram



System Description

INFOID:000000008139982

- Pre-crash seat belt system integrates control unit and motor in driver and passenger seat belt retractors.
- Provides a sense of ease when pre-crash seat belt control unit judges the emergency braking operation, the intelligent brake assistance operating status, the continuous ABS operating status, the emergency steering wheel operation, or the lateral slippage status during cornering. The motor immediately retracts the seat belt and suppresses change in occupant posture.
- Even in a situation where a collision is unavoidable, effects of other safety devices, like the air bag, are maximized and damages are reduced.
- Motor retracts seat belt when unfastening and extracts seat belt when fastening to reduce the feeling of pressure. (comfort function)

FUNCTION DESCRIPTION

Pre-crash seat belt system operates under the following conditions.

- During emergency brake operation
- When ABS continuously operates
- When intelligent brake assistance operates
- When lateral slippage during cornering occurs
- When steering wheel is rotated for emergency
- When comfort function operates

OPERATION CONDITION

Operation while driving

- Operation start and stop conditions of pre-crash seat belt system are as shown in the following table.
- The activation and deactivation conditions of pre-crash seat belt are as per the following.

SYSTEM

< SYSTEM DESCRIPTION >

Operation item	Operation start condition	Operation stop condition
During emergency brake operation	- Vehicle speed is 15 km/h (9 MPH) or more - Emergency braking status is detected	- During acceleration - When stopped
When ABS continuously operates	- ABS continuously operates for 2 seconds or more - Brake pedal is in depressed state	
When intelligent brake assistance operates	System detects that intelligent brake assistance is in operating status	2 seconds after operation start
When lateral slippage during cornering occurs	- Vehicle speed is 30 km/h (19 MPH) or more - System detects that the vehicle is in lateral slip-page state - System detects that the vehicle is driving on a curve	- Vehicle stopped 1 second or more after maintaining steering wheel angle in straight driving state
When steering wheel is rotated for emergency	- Vehicle speed is 60 km/h (36 MPH) or more - Steering wheel angle is 90 degrees or more - System detects that steering wheel is rotated for emergency	

NOTE:

For details of intelligent brake assist system. Refer to [BRC-179. "INTELLIGENT BRAKE ASSIST : System Description"](#).

Comfort function

- Seat belt is retracted and the looseness is reduced in the state as shown in the following table.
- Operation start and stop conditions of pre-crash seat belt system are as shown in the following table.

Operation item	Activating condition	Deactivating condition
Door open	- Seat belt is in not fastened state - Door is operated to open from closed - Vehicle stopped	- Seat belt retract is complete 13 seconds after start retracting
Seat belt is fastened	- When door is closed - Seat belt is fastened	- Seat belt is unfastened 1 second after operation
Seat belt is release	Seat belt is unfastened	- Seat belt retract is complete 10 seconds after start retracting

Operation Prohibition Condition

Pre-crash seat belt system does not operate in the following conditions.

- When seat belt is not fastened (only the seat belt that is not fastened does not operate)
- When motor is overheat due to contentious operation*1
- When the system is in fail-safe mode

*1: System operation is temporarily deactivated to avoid overheating, when comfort function is continuously operated (18 times or more) during a short period of time by fastening and unfastening seat belts or opening and closing doors.

MALFUNCTION WARNING

When system malfunction is detected, comfort function is deactivated to warn customer of system malfunction.

Fail Safe (Driver Side)

INFOID:000000008266631

When a system malfunction is detected, deactivates a part of the system or all functions depending on the malfunctioning part.

When the malfunction condition recovers to the normal condition, the system returns to the normal operation.

Display contents of CONSULT	Fail-safe
B2451:SEAT BLT MTR DR CIRC	Fully deactivates the whole operation.
B2452:SEAT BLT MTR AS CIRC	Deactivates a part of comfort function.
B2454:SEAT BLT PWR DR CIRC	Fully deactivates the whole operation.

SYSTEM

< SYSTEM DESCRIPTION >

Display contents of CONSULT	Fail-safe
B2455:CONTROL UNIT DR	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function
B2456:SEAT BLT PWR AS	Deactivates a part of comfort function.
B2457:CONTROL UNIT AS	Deactivates a part of comfort function.
B2458:LOCAL COMM	Deactivates a part of comfort function.
B2461:VHCL SPEED SIGNAL	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • When comfort function operates
B2466:DR/AS CONTROL UNIT	Deactivates a part of comfort function.
B2470:SYS HEAT PROTC DR	• Fully deactivates the whole operation. • Operation return - 1 time operation becomes possible after approximately 30 seconds - Returns to the initial condition after approximately 8 minutes
B2472:BRAKE STROKE SENSOR	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates • A part of comfort function
U0126:STRG ANG SEN SIG	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • A part of comfort function
U0428:STRG ANGL CAL	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • A part of comfort function
U1000:CAN communication circuit	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function

*1: The deactivation mode differs depending on the internal malfunctioning condition of control unit

Fail Safe (Passenger Side)

INFOID:000000008266632

When a system malfunction is detected, deactivates a part of the system or all functions depending on the malfunctioning part.

When the malfunction condition recovers to the normal condition, the system returns to the normal operation.

Display contents of CONSULT	Fail-safe
B2452:SEAT BLT MTR AS CIRC	Fully deactivates the whole operation.
B2455:CONTROL UNIT DR	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function

SYSTEM

< SYSTEM DESCRIPTION >

Display contents of CONSULT	Fail-safe
B2456:SEAT BLT PWR AS	Fully deactivates the whole operation.
B2457:CONTROL UNIT AS	Fully deactivates the whole operation. *1
B2458:LOCAL COMM	Fully deactivates the whole operation. *1
B2461:VHCL SPEED SIGNAL	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • A part or the whole comfort function
B2466:DR/AS CONTROL UNIT	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function
B2471:SYS HEAT PROTC AS	• Fully deactivates the whole operation. • Operation return - 1 time operation becomes possible after approximately 30 seconds - Returns to the initial condition after approximately 8 minutes
B2472:BRAKE STROKE SENSOR	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates
U0126:STRG ANG SEN SIG	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency
U0428:STRG ANGL CAL	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency
U1000:CAN communication circuit	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function

*1: The deactivation mode differs depending on the internal malfunctioning condition of control unit

DIAGNOSIS SYSTEM (PRE-CRASH SEAT BELT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (PRE-CRASH SEAT BELT)

CONSULT Function

INFOID:000000008139984

Diagnosis for pre-crash seat belt system can be performed using CONSULT.

APPLICATION ITEM

Part to be diagnosed	Diagnosis Mode	Function description
Pre-crash seat belt	Self-diagnosis Results	- Displays data recorded when a malfunction is detected. - Can print out the display. - Erases DTC recorded in memory.
	Data Monitor	Displays input data for pre-crash seat belt control unit in real time.
	Work Support	Changes the setting for each system function.
	CAN DIAG SUPPORT MNTR	Monitors communication status of CAN communication.
	ECU Identification	Displays pre-crash seat belt control unit part number.

SELF-DIAGNOSIS RESULTS

Refer to [SBC-15. "DTC Index"](#).

CAUTION:

When malfunctions are detected in several systems, including the CAN communication [U1000], troubleshoot the CAN communication [U1000].

ERASING SELF-DIAGNOSIS RESULTS

- SELF-DIAGNOSIS RESULTS
Current "SELF-DIAG RESULTS" are displayed. (If all suspect circuits have been repaired, "NO DTC" is displayed.)
- SELF-DIAG RESULTS [MEMORY]
Resume trouble diagnosis item selection screen, confirm "SELF-DIAG RESULTS", and then touch ERASE MEMORY.

DATA MONITOR

Monitor item	Contents
BUCKLE SW RH	Indicates [ON/OFF] condition of seat belt buckle switch (RH).
BUCKLE SW LH	Indicates [ON/OFF] condition of seat belt buckle switch (LH).
VEHICLE DISTANCE	Indicates [ON/OFF] condition of intelligent brake assist signal.
IGN SW	Indicates [ON/OFF] condition of ignition switch.
FR DOOR SW RH	Indicates [Close/Open] condition of front door switch (RH).
FR DOOR SW LH	Indicates [Close/Open] condition of front door switch (LH).
ABS ACTIVATING	Indicates [ON/OFF] condition of ABS activating.
VHCL SPEED	Indicates [Km/h] vehicle speed signal.
BRAKE STROKE SEN	Indicates [V] voltage of brake pedal stroke sensor signal.
STRG ANGLE	Indicates [deg] steering angle signal.
STRG ANGLE SPEED	Indicates [deg/s] steering angle speed signal.
HEAT PROTC RH	Indicates [ON/OFF] condition of heat protection (RH).
HEAT PROTC LH	Indicates [ON/OFF] condition of heat protection (LH).

WORK SUPPORT

DIAGNOSIS SYSTEM (PRE-CRASH SEAT BELT)

< SYSTEM DESCRIPTION >

Monitor item	Description
DOOR OPENING RETRACT RETRY	Changes the number of times for the seat belt retract retry when the door opens.

PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

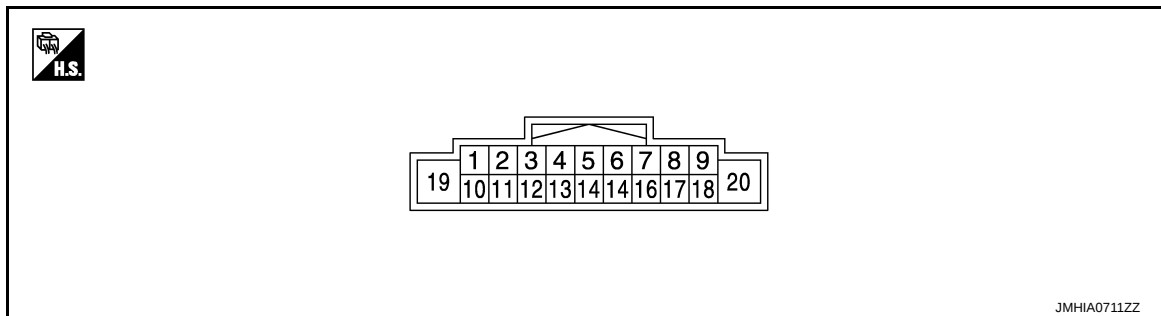
Reference Value

INFOID:0000000008139985

VALUES ON THE DIAGNOSIS TOOL
CONSULT MONITOR ITEM

Monitor item	Condition	Value/Status (Approx.)
BUCKLE SW RH	RH seat belt is not fastened	OFF
	RH seat belt is fastened	ON
BUCKLE SW LH	RH seat belt is not fastened	OFF
	RH seat belt is fastened	ON
VEHICLE DISTANCE	Not activated	OFF
	Activated	ON
IGN SW	Ignition switch OFF	OFF
	Ignition switch ON	ON
FR DOOR SW RH	LH door close	CLOSE
	LH door open	OPEN
FR DOOR SW LH	RH door close	CLOSE
	RH door open	OPEN
ABS ACTIVATING	ABS not activating	OFF
	ABS activating	ON
VHCL SPEED	While driving	Equivalent speedometer reading (km/h)
BRAKE STROKE SEN	Brake released → depressed	(1 V → 4 V)
STRG ANGLE	Steering wheel: 0° (Neutral)	±2.5 (deg)
	Steering wheel: 90° (Turned right)	+90 (deg)
	Steering wheel: 90° (Turned left)	-90 (deg)
STRG ANGLE SPEED	Ignition switch ON	Depending on steering angle speed (deg/s)
HEAT PROTC RH	RH heat protection is not activated	OFF
	RH heat protection is activated	ON
HEAT PROTC LH	LH heat protection is not activated	OFF
	LH heat protection is activated	ON

TERMINAL LAYOUT



PHYSICAL VALUES

PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

< ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Description		Condition	Value*1 (Approx.)
+	—	Signal name	Input/ Output		
1 (V)	GND	Power supply	Input	—	Battery voltage
4 (P)	GND	CAN-L	Input/ Output	—	—
6 (LG)	GND	Seat belt buckle switch signal	Input	Seat belt is fastened	0 V
				Seat belt is unfastened	5 V
8 (BR)	GND	Local Communication Line 2	Input/ Output	IGN ON	5 V
14 (L)	GND	CAN-H	Input/ Output	—	—
16 (Y)	GND	Local Communication Line 1	Input/ Output	—	—
18 (B)	GND	GND	Output	—	0 V
19 (Y)	GND	Motor drive circuit power supply	Input	—	Battery voltage
20 (B)	GND	Motor drive circuit ground	Output	—	0 V

*1: Perform the measurement while connecting the control unit and the harness.

Fail Safe (Driver Side)

INFOID:000000008139986

When a system malfunction is detected, deactivates a part of the system or all functions depending on the malfunctioning part.

When the malfunction condition recovers to the normal condition, the system returns to the normal operation.

Display contents of CONSULT	Fail-safe
B2451:SEAT BLT MTR DR CIRC	Fully deactivates the whole operation.
B2452:SEAT BLT MTR AS CIRC	Deactivates a part of comfort function.
B2454:SEAT BLT PWR DR CIRC	Fully deactivates the whole operation.
B2455:CONTROL UNIT DR	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function
B2456:SEAT BLT PWR AS	Deactivates a part of comfort function.
B2457:CONTROL UNIT AS	Deactivates a part of comfort function.
B2458:LOCAL COMM	Deactivates a part of comfort function.
B2461:VHCL SPEED SIGNAL	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • When comfort function operates
B2466:DR/AS CONTROL UNIT	Deactivates a part of comfort function.

PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

< ECU DIAGNOSIS INFORMATION >

Display contents of CONSULT	Fail-safe
B2470:SYS HEAT PROTC DR	- Fully deactivates the whole operation. - Operation return 1 time operation becomes possible after approximately 30 seconds - Returns to the initial condition after approximately 8 minutes
B2472:BRAKE STROKE SENSOR	Stops the operation in the conditions as per the following. - During emergency brake operation - When ABS continuously operates - A part of comfort function
U0126:STRG ANG SEN SIG	Stops the operation in the conditions as per the following. - When lateral slippage during cornering occurs - When steering wheel is rotated for emergency - A part of comfort function
U0428:STRG ANGL CAL	Stops the operation in the conditions as per the following. - When lateral slippage during cornering occurs - When steering wheel is rotated for emergency - A part of comfort function
U1000:CAN communication circuit	Stops the operation in the conditions as per the following. ^{*1} - During emergency brake operation - When ABS continuously operates - When lateral slippage during cornering occurs - When Intelligent brake assistance operates - When steering wheel is rotated for emergency - A part or the whole comfort function

*1: The deactivation mode differs depending on the internal malfunctioning condition of control unit

DTC Index

INFOID:000000008139987

DTC	Trouble diagnosis name (CONSULT display)	DTC detection condition	Reference
U1000	CAN COMM CIRCUIT	Pre-crash seat belt control unit cannot transmit and receive CAN communication signal for 2 seconds or more	SBC-23
B2451	SEAT BLT MTR DR CIRC	- Motor or control unit malfunction - Seat belt motor circuit is shorted or open	SBC-26
B2452	SEAT BLT MTR AS CIRC	- Motor or control unit malfunction - Seat belt motor circuit is shorted or open	SBC-27
B2454	SEAT BLT PWR DR CIRC	Motor power supply circuit is shorted or open	SBC-28
B2455	CONTROL UNIT DR	Malfunction in pre-crash seat belt control unit	SBC-29
B2456	SEAT BLT PWR AS CIRC	Motor power supply circuit is shorted or open	SBC-30
B2457	CONTROL UNIT AS	Malfunction in pre-crash seat belt control unit	SBC-32
B2458	LOCAL COMM	Local communication line shorted or open	SBC-33
B2461	VHCL SPEED SIGNAL	Vehicle speed signal malfunction is received	SBC-35
B2466	DR/AS CONTROL UNIT	Control unit is out of the vehicle specification	SBC-36
B2470	SYS HEAT PROTC DR	Deactivation for cooling to prevent system heating due to continuous operation	SBC-37
B2471	SYS HEAT PROTC AS	Deactivation for cooling to prevent system heating due to continuous operation	SBC-38
B2472	BRAKE STROKE SENSOR	- Brake pedal stroke sensor malfunction - Brake pedal stroke sensor circuit is short - Electrically-driven intelligent brake unit malfunction	SBC-39
U0126	STRG ANG SEN SIG	Steering angle sensor malfunction is received	SBC-24
U0428	STRG ANGL CAL	Steering angle sensor calibration incomplete signal is received	SBC-25

PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)

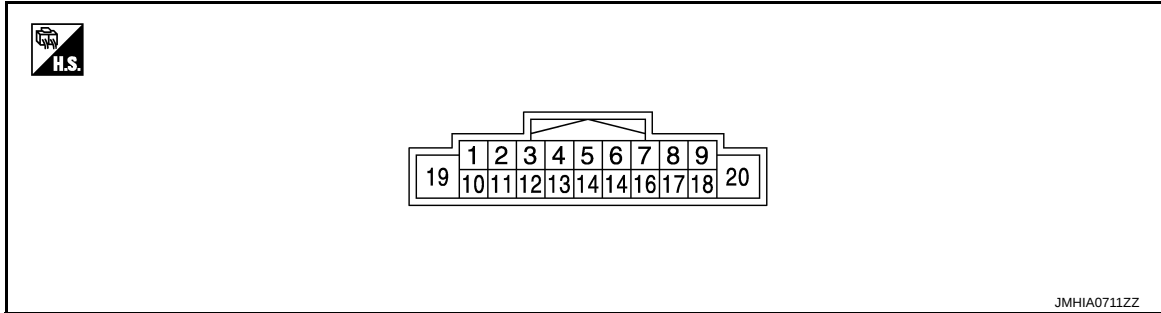
< ECU DIAGNOSIS INFORMATION >

PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)

Reference Value

INFOID:000000008266628

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value*1 (Approx.)
+	—	Signal name	Input/ Output		
1 (P)	GND	Power supply	Input	—	Battery voltage
6 (G)	GND	Seat belt buckle switch signal	Input	Seat belt is fastened	0 V
				Seat belt is unfastened	5 V
8 (V)	GND	Local Communication Line 2	Input/ Output	IGN ON	5 V
16 (LG)	GND	Local Communication Line 1	Input/ Output	—	—
18 (B)	GND	GND	Output	—	0 V
19 (W)	GND	Motor passenger circuit power supply	Input	—	Battery voltage
20 (B)	GND	Motor passenger circuit ground	Output	—	0 V

*1: Perform the measurement while connecting the control unit and the harness.

Fail Safe (Passenger Side)

INFOID:000000008266629

When a system malfunction is detected, deactivates a part of the system or all functions depending on the malfunctioning part.

When the malfunction condition recovers to the normal condition, the system returns to the normal operation.

Display contents of CONSULT	Fail-safe
B2452:SEAT BLT MTR AS CIRC	Fully deactivates the whole operation.
B2455:CONTROL UNIT DR	Stops the operation in the conditions as per the following. *1 • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function
B2456:SEAT BLT PWR AS	Fully deactivates the whole operation.
B2457:CONTROL UNIT AS	Fully deactivates the whole operation. *1
B2458:LOCAL COMM	Fully deactivates the whole operation. *1

PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)

< ECU DIAGNOSIS INFORMATION >

Display contents of CONSULT	Fail-safe
B2461:VHCL SPEED SIGNAL	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency • A part or the whole comfort function
B2466:DR/AS CONTROL UNIT	Stops the operation in the conditions as per the following. ^{*1} • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function
B2471:SYS HEAT PROTC AS	• Fully deactivates the whole operation. • Operation return - 1 time operation becomes possible after approximately 30 seconds - Returns to the initial condition after approximately 8 minutes
B2472:BRAKE STROKE SENSOR	Stops the operation in the conditions as per the following. • During emergency brake operation • When ABS continuously operates
U0126:STRG ANG SEN SIG	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency
U0428:STRG ANGL CAL	Stops the operation in the conditions as per the following. • When lateral slippage during cornering occurs • When steering wheel is rotated for emergency
U1000:CAN communication circuit	Stops the operation in the conditions as per the following. ^{*1} • During emergency brake operation • When ABS continuously operates • When lateral slippage during cornering occurs • When Intelligent brake assistance operates • When steering wheel is rotated for emergency • A part or the whole comfort function

^{*1}: The deactivation mode differs depending on the internal malfunctioning condition of control unit

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PRE-CRASH SEAT BELT CONTROL UNIT

< WIRING DIAGRAM >

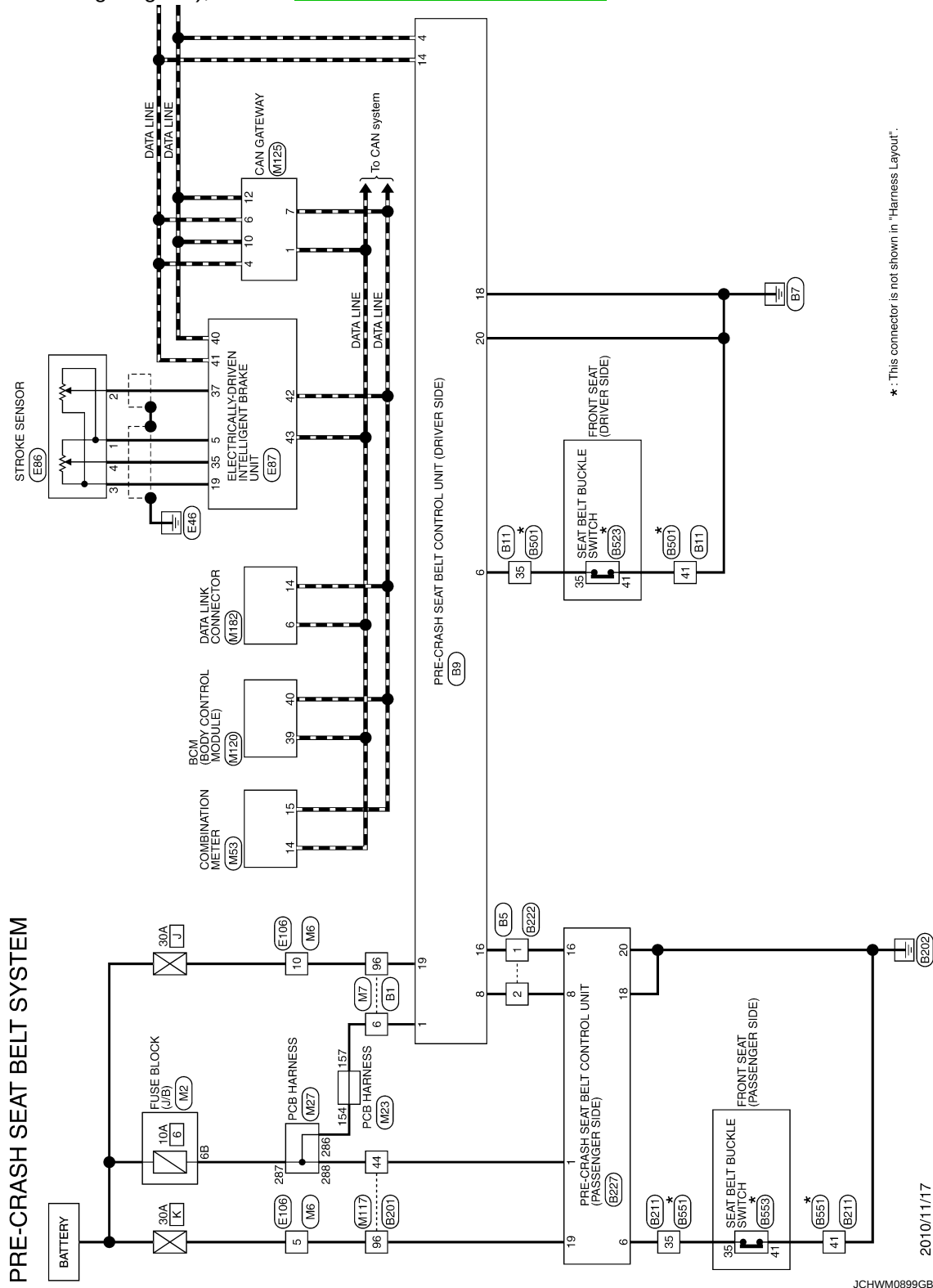
WIRING DIAGRAM

PRE-CRASH SEAT BELT CONTROL UNIT

Wiring Diagram

INFOID:000000008139988

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-13. "Connector Information"](#).



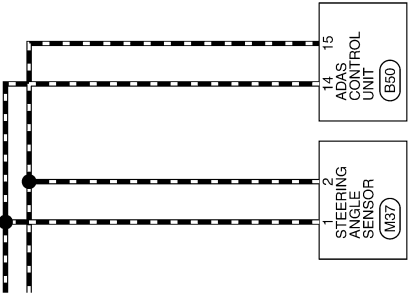
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PRE-CRASH SEAT BELT CONTROL UNIT

< WIRING DIAGRAM >

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

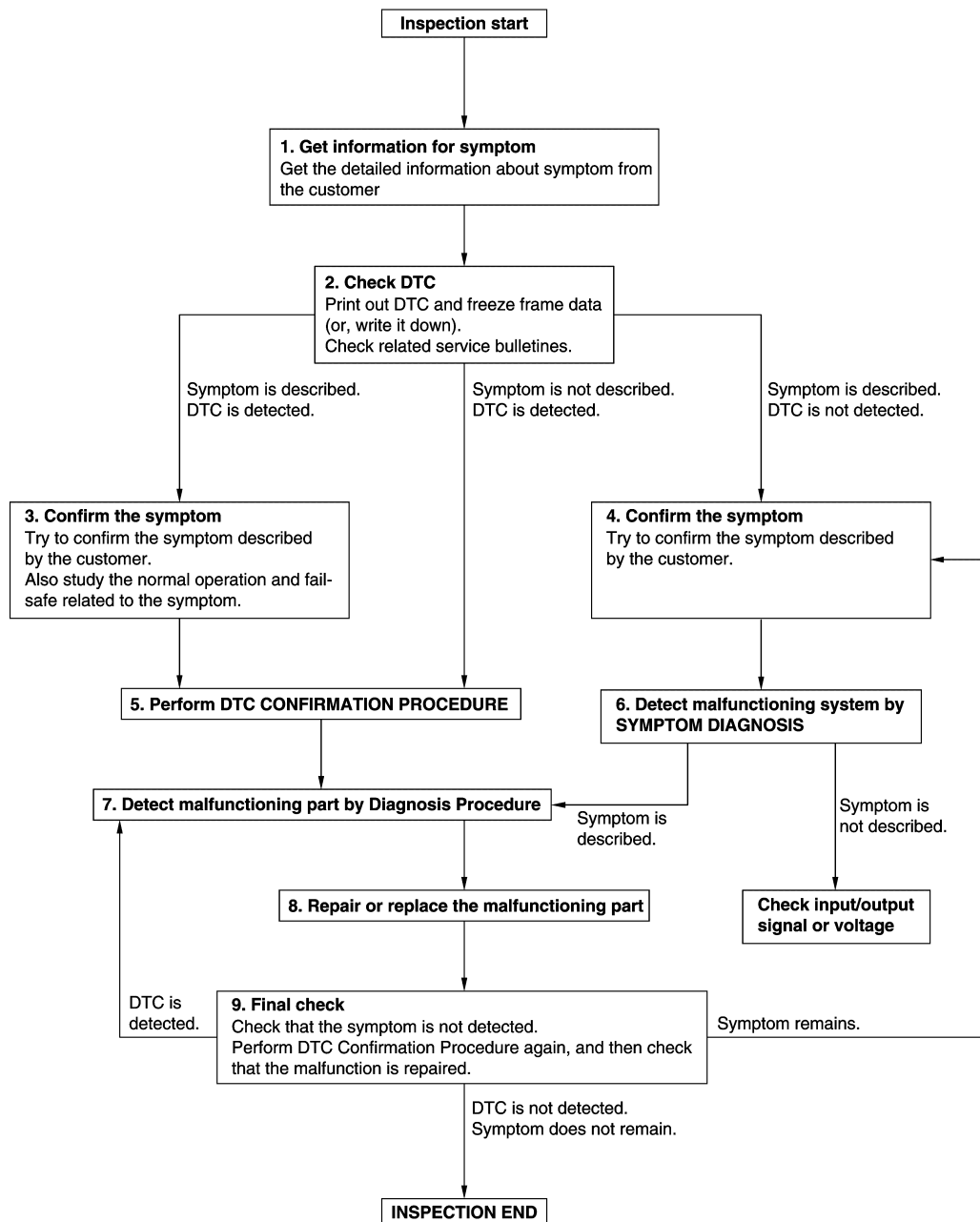
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000008139989

OVERALL SEQUENCE



JMKIA8652GB

DETAILED FLOW

Revision: 2013 March

SBC-20

2013 M Hybrid

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

1.GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the function that is malfunctioning.

>> GO TO 2.

2.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC and freeze frame data (Print them out using CONSULT.)
 - Erase DTC.
 - Study the relationship between the cause detected by DTC and the symptom described by the customer.
3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail-safe related to the symptom.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time. If two or more DTCs are detected, refer to [SBC-15. "DTC Index"](#), and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIRMATION PROCEDURE.

Is DTC detected?

YES >> GO TO 7.

NO >> Check according to [GI-49. "Intermittent Incident"](#).

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

Is the symptom described?

YES >> GO TO 7.

NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

7.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

Is malfunctioning part detected?

YES >> GO TO 8.

NO >> Check according to [GI-49, "Intermittent Incident"](#).

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
3. Check DTC. If DTC is detected, erase it.

>> GO TO 9.

9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.

When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.

YES-2 >> Symptom remains: GO TO 4.

NO >> Before returning the vehicle to the customer, always erase DTC.

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000008139990

- CAN (Controller Area Network) is a serial communication line for real time applications. It is an on board multiplex communication line with high data communication speed and excellent error detection ability. A modern vehicle is equipped with many ECMs, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, two control units are connected with two communication lines (CAN H-line, CAN L-line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
- It transmits the vehicle status to pre-crash seat belt control unit using the CAN communication system.
- It consists of CAN system (unified meter and A/C amp., ICC sensor, BCM, steering angle sensor).
- Refer to [LAN-35. "CAN COMMUNICATION SYSTEM : CAN System Specification Chart"](#) in LAN section for CAN communication unit (2WD).

DTC Logic

INFOID:000000008139991

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
U1000	CAN communication circuit	Pre-crash seat belt control unit cannot transmit and receive CAN communication system for 2 seconds or more.	• Harness or connectors (CAN communication line is open or shorted)

SBC

DTC CONFIRMATION PROCEDURE

1. SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check "Self-diagnostic result" with CONSULT.

Is any DTC detected?

- YES >> Refer to [LAN-35. "CAN COMMUNICATION SYSTEM : CAN System Specification Chart"](#) in LAN section for CAN communication or CAN system.
- NO >> CAN communication system is normal.

U0126 ST ANG SEN SIG

< DTC/CIRCUIT DIAGNOSIS >

U0126 ST ANG SEN SIG

Description

INFOID:000000008139992

Inputs the steering angle signal from steering angle sensor via CAN communication.

DTC Logic

INFOID:000000008139993

DTC DETECTION LOGIC

NOTE:

If DTC U0126 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [SBC-23, "DTC Logic"](#).

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
U0126	ST ANG SEN SIG	Receipt of a malfunction signal of Steering angle signal	Steering angle sensor

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-24, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008139994

1.CHECK DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Check "Self-diagnostic result" for "ABS" with CONSULT. Refer to [BRC-45, "CONSULT Function"](#).

Is DTC detected?

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

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

U0428 STRG ANGL CAL

< DTC/CIRCUIT DIAGNOSIS >

U0428 STRG ANGL CAL

Description

INFOID:0000000008139995

Inputs the steering calibration incomplete signal from steering angle sensor via CAN communication.

DTC Logic

INFOID:0000000008139996

DTC DETECTION LOGIC

NOTE:

If DTC U0428 is displayed with DTC U0126, first perform the trouble diagnosis for DTC U0126. Refer to [SBC-24, "DTC Logic"](#).

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
U0428	STRG ANGL CAL	Receipt of the calibration incomplete signal	Steering angle sensor calibration incomplete

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-25, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008139997

1.CHECK DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Check "Self-diagnostic result" for "ABS" with CONSULT. Refer to [BRC-45, "CONSULT Function"](#).

Is DTC detected?

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

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

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B2451 SEAT BLT MTR DR CIRC

< DTC/CIRCUIT DIAGNOSIS >

B2451 SEAT BLT MTR DR CIRC

DTC Logic

INFOID:000000008139998

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2451	SEAT BLT MTR DR CIRC	Circuit of seat belt motor (driver side) is open or shorted	Pre-crash seat belt control unit (driver side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-26, "Diagnosis Procedure"](#).
NO >> Driver side pre-crash seat belt motor system is normal.

Diagnosis Procedure

INFOID:000000008139999

1.INSPECTION START

1. Check "Self-diagnostic result" with CONSULT.
2. Touch "ERASE".
3. Perform DTC Confirmation Procedure.
See [SBC-26, "DTC Logic"](#).

Is DTC B2451 displayed again?

- YES >> Replace pre-crash seat belt control unit (driver side).
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2452 SEAT BLT MTR AS CIRC

< DTC/CIRCUIT DIAGNOSIS >

B2452 SEAT BLT MTR AS CIRC

DTC Logic

INFOID:0000000008140000

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2452	SEAT BLT MTR AS CIRC	Circuit of seat belt motor (passenger side) is open or shorted	Pre-crash seat belt control unit (passenger side)

DTC REPRODUCTION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-27, "Diagnosis Procedure"](#).
NO >> Passenger side pre-crash seat belt motor system is normal.

Diagnosis Procedure

INFOID:0000000008140001

1.INSPECTION START

1. Check "Self-diagnostic result" with CONSULT.
2. Touch "ERASE".
3. Perform DTC Confirmation Procedure.
See [SBC-27, "DTC Logic"](#).

Is DTC B2452 displayed again?

- YES >> Replace pre-crash seat belt control unit (passenger side).
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

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B2454 SEAT BLT PWR DR CIRC

< DTC/CIRCUIT DIAGNOSIS >

B2454 SEAT BLT PWR DR CIRC

DTC Logic

INFOID:000000008140002

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2454	SEAT BLT PWR DR CIRC	Seat belt motor (driver side) power supply circuit is open or shorted	• Harness or connectors [Pre-crash seat belt control unit (driver side) circuit is open or shorted] • Pre-crash seat belt control unit (driver side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

YES >> Refer to [SBC-28, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140003

1.CHECK FUSE

1. Turn ignition switch OFF.
2. Check 30 A fusible link (Letter J).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the blown fusible link after repairing the affected circuit if a fuse is blown.

2.CHECK PRE-CRASH SEAT BELT MOTOR POWER SUPPLY

1. Disconnect pre-crash seat belt control unit (driver side) connector.
2. Check voltage between pre-crash seat belt control unit (driver side) harness connector and ground.

Pre-crash seat belt control unit (driver side)		Ground	Voltage (V)
Connector	Terminal		Battery voltage
B9	19		

Is the inspection result normal?

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

3.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2455 CONTROL UNIT DR

< DTC/CIRCUIT DIAGNOSIS >

B2455 CONTROL UNIT DR

DTC Logic

INFOID:000000008140004

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2455	CONTROL UNIT DR	Pre-crash seat belt control unit (driver side) internal circuit malfunction	Pre-crash seat belt control unit (driver side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-29, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140005

1..INSPECTION START

1. Check "Self-diagnostic result" with CONSULT.
2. Touch "ERASE".
3. Perform DTC Confirmation Procedure.
See [SBC-29, "DTC Logic"](#).

Is DTC B2455 displayed again?

- YES >> Replace pre-crash seat belt control unit (driver side).
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

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B2456 SEAT BLT PWR AS

< DTC/CIRCUIT DIAGNOSIS >

B2456 SEAT BLT PWR AS

DTC Logic

INFOID:000000008140006

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2456	SEAT BLT PWR AS	Pre-crash seat belt control unit (passenger side) power supply circuit is open or shorted	• Harness or connectors [Pre-crash seat belt control unit (passenger side) circuit is open or shorted] • Pre-crash seat belt control unit (passenger side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

YES >> Refer to [SBC-30, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140007

1.CHECK FUSE AND FUSIBLE LINK

Check that the following fusible link is not blown.

Terminal No.	Signal name	Fusible link No.
19	Battery power supply	K

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the blown fusible link after repairing the affected circuit if a fuse or fusible link is blown.

2.CHECK PRE-CRASH SEAT BELT MOTOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect pre-crash seat belt control unit (passenger side) connector.
3. Check voltage between pre-crash seat belt control unit (passenger side) harness connector and ground.

Pre-crash seat belt control unit (passenger side)		Ground	Voltage (V) (Approx.)
Connector	Terminal		Battery voltage
B227	19		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness between pre-crash seat belt control unit (passenger side) and fusible link.

3.CHECK SELF DIAGNOSTIC RESULT

1. Connect pre-crash seat belt control unit (passenger side) connector.
2. Turn ignition switch ON.
3. Check "Self-diagnostic result" with CONSULT.
4. Touch "ERASE".
5. Perform DTC Confirmation Procedure.
See [SBC-30, "DTC Logic"](#).

Is DTC B2456 displayed again?

YES >> Replace pre-crash seat belt control unit (passenger side).

NO >> GO TO 4.

B2456 SEAT BLT PWR AS

< DTC/CIRCUIT DIAGNOSIS >

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-49. "Intermittent Incident"](#).

>> INSPECTION END

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B2457 CONTROL UNIT AS

< DTC/CIRCUIT DIAGNOSIS >

B2457 CONTROL UNIT AS

DTC Logic

INFOID:000000008140008

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2457	CONTROL UNIT AS	Pre-crash seat belt control unit (passenger side) internal circuit malfunction	Pre-crash seat belt control unit (passenger side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-32, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140009

1..INSPECTION START

1. Check "Self-diagnostic result" with CONSULT.
2. Touch "ERASE".
3. Perform DTC Confirmation Procedure.
See [SBC-32, "DTC Logic"](#).

Is DTC B2457 displayed again?

- YES >> Replace pre-crash seat belt control unit (passenger side).
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2458 LOCAL COMM

< DTC/CIRCUIT DIAGNOSIS >

B2458 LOCAL COMM

DTC Logic

INFOID:000000008140010

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2458	LOCAL COMM	Receipt of a malfunction signal between pre-crash seat belt control unit (driver side) and pre-crash seat belt control unit (passenger side)	• Harness or connectors [The pre-crash seat belt control unit (driver side) and pre-crash seat belt (passenger side) circuit is open or shorted] • Pre-crash seat belt control unit (driver side) • Pre-crash seat belt control (passenger side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-33, "Diagnosis Procedure"](#).
NO >> INSPECT IN END

Diagnosis Procedure

INFOID:000000008140011

1.CHECK PRE-CRASH-SEAT BELT CONTROL UNIT (PASSENGER SIDE)

Check pre-crash seat belt control unit (passenger side) power supply. Refer to [SBC-30, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace harness between pre-crash seat belt control unit (passenger side) connector and fusible link.

2.CHECK LOCAL COMMUNICATION LINE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect pre-crash seat belt control unit (driver side and passenger side) connectors.
3. Check continuity between local communication line harness connectors.

Pre-crash seat belt control unit (driver side)		Pre-crash seat belt control unit (passenger side)		Continuity
Connector	Terminal	Connector	Terminal	
B9	8	B227	8	Existed
	16		16	

4. Check continuity between pre-crash seat belt control unit (driver side) harness connector and ground.

Pre-crash seat belt control unit (driver side)		Ground	Continuity
Connector	Terminal		
B9	8		Not existed
	16		

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace local communication line.

3.REPLACE PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)

1. Replace pre-crash seat belt control unit (passenger side)
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

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B2458 LOCAL COMM

< DTC/CIRCUIT DIAGNOSIS >

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

4.REPLACE PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

1. Replace pre-crash seat belt control unit (driver side)
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

YES >> GO TO 5.
NO >> INSPECTION END

5.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2461 VHCL SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

B2461 VHCL SPEED SIGNAL

Description

INFOID:0000000008140012

Inputs the vehicle speed signal from combination meter via CAN communication.

DTC Logic

INFOID:0000000008140013

DTC DETECTION LOGIC

NOTE:

If DTC B2461 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [SBC-23, "DTC Logic"](#).

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2461	VHCL SPEED SIGNAL	Receipt of a malfunction signal of the vehicle speed signal	Combination meter

DTC CONFIRMATION PROCEDURE

1. SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-35, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008140014

1. CHECK DTC WITH "UNIFIED METER AND A/C AMP."

Check "Self-diagnostic result" for "METER/M&A" with CONSULT. Refer to [MWI-36, "CONSULT Function"](#).

Is DTC detected?

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

2. CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

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SBC

B2466 DR/AS CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

B2466 DR/AS CONTROL UNIT

DTC Logic

INFOID:0000000008140015

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2466	DR/AS CONTROL UNIT	Pre-crash seat belt control unit is out of the vehicle specification	• Pre-crash seat belt control unit (driver side) • Pre-crash seat belt control unit (passenger side)

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-36, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008140016

1.CHECK THE VEHICLE SPECIFICATION

Check the part number.

Does the part application fit to the vehicle specification?

- YES >> GO TO 2.
NO >> Replace the malfunction parts.

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2470 SYS HEAT PROTC DR

< DTC/CIRCUIT DIAGNOSIS >

B2470 SYS HEAT PROTC DR

Description

INFOID:000000008140017

When fastening and unfastening seat belt or opening and closing door is repeated continuously for a short period of time, the system temporarily deactivates the retracting function of seat belt to prevent excessive heating. The system recovers automatically.

DTC Logic

INFOID:000000008140018

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2470	SYS HEAT PROTC DR	Deactivates to prevent excessive heating	Belt retracting function activates continuously in a short period of time.

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-37, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140019

SBC

1.CHECK THE VEHICLE CONDITION WITH CONSULT DATA MONITOR

1. Check "HEAT PROTC LH" of DATA MONITOR.
2. Wait until "OFF" appears.
3. Perform the self-diagnosis, after performing the check.
4. Touch "ERASE".
5. Perform DTC Confirmation Procedure.
See [SBC-37, "DTC Logic"](#).

Is DTC B2470 displayed again?

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

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2471 SYS HEAT PROTC AS

< DTC/CIRCUIT DIAGNOSIS >

B2471 SYS HEAT PROTC AS

Description

INFOID:000000008140020

When fastening and unfastening seat belt or opening and closing door is repeated continuously for a short period of time, the system temporarily deactivates the retracting function of seat belt to prevent excessive heating. The system recovers automatically.

DTC Logic

INFOID:000000008140021

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2471	SYS HEAT PROTC AS	Deactivates to prevent excessive heating	Belt retracting function activates continuously in the short period of time

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-38, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140022

1.CHECK THE VEHICLE CONDITION WITH CONSULT DATA MONITOR

1. Check "HEAT PROTC RH" of DATA MONITOR.
2. Wait until "OFF" appears.
3. Perform the self-diagnosis, after performing the check.
4. Touch "ERASE".
5. Perform DTC Confirmation Procedure.
See [SBC-38, "DTC Logic"](#).

Is DTC B2471 displayed again?

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

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

B2472 BRAKE PEDAL STROKE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

B2472 BRAKE PEDAL STROKE SENSOR

Description

INFOID:000000008140023

Inputs the steering angle signal from steering angle sensor via CAN communication.

DTC Logic

INFOID:000000008140024

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2472	BRAKE STROKE SENSOR	Circuit of stroke sensor output is open or shorted	• Harness or connectors (The sensor circuit is open or shorted) • Electrically-driven intelligent brake unit • Stroke sensor

DTC CONFIRMATION PROCEDURE

1.SELF-DIAGNOSIS WITH PRE-CRASH SEAT BELT CONTROL UNIT

1. Turn ignition switch ON.
2. Check "Self-diagnostic result" with CONSULT.

Is DTC detected?

- YES >> Refer to [SBC-39, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000008140025

SBC

1.CHECK DTC WITH ELECTRICALLY-DRIVEN INTELLIGENT BRAKE UNIT

Check "Self-diagnostic result" for "ABS" with CONSULT. Refer to [BRC-45, "CONSULT Function"](#).

Is DTC detected?

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

2.CHECK INTERMITTENT INCIDENT

Refer to [GI-49, "Intermittent Incident"](#).

>> INSPECTION END

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000008140026

1.CHECK FUSE AND FUSIBLE LINK

Check that the following fuse is not blown.

Terminal No.		Signal name	Fuse No.
Driver side	1	Battery power supply	6
Passenger side			

Is the fuse blown?

YES >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect pre-crash seat belt control unit (driver side and passenger side) connectors.
3. Check voltage between harness pre-crash seat belt control unit (driver side and passenger side) connector and ground.

Pre-crash seat belt control unit (driver side and passenger side)		Ground	Voltage (V) (Approx.)
Connector	Terminal		Battery voltage
B9	1		
B227			

Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair or replace harness.

3.CHECK GROUND CIRCUIT

Check continuity between pre-crash seat belt control unit (driver side and passenger side) harness connector and ground.

Pre-crash seat belt control unit (driver side and passenger side)		Ground	Continuity
Connector	Terminal		Existed
B9	18		
	20		
B227	18		
	20		

Does continuity exist?

YES >> INSPECTION END

NO >> Repair or replace harness.

SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

Description

INFOID:000000008140027

- Performs the control of tension reducer according to the seat belt buckle switch ON/OFF.
- Detects whether or not the seat belt is fastened when the ignition switch turns ON. If the seat belt is not fastened, illuminates the seat belt warning lamp on the combination meter.
- The seat belt buckle switch is installed in the seat belt buckle.

Component Function Check

INFOID:000000008140028

1.CHECK PRE-CRASH SEAT BELT CONTROL UNIT INPUT SIGNAL

Ⓜ With CONSULT-

When checking "BUCKLE SW LH" on DATA MONITOR screen, check that ON/OFF display changes synchronized with the insertion operation to the seat belt buckle.

Monitor item	Condition
BUCKLE SW LH	When driver side seat belt is not fastened: OFF
	When driver side seat belt is fastened: ON

Is the inspection result normal?

- YES >> Seat belt buckle switch (driver side) circuit is normal.
NO >> Refer to [SBC-41, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000008140029

SBC

1.CHECK PRE-CRASH SEAT BELT CONTROL UNIT INPUT SIGNAL

Check that voltage between seat belt buckle switch (driver side) and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)
Seat belt buckle switch (driver side)				
Connector	Terminal			
B523	35	Ground	When driver side seat belt is not fastened	5
			When driver side seat belt is fastened	0

Is the inspection result normal?

- YES >> Seat belt buckle switch (driver side) circuit is normal.
NO >> GO TO 2.

2.CHECK SEAT BELT BUCKLE SWITCH (DRIVER SIDE) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect pre-crash seat belt control unit (driver side) connector and seat belt buckle switch (driver side) connector.
3. Check continuity between pre-crash seat belt control unit (driver side) and seat belt buckle switch (driver side).

Pre-crash seat belt control unit (driver side)		Seat belt buckle switch (driver side)		Continuity
Connector	Terminal	Connector	Terminal	
B9	6	B523	35	Existed

4. Check continuity between pre-crash seat belt control unit (driver side) and ground.

Pre-crash seat belt control unit (driver side)		Ground	Continuity
Connector	Terminal		
B9	6		Not existed

SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness between pre-crash seat belt control unit (driver side) and seat belt buckle switch (driver side).

3.CHECK SEAT BELT BUCKLE SWITCH GROUND CIRCUIT

Check continuity between seat belt buckle switch (driver side) and ground.

Seat belt buckle switch (driver side)		Ground	Continuity
Connector	Terminal		
B523	41		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness between seat belt buckle switch and ground.

4.CHECK SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

Check seat belt buckle switch (driver side). Refer to [SBC-42, "Component Inspection \(Belt Buckle Switch\)"](#).

Is the inspection result normal?

YES >> Replace pre-crash seat belt control unit (driver side).

NO >> Replace seat belt buckle switch (driver side).

Component Inspection (Belt Buckle Switch)

INFOID:000000008140030

1.CHECK SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch connector.
3. Check continuity of seat belt buckle (driver side).

Seat belt buckle switch (driver side)		Condition	Continuity
Terminal			
35	41	When driver side seat belt is not fastened	Not existed
		When driver side seat belt is fastened	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace seat belt buckle switch (driver side).

SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

Description

INFOID:000000008140031

- Performs the control of tension reducer according to the seat belt buckle switch ON/OFF.
- Detects whether or not the seat belt is fastened when the ignition switch turns ON. If the seat belt switch is not fastened, illuminates the seat belt warning lamp on the combination meter.
- The seat belt buckle switch is installed in the seat belt buckle.

Component Function Check

INFOID:000000008140032

1.CHECK PRE-CRASH SEAT BELT CONTROL UNIT INPUT SIGNAL

Ⓔ With CONSULT

When checking "BUCKLE SW RH" on DATA MONITOR screen, check that ON/OFF display changes are synchronized with the insertion operation to the seat belt buckle.

Monitor item	Condition
BUCKLE SW RH	When driver side seat belt is not fastened: OFF
	When driver side seat belt is fastened: ON

Is the inspection result normal?

YES >> Seat belt buckle switch (passenger side) circuit is normal.

NO >> Refer to [SBC-43, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000008140033

SBC

1.CHECK PRE-CRASH SEAT BELT CONTROL UNIT INPUT SIGNAL

Check that voltage between seat belt buckle switch (passenger side) and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)
Seat belt buckle switch (passenger side)				
Connector	Terminal			
B553	35	Ground	When driver side seat belt is not fastened	5
			When driver side seat belt is fastened	0

Is the inspection result normal?

YES >> Seat belt buckle switch (passenger side) circuit is normal.

NO >> GO TO 2.

2.CHECK SEAT BELT BUCKLE (PASSENGER SIDE) SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect pre-crash seat belt control unit (passenger side) connector and seat belt buckle switch (passenger side) connector.
3. Check continuity between pre-crash seat belt control unit (passenger side) and seat belt buckle switch (passenger side).

Pre-crash seat belt control unit (passenger side)		Seat belt buckle switch (passenger side)		Continuity
Connector	Terminal	Connector	Terminal	
B227	6	B553	35	Existed

4. Check continuity between pre-crash seat belt control unit (passenger side) and ground.

Pre-crash seat belt control unit (passenger side)		Ground	Continuity
Connector	Terminal		
B227	6		Not existed

SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness between pre-crash seat belt control unit (passenger side) and seat belt buckle switch (passenger side).

3.CHECK SEAT BELT BUCKLE SWITCH GROUND CIRCUIT

Check continuity between seat belt buckle switch (passenger side) and ground.

Seat belt buckle switch (passenger side)		Ground	Continuity
Connector	Terminal		
B553	41		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness between seat belt buckle switch and ground.

4.CHECK SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

Check seat belt buckle switch (passenger side). Refer to [SBC-44, "Component Inspection \(Belt Buckle Switch\)"](#).

Is the inspection result normal?

YES >> Replace pre-crash seat belt control unit (passenger side).

NO >> Replace seat belt buckle switch (passenger side).

Component Inspection (Belt Buckle Switch)

INFOID:000000008140034

1.CHECK SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch connector.
3. Check continuity of seat belt buckle (passenger side).

Seat belt buckle switch (passenger side)		Condition	Continuity
Terminal			
35	41	When driver side seat belt is not fastened	Not existed
		When driver side seat belt is fastened	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace seat belt buckle switch (passenger side).

PRE-CRASH SEAT BELT DOSE NOT OPERATE

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

PRE-CRASH SEAT BELT DOSE NOT OPERATE
BOTH SIDES

BOTH SIDES : Diagnosis Procedure

INFOID:000000008140035

1.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check power supply and ground circuit. Refer to [SBC-40, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-49, "Intermittent Incident"](#).

NO >> GO TO 1.

DRIVER SIDE

DRIVER SIDE : Diagnosis Procedure

INFOID:000000008140036

1.CHECK SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

Check seat belt buckle switch (driver side). Refer to [SBC-41, "Component Function Check"](#)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-49, "Intermittent Incident"](#).

NO >> GO TO 1.

PASSENGER SIDE

PASSENGER SIDE : Diagnosis Procedure

INFOID:000000008140037

1.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check power supply and ground circuit. Refer to [SBC-40, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2.CHECK SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

Check seat belt buckle switch (passenger side). Refer to [SBC-43, "Component Function Check"](#)

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the malfunctioning parts.

3.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-49, "Intermittent Incident"](#).

NO >> GO TO 1.

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BRAKE PEDAL STROKE SENSOR

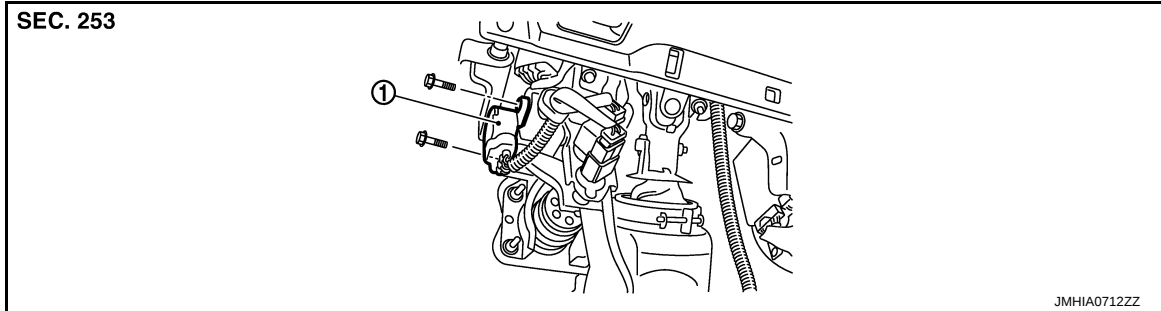
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

BRAKE PEDAL STROKE SENSOR

Exploded View

INFOID:000000008140038



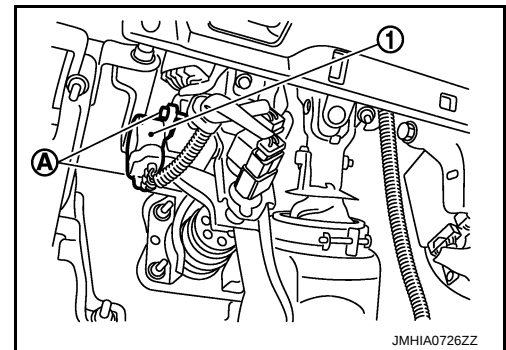
1. Brake pedal stroke sensor

Removal and Installation

INFOID:000000008140039

REMOVAL

1. Remove the instrument panel lower cover LH. Refer to [IP-13, "Removal and Installation"](#).
2. Disconnect the brake pedal stroke sensor connector.
3. Remove the screws (A).
4. Remove the brake pedal stroke sensor (1).



INSTALLATION

Install in the reverse order of removal.

PRE-CRASH SEAT BELT CONTROL UNIT

< REMOVAL AND INSTALLATION >

PRE-CRASH SEAT BELT CONTROL UNIT

Exploded View

INFOID:000000008140040

Refer to [SB-5, "SEAT BELT RETRACTOR : Exploded View"](#).

Removal and Installation

INFOID:000000008140041

For removal and installation procedures, refer to [SB-7, "SEAT BELT RETRACTOR : Removal and Installation"](#).

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