SECTION SBC
SEAT BELT CONTROL SYSTEM

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000009761263

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 dual stage front air bag modules. The SRS system may only deploy one front air bag, depending on the severity of a collision and whether the front passenger seat is occupied. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, 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 the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

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

Precaution for Seat Belt Service

INFOID:0000000009134263

CAUTION:

- **Before removing the seat belt pre-tensioner assembly, turn the ignition switch OFF, disconnect both battery terminals and wait at least three minutes. For approximately three minutes after the battery terminals have been removed, it is still possible for the air bag and seat belt pre-tensioner to deploy. Therefore, do not attempt work on any SRS connectors or wires until at least three minutes have passed.**
- **After replacing or reinstalling seat belt pre-tensioner assembly, or reconnecting seat belt pre-tensioner assembly connector, make sure entire SRS operates properly. Refer to SRC-15, "SRS Operation Check".**
- **Do not disassemble buckle or seat belt assembly.**
- **Replace anchor bolts if they are deformed or worn out.**
- **Do not 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 INFINITI seat belt assembly.**

AFTER A COLLISION

WARNING:

- **Inspect all seat belt assemblies including retractors and attaching hardware after any collision.**
- **INFINITI 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 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, etc.)
- 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.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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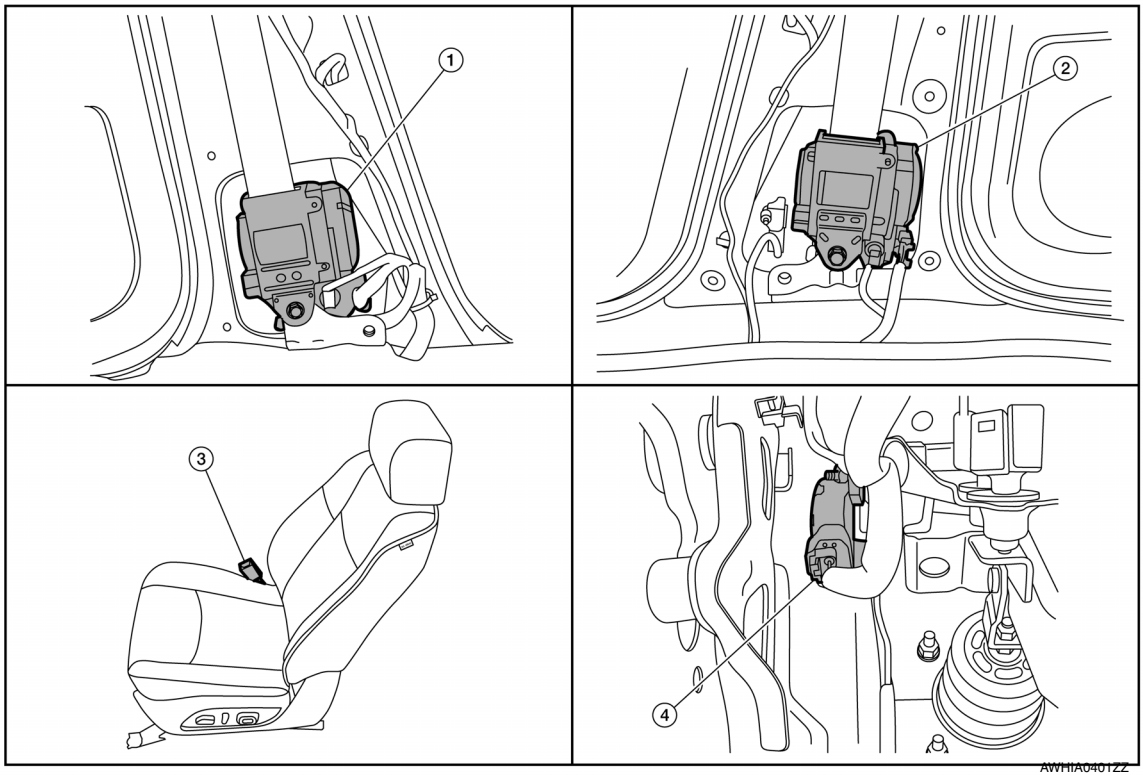


1. Pre-crash seat belt control unit (driver side) (View with center pillar lower garnish LH removed.)
2. Pre-crash seat belt control unit (passenger side) (View with center pillar lower garnish RH removed.)
3. Seat belt buckle switch (driver seat) (passenger seat similar)
4. Brake pedal stroke sensor (View with instrument lower panel LH removed.)

Component Description

INFOID:0000000009134265

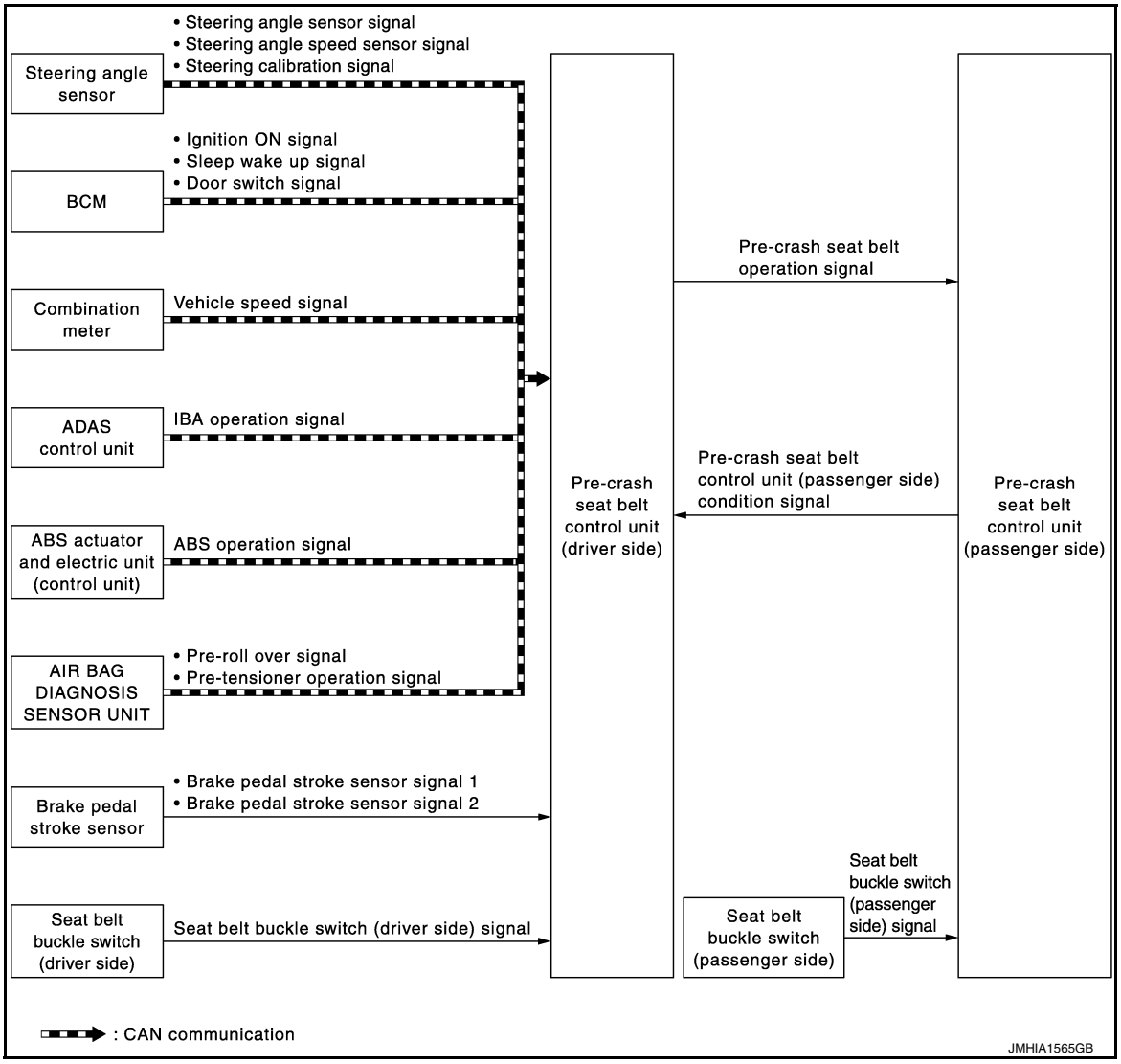
Component	Function
Pre-crash seat belt control unit (driver side)	• Integrated front seat belt pre-tensioner, control unit and seat belt motor. • Controls pre-crash seat belt control unit (passenger side) as slave control unit. • Seat belt motor operates when belt is extended and retracted.
Pre-crash seat belt control unit (passenger side)	• Integrated front seat belt pre-tensioner, control unit and seat belt motor. • Is controlled by pre-crash seat belt control unit (driver side) as master control unit. • Seat belt motor operates when belt is extended and retracted.
Brake pedal stroke sensor	• Varies voltage based on brake pedal position and sends the signal to pre-crash seat belt control unit (driver side). • There are 2 signals sent from the brake pedal stroke sensor (brake pedal stroke sensor signal 1 and 2). • Pre-crash seat belt control unit (driver side) judges the stroke distance and speed of the brake pedal based on the voltage signals sent by each side of the sensor.

Component	Function
Seat belt buckle switch (driver side)	Fastening of seat belt is judged. This signal is used for control of driver pre-crash seat belt system.
Seat belt buckle switch (passenger side)	Fastening of seat belt is judged. This signal is used for control of passenger pre-crash seat belt system.
BCM	The following signals are received from the BCM via CAN communication: • ignition ON signal • sleep/wake signal • door switch signal
Air bag diagnosis sensor unit	The following signals are received from the air bag diagnosis sensor unit via CAN communication: • pre-rollover signal • collision signal
ABS actuator and electric unit (control unit)	ABS operation signal is received from ABS actuator and electric unit (control unit) via CAN communication.
ADAS control unit	Intelligent brake assist operation signal is received from ADAS control unit via CAN communication.
Combination meter	Vehicle speed signal is received from the combination meter via CAN communication.
Steering angle sensor	The following signals are received from the steering angle sensor via CAN communication: • steering angle sensor signal • steering angle sensor speed signal • steering angle sensor neutral position adjustment completion signal • steering angle sensor malfunction signal

SYSTEM

System Diagram

INFOID:0000000009134266



System Description

INFOID:0000000009134267

The pre-crash seat belt system integrates a control unit and motor in the existing seat belt pre-tensioners for both the driver and front passenger. The motor retracts the seat belt and secures the occupant during non-collision operations. The system integrates various CAN signals from other safety systems to give the driver and passenger a sense of security during various driving conditions. The motor extracts and retracts the seat belts when fastening to reduce effort required.

FUNCTIONS

Pre-crash seat belt system may operate under the following conditions:

- Emergency brake operation
- ABS operation (extended)
- Intelligent brake assist operation
- When lateral slippage during cornering occurs
- During emergency steering operations
- When the vehicle is inclined excessively
- When comfort function operates (refer to table below for more details)

OPERATING CONDITIONS

Operating condition	Operation starts	Operation stops
Emergency brake operation	• Vehicle speed is 15 km/h (9 MPH) or more • Emergency braking status is detected	• During acceleration • Vehicle stopped
ABS operation (extended)	• ABS operates continuously for 2 seconds or more • Brake pedal is depressed	
Intelligent brake assist operation	System detects that intelligent brake assist is operating	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 slippage 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
During emergency steering operations	• 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	
When the vehicle is inclined excessively	• Vehicle speed is 30 km/h (19 MPH) or more • System detects that the vehicle inclined excessively	• During acceleration • Vehicle stopped

COMFORT FUNCTION

Seat belts are extracted and retracted as shown in the following table.

Operating condition	Activation requirements	Comfort action	Deactivation requirements
Door is opened	• Vehicle stopped • Seat belt is unbuckled	Seat belt motor retracts belt	Seat belt retract is complete (maximum 13 seconds)
Seat belt is buckled	Door is closed	Seat belt motor extracts belt	• Seat belt is unbuckled • (maximum 1 second)
Seat belt is unbuckled	Seat belt is unbuckled	Seat belt motor retracts belt	Seat belt retract is complete (maximum 10 seconds)

CONDITIONS THAT PROHIBIT OPERATION

Pre-crash seat belt system will not operate if the following conditions are detected:

- Motor overheat due to prolonged operation*
- Fail-safe mode activation

* System operation is temporarily deactivated to avoid overheating if system is continuously activated (18 times or more) during a short period of time.

MALFUNCTION WARNING

When system malfunction is detected a warning message is displayed in the color display.

DIAGNOSIS SYSTEM (PRE-CRASH SEAT BELT)

CONSULT Function

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CAUTION:
After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF → ON (for at least 5 seconds) → OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and a no-start condition.

APPLICATION ITEM

CONSULT can display each diagnostic item using the diagnostic test modes shown following.

Diagnosis mode	Description
Self Diagnostic Results	Displays pre-crash seat belt control unit self-diagnosis results.
Data Monitor	Displays pre-crash seat belt control unit input/output data in real time.
Work Support	Pre-crash seat belt control unit can change system settings based on driver requirements.
Ecu Identification	Displays pre-crash seat belt control unit part number.

SELF DIAGNOSTIC PROCEDURE

CONSULT can be used to read and clear DTCs.

ECU IDENTIFICATION

Displays the part number of the pre-crash seat belt control unit.

SELF DIAGNOSTIC RESULTS

Refer to SBC-14, "DTC Index".

DATA MONITOR

CONSULT	Display	Description
BUCKLE SW RH	On	Seat belt buckle switch (passenger seat) is ON.
	Off	Seat belt buckle switch (passenger seat) is OFF.
BUCKLE SW LH	On	Seat belt buckle switch (driver seat) is ON.
	Off	Seat belt buckle switch (driver seat) is OFF.
VEHICLE DISTANCE	On	Intelligent brake assist signal ON.
	Off	Intelligent brake assist signal OFF.
IGN SW	On	Ignition switch ON.
	Off	Ignition switch OFF.
FR DOOR SW RH	Open	Front door switch (RH) closed.
	Close	Front door switch (RH) open.
FR DOOR SW LH	Open	Front door switch (LH) closed.
	Close	Front door switch (LH) open.
ABS ACTIVATING	On	ABS activation signal ON.
	Off	ABS activation signal OFF.
VHCL SPEED	[mph]	Indicates vehicle speed.
BRK PEDAL SNSR1	[V]	Brake pedal stroke sensor 1 signal.
BRK PEDAL SNSR2	[V]	Brake pedal stroke sensor 2 signal.
STRG ANGLE	[deg]	Steering angle signal.
STRG ACCL SPEED	[deg/s]	Steering angle speed signal.
INCLINATION JDMT	On	Pre roll over signal ON.
	Off	Pre roll over signal OFF.

CONSULT	Display	Description
PRE-TEN ACTIVTN	On	Pre-tensioner operation signal ON.
	Off	Pre-tensioner operation signal OFF.
HEAT PROTC RH	On	Heat protection (RH) ON.
	Off	Heat protection (RH) OFF.
HEAT PROTC LH	On	Heat protection (LH) ON.
	Off	Heat protection (LH) OFF.

WORK SUPPORT

Work support item	Display	Function
DOOR OPENING RETRACT RETRY	UP	Sets the seat belt retractor counter to a higher trigger.
	STANDARD	Default seat belt retractor counter trigger.
	DOWN	Sets the seat belt retractor counter to a lower trigger.

ECU DIAGNOSIS INFORMATION

PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)

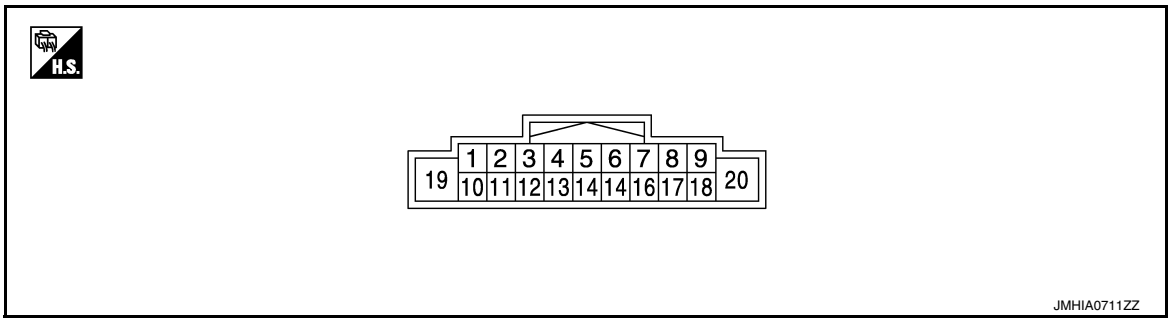
Reference Value

INFOID:0000000009134269

VALUES ON THE DIAGNOSIS TOOL

CONSULT	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	IBA not activated	OFF
	IBA activated	ON
IGN SW	Ignition switch OFF	OFF
	Ignition switch ON	ON
FR DOOR SW RH	RH door closed	CLOSE
	RH door open	OPEN
FR DOOR SW LH	LH door closed	CLOSE
	LH door open	OPEN
ABS ACTIVATING	ABS is inactive	OFF
	ABS is active	ON
VHCL SPEED	While driving	Equivalent speedometer reading (mph)
BRK PEDAL SNSR1	Brake released → depressed	(1 V → 4 V)
BRK PEDAL SNSR2	Brake released → depressed	(4 V → 1 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 ACCL SPEED	Steering wheel: Being turned	Depending on steering acceleration speed (deg/s)
INCLINATION JDMT	Vehicle is level	OFF
	Vehicle is inclined	ON
PRE-TEN ACTIVTN	Seat belt pre-tensioner is not activated	OFF
	Seat belt pre-tensioner is activated	ON
HEAT PROTC RH	RH motor heat protection is not activated	OFF
	RH motor heat protection is activated	ON
HEAT PROTC LH	LH motor heat protection is not activated	OFF
	LH motor heat protection is activated	ON

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (R)	Ground	Battery power supply	Input	—	Battery voltage
2 (B)	Ground	Brake pedal stroke sensor signal 1	Input	Brake released → depressed	1 V - 4 V
4 (P)	Ground	CAN-L	—	—	—
6 (G)	Ground	Seat belt buckle switch signal (driver seat)	Input	Seat belt is fastened	0 V
				Seat belt is unfastened	5 V
8 (W)	Ground	Local Communication Line 2	Input/ Output	IGN ON	5 V
9 (GR)	Ground	Shield	—	—	—
10 (W)	Ground	Brake pedal stroke sensor power circuit	Output	IGN ON	5 V
12 (G)	Ground	Brake pedal stroke sensor signal 2	Input	Brake released → depressed	4 V - 1 V
14 (L)	Ground	CAN-H	—	—	—
16 (B)	Ground	Local Communication Line 1	Input/ Output	—	—
17 (R)	Ground	Brake pedal stroke sensor ground circuit	—	—	0 V
18 (B)	Ground	Ground	—	—	0 V
19 (W)	Ground	Motor drive battery power supply circuit	Input	—	Battery voltage
20 (B)	Ground	Motor drive ground circuit	—	—	0 V

Fail Safe

INFOID:0000000009134270

- When a system malfunction is detected it 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.

CONSULT		Fail-safe
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 • When the vehicle inclined excessively • A part or the whole comfort function
B2451	SEAT BLT MTR DR CIRC	Fully deactivates the whole operation.
B2452	SEAT BLT MTR AS CIRC	Deactivates a part of comfort function.
B2453	BR STROKE SEN CIRC	Stops the operation in the conditions as per the following: • During emergency brake operation • When ABS continuously operates • 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 • When the vehicle inclined excessively • 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 the vehicle inclined excessively • When comfort function operates
B2463	ROLLOVER SIGNAL	Stops the operation in the conditions as per the following: • When the vehicle inclined excessively • A part or the whole comfort function
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

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

DTC Index

INFOID:0000000009134271

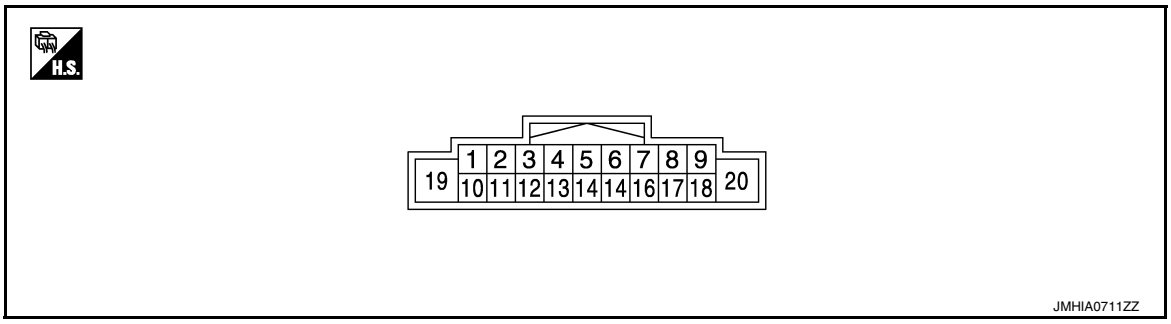
DTC	Trouble diagnosis name (CONSULT display)	DTC detection condition	Reference
U0126	STRG ANG SEN SIG	Steering angle sensor malfunction is received	SBC-29
U0428	STRG ANGL CAL	Steering angle sensor calibration incomplete signal is received	SBC-30
U1000	CAN COMM CIRCUIT	Pre-crash seat belt control unit cannot transmit and receive CAN communication signal for 2 seconds or more	SBC-31
B2451	SEAT BLT MTR DR CIRC	• Motor or control unit malfunction • Seat belt motor circuit is open or shorted	SBC-32
B2452	SEAT BLT MTR AS CIRC	• Motor or control unit malfunction • Seat belt motor circuit is open or shorted	SBC-33
B2453	BR STROKE SEN CIRC	• Brake pedal stroke sensor malfunction • Brake pedal stroke sensor circuit is open or shorted	SBC-34
B2454	SEAT BLT PWR DR CIRC	Motor power supply circuit is open or shorted	SBC-37
B2455	CONTROL UNIT DR	Malfunction in pre-crash seat belt control unit	SBC-38
B2456	SEAT BLT PWR AS CIRC	Motor power supply circuit is open or shorted	SBC-39
B2457	CONTROL UNIT AS	Malfunction in pre-crash seat belt control unit (passenger side)	SBC-40
B2458	LOCAL COMM	Local communication line open or shorted	SBC-41
B2461	VHCL SPEED SIGNAL	Vehicle speed signal malfunction is received	SBC-43
B2463	ROLLOVER SIGNAL	Rollover signal malfunction is received	SBC-44
B2466	DR/AS CONTROL UNIT	Control unit is out of the vehicle specification	SBC-45
B2470	SYS HEAT PROTC DR	Deactivation for cooling to prevent system heating due to continuous operation	SBC-46
B2471	SYS HEAT PROTC AS	Deactivation for cooling to prevent system heating due to continuous operation	SBC-47

PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)

Reference Value

INFOID:0000000009134272

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (P)	Ground	Battery power supply	Input	—	Battery voltage
6 (Y)	Ground	Seat belt buckle switch signal (passenger seat)	Input	RH Seat belt is fastened	0 V
				RH Seat belt is unfastened	5 V
8 (W)	Ground	Local Communication Line 2	Input/ Output	IGN ON	5 V
9	Ground	Shield	—	—	—
16 (B)	Ground	Local Communication Line 1	Input/ Output	—	—
18 (B)	Ground	Ground	—	—	0 V
19 (W)	Ground	Motor power supply circuit (passenger side)	Input	—	Battery voltage
20 (GR)	Ground	Motor ground circuit (passenger side)	—	—	0 V

Fail Safe

INFOID:0000000009134273

- When a system malfunction is detected it 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.

CONSULT		Fail-safe
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

CONSULT		Fail-safe
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 • When the vehicle inclined excessively • A part or the whole comfort function
B2451	SEAT BLT MTR DR CIRC	Fully deactivates the whole operation.
B2452	SEAT BLT MTR AS CIRC	Deactivates a part of comfort function.
B2453	BR STROKE SEN CIRC	Stops the operation in the conditions as per the following: • During emergency brake operation • When ABS continuously operates • 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 • When the vehicle inclined excessively • 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 the vehicle inclined excessively • When comfort function operates
B2463	ROLLOVER SIGNAL	Stops the operation in the conditions as per the following: • When the vehicle inclined excessively • A part or the whole comfort function
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

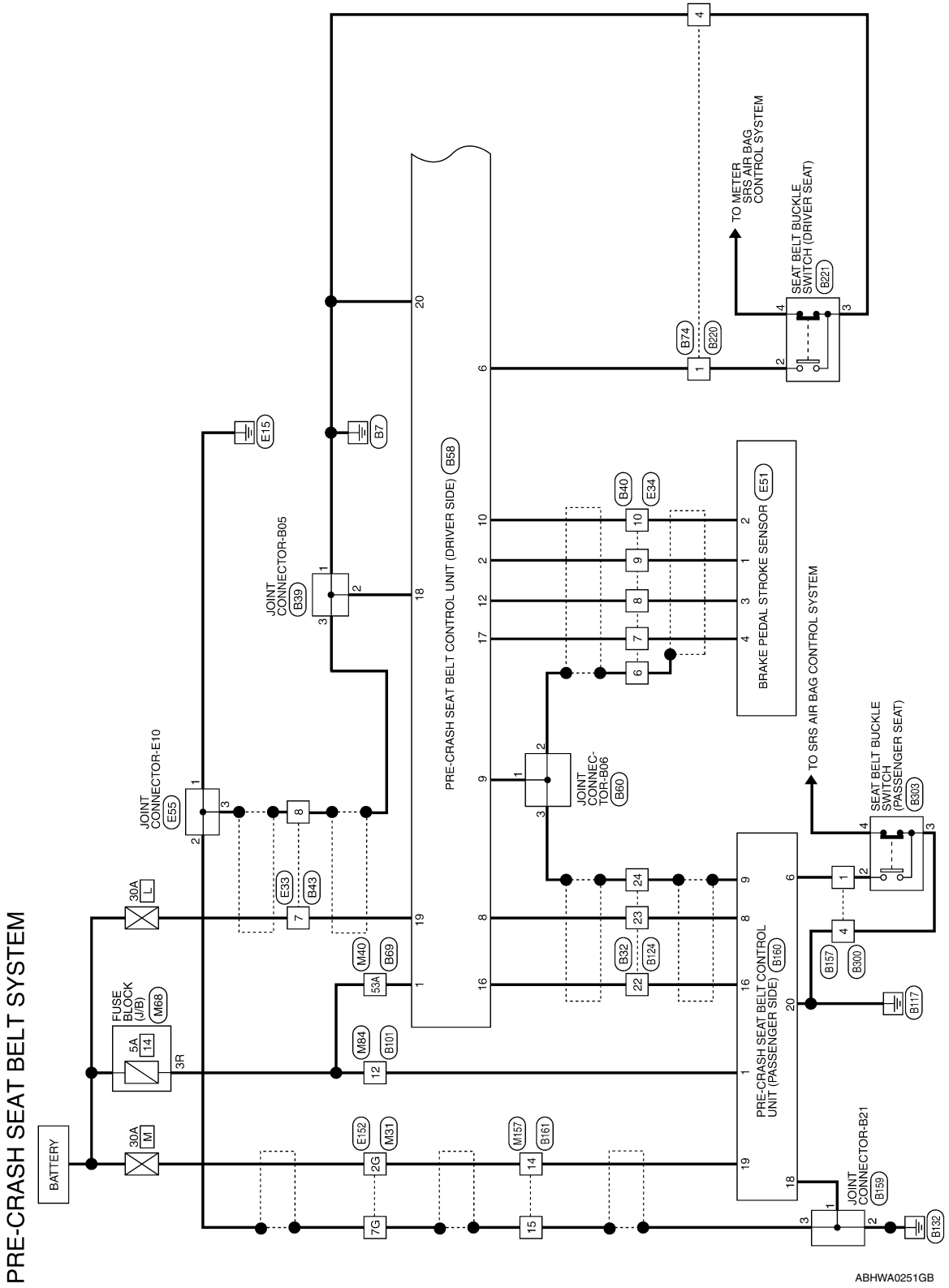
*1: The deactivation mode differs depending on the internal malfunctioning condition of control unit

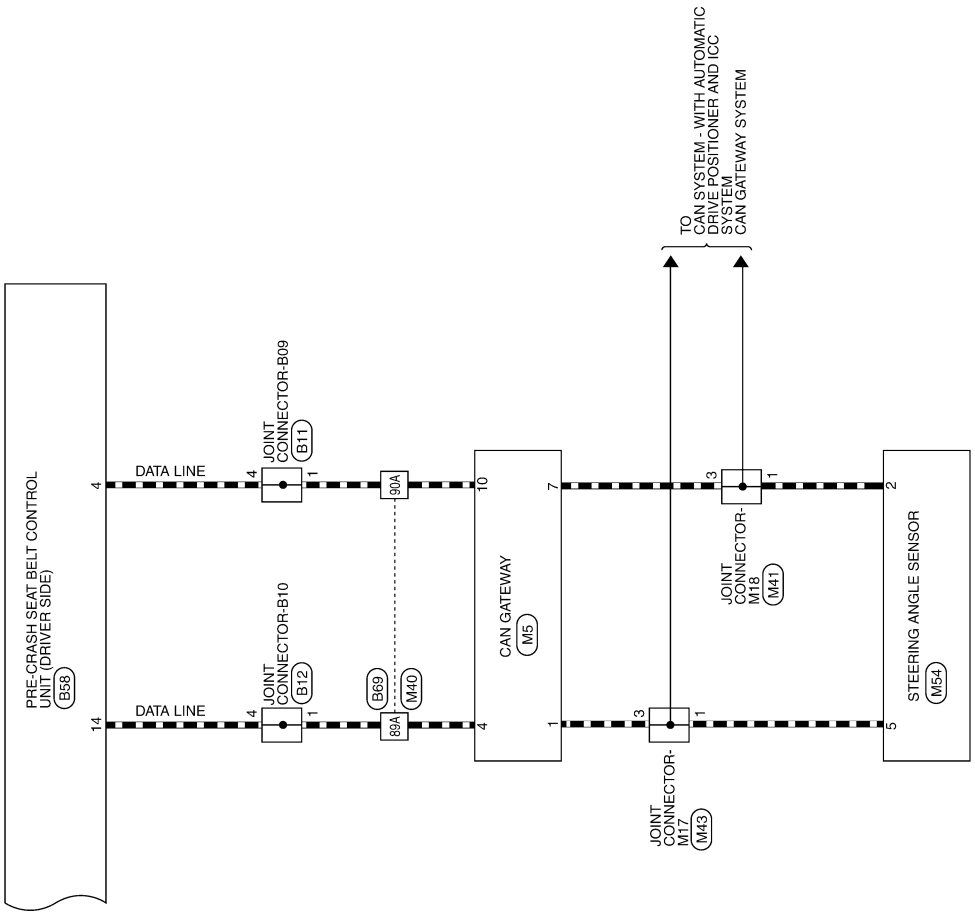
WIRING DIAGRAM

PRE-CRASH SEAT BELT SYSTEM

Wiring Diagram

INFOID:0000000009134274



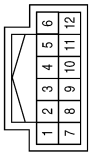


ABHWA0252GB

PRE-CRASH SEAT BELT SYSTEM CONNECTORS

Connector No.	M5
Connector Name	CAN GATEWAY
Connector Color	WHITE

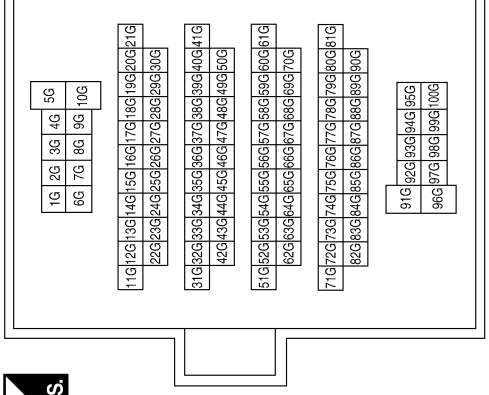
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
4	L	CAN-H
7	P	CAN-L
10	P	CAN-L

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE

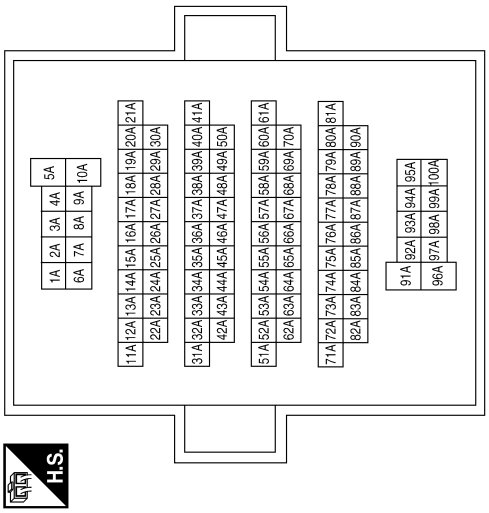
H.S.



Terminal No.	Color of Wire	Signal Name
2G	W	–
7G	SHIELD	–

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
53A	G	–
89A	L	–
90A	P	–

Connector No.	M41
Connector Name	JOINT CONNECTOR-M18
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
3	P	–

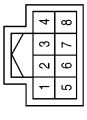
Connector No.	M43
Connector Name	JOINT CONNECTOR-M17
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
3	L	–

Connector No.	M54
Connector Name	STEERING ANGLE SENSOR
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
2	P	–
5	L	–

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Connector No.	M68
Connector Name	FUSE BLOCK (J/B)
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
3R	G	–

Connector No.	M84
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
12	G	–

Connector No.	M157
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
14	W	–
15	SHIELD	–

Connector No.	E33
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
7	W	–
8	SHIELD	–

Connector No.	E34
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
6	SHIELD	–
7	W	–
8	G	–
9	R	–
10	B	–

Connector No.	E51
Connector Name	BRAKE PEDAL STROKE SENSOR
Connector Color	BLACK

H.S.

1	2	3	4

Terminal No.	Color of Wire	Signal Name
1	R	–
2	B	–
3	G	–
4	W	–

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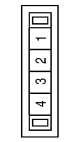
Connector No.	E55
Connector Name	JOINT CONNECTOR-E10
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	–
2	SHIELD	–
3	SHIELD	–

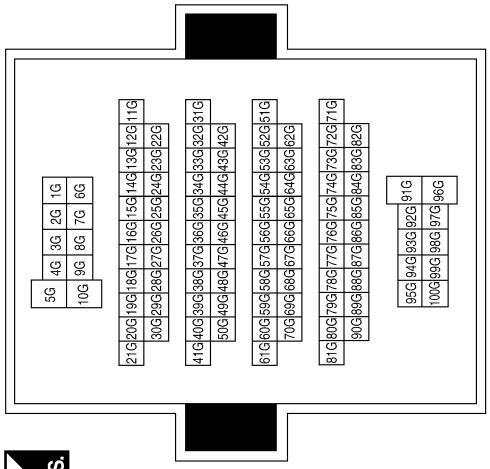
Connector No.	B11
Connector Name	JOINT CONNECTOR-B09
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	–
4	P	–

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE

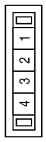
H.S.



Terminal No.	Color of Wire	Signal Name
2G	W	–
7G	SHIELD	–

Connector No.	B12
Connector Name	JOINT CONNECTOR-B10
Connector Color	WHITE

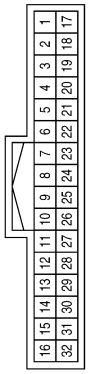
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	–
4	L	–

Connector No.	B32
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
22	B	–
23	W	–
24	SHIELD	–

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Connector No.	B39
Connector Name	JOINT CONNECTOR-B05
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
2	B	–
3	SHIELD	–

Connector No.	B40
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
6	SHIELD	–
7	R	–
8	G	–
9	B	–
10	W	–

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
7	W	–
8	SHIELD	–

Connector No.	B58
Connector Name	PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	R	SIG BAT
2	B	OUT 1
3	–	–
4	P	CAN-L
5	–	–
6	G	BUCKLE SW LH NO
7	–	–

Terminal No.	Color of Wire	Signal Name
8	W	LOCAL COMM 2
9	GR	SHIELD GND
10	W	SENS POWER 1
11	–	–
12	G	OUT 2
13	–	–
14	L	CAN-H
15	–	–
16	B	LOCAL COMM 1
17	R	SENS GND 1
18	B	SIG GND
19	W	MOTOR BAT
20	B	MOTOR GND

Connector No.	B60
Connector Name	JOINT CONNECTOR-B06
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	GR	–
2	SHIELD	–
3	SHIELD	–

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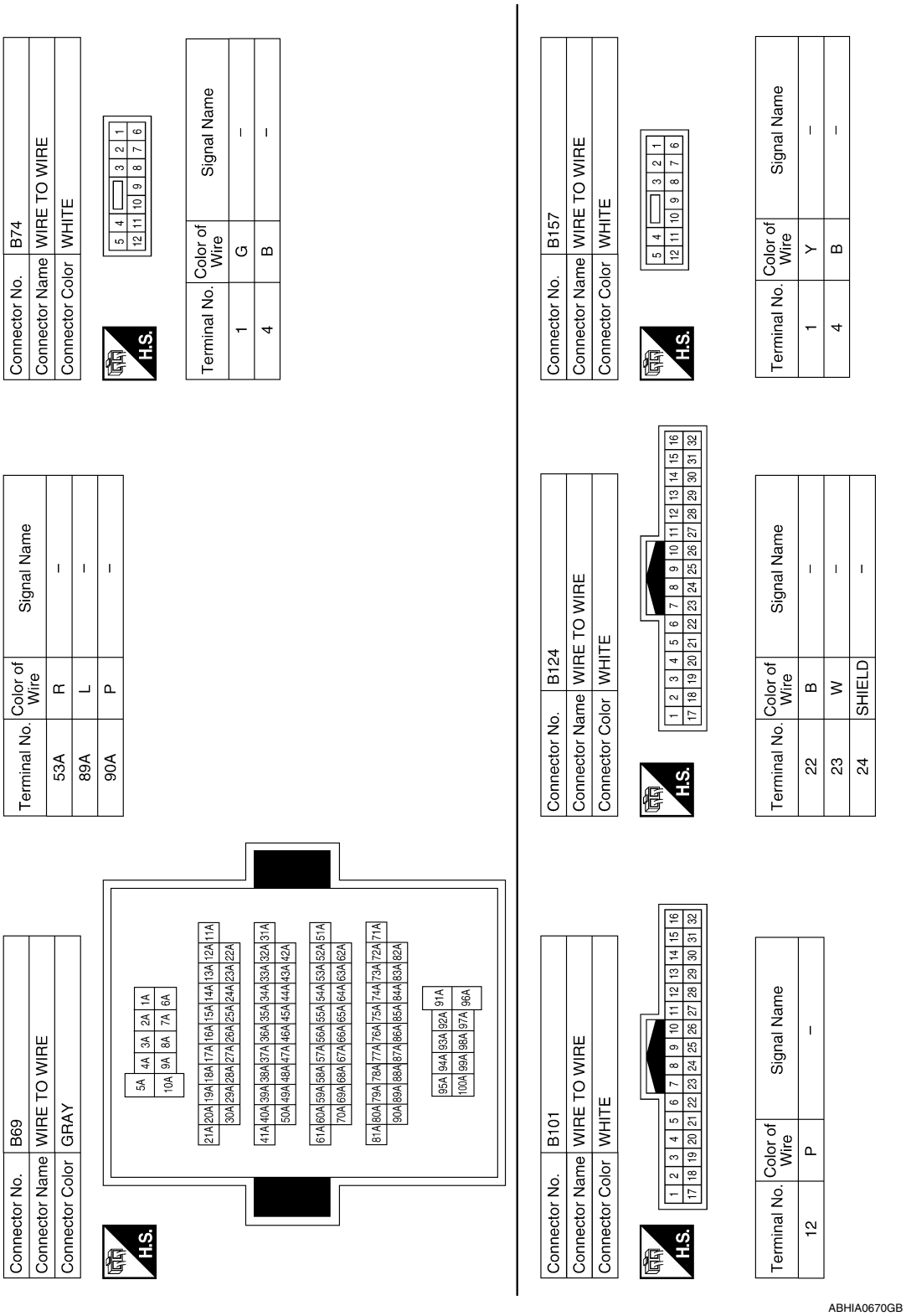

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Connector No.	B159
Connector Name	JONIT CONNECTOR-B21
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
2	B	–
3	SHIELD	–

Connector No.	B160
Connector Name	PRE-CRASH SEAT BELT CONTROL UNIT (PASSENGER SIDE)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	SIG BAT
2	–	–
3	–	–
4	–	–
5	–	–
6	Y	BUCKLE SW RH NO
7	–	–
8	W	LOCAL COMM 2
9	SHIELD	SHIELD GND
10	–	–
11	–	–
12	–	–
13	–	–
14	–	–
15	–	–
16	B	LOCAL COMM 1
17	–	–
18	B	SIGNAL GND
19	W	MOTOR BAT
20	GR	MOTOR GND

Connector No.	B161
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
14	W	–
15	SHIELD	–

Connector No.	B220
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
4	GR	–

Connector No.	B221
Connector Name	SEAT BELT BUCKLE SWITCH (DRIVER SEAT)
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
2	L	–
3	GR	–
4	BG	–

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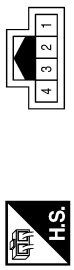
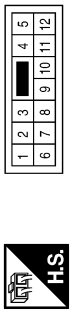
Connector No.	B303
Connector Name	SEAT BELT BUCKLE SWITCH (PASSENGER SEAT)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	L	–
3	GR	–
4	BG	–

Connector No.	B300
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	–
4	GR	–

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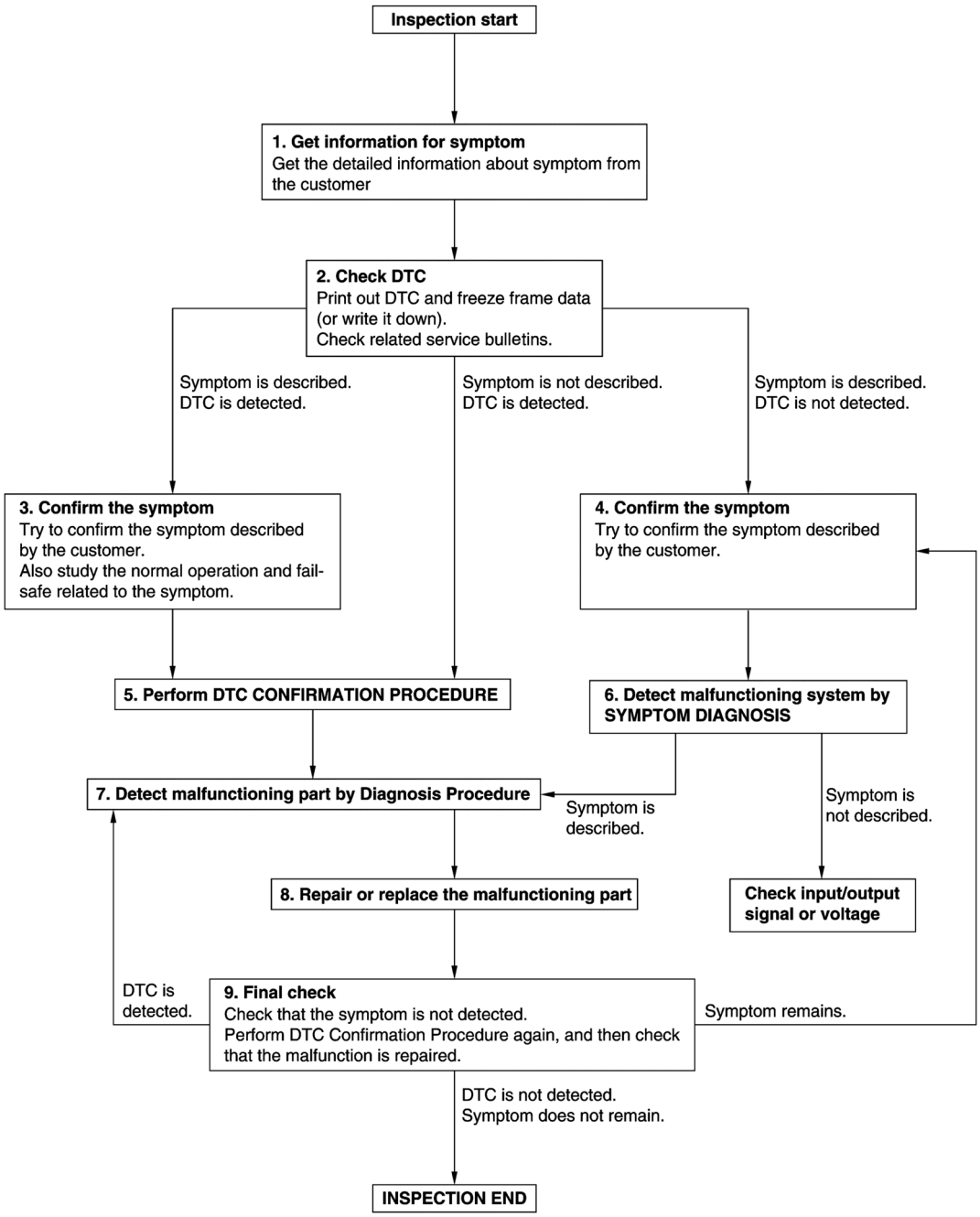
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:0000000009134275

OVERALL SEQUENCE



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DETAILED FLOW

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.

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-53, "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.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check according to GI-53, "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.

DTC/CIRCUIT DIAGNOSIS

U0126 ST ANG SEN SIG

Description

INFOID:0000000009134276

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

DTC Logic

INFOID:0000000009134277

DTC DETECTION LOGIC

NOTE:
If DTC U0126 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to SBC-31, "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-29, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134278

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

Check Self-diagnostic result for ABS with CONSULT. Refer to BRC-36, "CONSULT Function".

Is DTC detected?

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

2. CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

U0428 STRG ANGL CAL

Description

INFOID:0000000009134279

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

DTC Logic

INFOID:0000000009134280

DTC DETECTION LOGIC

NOTE:
If DTC U0428 is displayed with DTC U0126, first perform the trouble diagnosis for DTC U0126. Refer to SBC-29, "Diagnosis Procedure".

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-30, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134281

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

Check Self-diagnostic result for ABS with CONSULT. Refer to BRC-36, "CONSULT Function".

Is DTC detected?

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

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000009134282

- 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-41, "CAN COMMUNICATION SYSTEM : CAN System Specification Chart".

DTC Logic

INFOID:0000000009134283

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)

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-41, "CAN COMMUNICATION SYSTEM : CAN System Specification Chart".
NO >> CAN communication system is normal.

B2451 SEAT BLT MTR DR CIRC

DTC Logic

INFOID:0000000009134284

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-32, "Diagnosis Procedure".
NO >> Driver side pre-crash seat belt motor system is normal.

Diagnosis Procedure

INFOID:0000000009134285

1.INSPECTION START

1. Check Self-diagnostic result with CONSULT.
2. Touch ERASE.
3. Perform DTC Confirmation Procedure. Refer to SBC-32, "DTC Logic".

Is DTC B2451 displayed again?

YES >> Replace pre-crash seat belt control unit (driver side). Refer to SR-29, "Removal and Installation".
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2452 SEAT BLT MTR AS CIRC

DTC Logic

INFOID:0000000009134286

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-33, "Diagnosis Procedure".
NO >> Passenger side pre-crash seat belt motor system is normal.

Diagnosis Procedure

INFOID:0000000009134287

1.INSPECTION START

1. Check Self-diagnostic result with CONSULT.
2. Touch ERASE.
3. Perform DTC Confirmation Procedure. Refer to SBC-33, "DTC Logic".

Is DTC B2452 displayed again?

YES >> Replace pre-crash seat belt control unit (passenger side). Refer to SR-29, "Removal and Installation".
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2453 BR STROKE SEN CIRC

DTC Logic

INFOID:0000000009134288

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2453	BR STROKE SEN CIRC	Circuit of brake pedal stroke sensor output is open or shorted	• Harness or connectors (The sensor circuit is open or shorted) • Pre-crash seat belt control unit (driver side) • Brake pedal 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-34, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134289

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

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

1. Turn ignition switch ON.
2. Select BRK PEDAL SNSR1 and BRK PEDAL SNSR2 in DATA MONITOR mode with CONSULT.
3. Check BRK PEDAL SNSR1 and BRK PEDAL SNSR2 indication under the following conditions.

Monitor item	Condition	Voltage (V) (Approx.)
BRK PEDAL SNSR1	Brake released → depressed	1 → 4
BRK PEDAL SNSR2		4 → 1

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 2.

2.CHECK BRAKE PEDAL STROKE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect brake pedal stroke sensor harness connector.
3. Check voltage between brake pedal stroke sensor harness connector and ground.

Brake pedal stroke sensor		Ground	Voltage (V) (Approx.)
Connector	Terminal		
E51	2		5

Is the inspection result normal?

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

3.CHECK BRAKE PEDAL STROKE SENSOR POWER SUPPLY CIRCUIT

1. Disconnect pre-crash seat belt control unit (driver side) harness connector.
2. Check continuity between pre-crash seat belt control unit (driver side) harness connector and brake pedal stroke sensor harness connector.

Pre-crash seat belt control unit (driver side)		Brake pedal stroke sensor		Continuity
Connector	Terminal	Connector	Terminal	
B58	10	E51	2	Yes

3. 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		
B58	10		No

Is the inspection result normal?

YES >> Replace pre-crash seat belt control unit (driver side). Refer to SR-29, "Removal and Installation".
NO >> Repair or replace harness or connector.

4. CHECK BRAKE PEDAL STROKE SENSOR CIRCUIT

1. Disconnect pre-crash seat belt control unit (driver side) harness connector.
2. Check continuity between pre-crash seat belt control unit (driver side) harness connector and brake pedal stroke sensor harness connector.

Pre-crash seat belt control unit (driver side)		Brake pedal stroke sensor		Continuity
Connector	Terminal	Connector	Terminal	
B58	2	E51	1	Yes
	12		3	
	17		4	

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

Pre-crash seat belt control unit (driver side)		Ground	Continuity
Connector	Terminal		
B58	2		No
	12		
	17		

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness or connector.

5. CHECK BRAKE PEDAL STROKE SENSOR

Refer to SBC-35, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace brake pedal stroke sensor. Refer to SBC-55, "Removal and Installation".

6. CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

Component Inspection

INFOID:0000000009134290

COMPONENT PARTS INSPECTION

1. CHECK BRAKE PEDAL STROKE SENSOR

1. Turn ignition switch OFF.
2. Disconnect brake pedal stroke sensor connector.
3. Check resistance between brake pedal stroke sensor terminal as per the following.

Brake pedal stroke sensor		Condition	Resistance (kΩ) (Approx.)
Terminal			
2	1	Brake released → depressed	1.0 → 0.2
	3		0.2 → 1.0

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace brake pedal stroke sensor. Refer to SBC-55, "Removal and Installation".

B2454 SEAT BLT PWR DR CIRC

DTC Logic

INFOID:0000000009134291

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-37, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134292

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

1.CHECK FUSIBLE LINK

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

Is the inspection result normal?

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

2.CHECK PRE-CRASH SEAT BELT MOTOR POWER SUPPLY

1. Disconnect pre-crash seat belt control unit (driver side) harness 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		
B58	19		Battery voltage

Is the inspection result normal?

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

3.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2455 CONTROL UNIT DR

DTC Logic

INFOID:0000000009134293

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-38, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134294

1..INSPECTION START

1. Check Self-diagnostic result with CONSULT.
2. Touch ERASE.
3. Perform DTC Confirmation Procedure.

Is DTC B2455 displayed again?

YES >> Replace pre-crash seat belt control unit (driver side). Refer to SR-29, "Removal and Installation".
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2456 SEAT BLT PWR AS

DTC Logic

INFOID:0000000009134295

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2456	SEAT BLT PWR AS CIRC	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-39, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134296

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

1.CHECK FUSIBLE LINK

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

Is the inspection result normal?

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

2.CHECK PRE-CRASH SEAT BELT MOTOR POWER SUPPLY

1. Disconnect pre-crash seat belt control unit (passenger side) harness connector.
2. 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		
B160	19		Battery voltage

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 INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2457 CONTROL UNIT AS

DTC Logic

INFOID:0000000009134297

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-40, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134298

1.INSPECTION START

1. Check Self-diagnostic result with CONSULT.
2. Touch ERASE.
3. Perform DTC Confirmation Procedure.

Is DTC B2457 displayed again?

YES >> Replace pre-crash seat belt control unit (passenger side). Refer to SR-29, "Removal and Installation".
NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2458 LOCAL COMM

DTC Logic

INFOID:0000000009134299

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-41, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134300

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

1.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check pre-crash seat belt control unit power supply and ground circuit. Refer to SBC-48, "Diagnosis Procedure".

Is the inspection result normal?

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

2.CHECK LOCAL COMMUNICATION LINE CIRCUIT

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

Pre-crash seat belt control unit (driver side)		Pre-crash seat belt control unit (passenger side)		Continuity
Connector	Terminal	Connector	Terminal	
B58	8	B160	8	Yes
	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		
B58	8		No
	16		

Is the inspection result normal?

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

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

1. Replace pre-crash seat belt control unit (passenger side). Refer to SR-29, "Removal and Installation".
2. Check Self-diagnostic result with CONSULT.

Is DTC detected?

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). Refer to SR-29, "Removal and Installation".
2. Check Self-diagnostic result with CONSULT.

Is DTC detected?

YES >> GO TO 5.
NO >> Inspection End.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2461 VHCL SPEED SIGNAL

Description

INFOID:0000000009134301

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

DTC Logic

INFOID:0000000009134302

DTC DETECTION LOGIC

NOTE:
If DTC B2461 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to SBC-31, "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-43, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134303

1.CHECK COMBINATION METER

Check combination meter self-diagnostics. Refer to MWI-17, "Description".

Is the inspection result normal?

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

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2463 ROLLOVER SIGNAL

Description

INFOID:0000000009134304

Inputs the rollover signal from air bag diagnosis sensor unit via CAN communication.

DTC Logic

INFOID:0000000009134305

DTC DETECTION LOGIC

NOTE:
If DTC B2463 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to SBC-31, "DTC Logic".

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2463	ROLLOVER SIGNAL	Receipt of a malfunction signal of the rollover signal	Air bag diagnosis sensor unit

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-44, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134306

1.CHECK DTC WITH AIR BAG DIAGNOSIS SENSOR UNIT

Check “self-diagnostic result” for “AIR BAG DIAGNOSIS SENSOR UNIT” with CONSULT. Refer to SRC-17, "CONSULT Function (AIR BAG)".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace air bag diagnosis sensor unit. Refer to SR-27, "Removal and Installation".

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2466 DR/AS CONTROL UNIT

DTC Logic

INFOID:0000000009134307

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-45, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134308

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-53, "Intermittent Incident".

>> Inspection End.

B2470 SYS HEAT PROTC DR

Description

INFOID:0000000009134309

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:0000000009134310

DTC DETECTION LOGIC

DTC No.	Self-diagnosis item	DTC Detection Condition	Possible causes
B2470	SYS HEAT PROTC DR	Deactivates to prevent excessive heating	Comfort 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-46, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134311

1.CHECK THE VEHICLE CONDITION WITH CONSULT DATA MONITOR

1. Check HEAT PROTC LH in DATA MONITOR with CONSULT.
2. Wait until OFF appears.
3. Perform the self-diagnosis result with CONSULT, after performing the check.
4. Touch ERASE.
5. Perform DTC Confirmation Procedure. Refer to SBC-46, "DTC Logic".

Is DTC B2470 displayed again?

YES >> GO TO 2.
NO >> Inspection End.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

B2471 SYS HEAT PROTC AS

Description

INFOID:0000000009134312

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:0000000009134313

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-47, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000009134314

1.CHECK THE VEHICLE CONDITION WITH CONSULT DATA MONITOR

1. Check HEAT PROTC RH in DATA MONITOR with CONSULT.
2. Wait until OFF appears.
3. Perform the self-diagnosis results with CONSULT, after performing the check.
4. Touch ERASE.
5. Perform DTC Confirmation Procedure. Refer to SBC-47, "DTC Logic".

Is DTC B2471 displayed again?

YES >> GO TO 2.
NO >> Inspection End.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-53, "Intermittent Incident".

>> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000009134315

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

1.CHECK POWER SUPPLY CIRCUIT - 1

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

Pre-crash seat belt control unit		Ground	Voltage (Approx.)
Connector	Terminal		
B58 (Driver side)	1		Battery voltage
B160 (Passenger side)			

Is the inspection result normal?

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

2.CHECK POWER SUPPLY CIRCUIT - 2

1. Disconnect fuse block (J/B) harness connector.
2. Check continuity between pre-crash seat belt control unit (driver side and passenger side) harness connector and fuse block (J/B) harness connector.

Pre-crash seat belt control unit		Fuse block (J/B)		Continuity
Connector	Terminal	Connector	Terminal	
B58 (Driver side)	1	M68	3R	Yes
B160 (Passenger side)				

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

Pre-crash seat belt control unit		Ground	Continuity
Connector	Terminal		
B58 (Driver side)	1		No
B160 (Passenger side)			

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT

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

Pre-crash seat belt control unit		Ground	Continuity
Connector	Terminal		
B58 (Driver side)	18		Yes
	20		
B160 (Passenger side)	18		
	20		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair harness or connector.

SEAT BELT BUCKLE SWITCH (DRIVER SIDE)

Component Function Check

INFOID:0000000009134316

1.CHECK SEAT BELT BUCKLE SWITCH CIRCUIT (DRIVER SEAT)

Check BUCKLE SW LH on DATA MONITOR.

Data Monitor Item	Condition	CONSULT
BUCKLE SW LH	Seat belt buckle (LH) fastened	ON
	Seat belt buckle (LH) unfastened	OFF

Is the inspection result normal?

YES >> Inspection End.
NO >> Check seat belt buckle switch (driver seat). Refer to SBC-50, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009134317

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

1.CHECK PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE) OUTPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch (driver seat) harness connector.
3. Turn ignition switch ON.
4. Check voltage between seat belt buckle switch (driver seat) harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
Seat belt buckle switch (driver seat)			
Connector	Terminal		
B221	2	Ground	5

Is the inspection result normal?

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

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

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

Pre-crash seat belt control unit (driver side)		Seat belt buckle switch (driver seat)		Continuity
Connector	Terminal	Connector	Terminal	
B58	6	B221	2	Yes

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		
B58	6		No

Is the inspection result normal?

YES >> Replace pre-crash seat belt control unit (driver side). Refer to SR-29, "Removal and Installation".
NO >> Repair or replace harness or connector.

3.CHECK SEAT BELT BUCKLE SWITCH (DRIVER SEAT) GROUND CIRCUIT

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

Seat belt buckle switch (driver seat)		Ground	Continuity
Connector	Terminal		
B221	3		Yes

Is the inspection result normal?

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

4. CHECK SEAT BELT BUCKLE SWITCH (DRIVER SEAT)

Check seat belt buckle switch (driver seat). Refer to SBC-51, "Component Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace seat belt buckle switch (driver seat). Refer to SR-30, "Removal and Installation".

Component Inspection

INFOID:0000000009134318

1. CHECK SEAT BELT BUCKLE SWITCH (DRIVER SEAT)

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch (driver seat) harness connector.
3. Check continuity between seat belt buckle switch (driver seat) terminals.

Seat belt buckle switch (driver seat)		Condition	Continuity
Terminal			
3	4	Seat belt buckle (driver seat) is fastened	No
		Seat belt buckle (driver seat) is not fastened	Yes
	2	Seat belt buckle (driver seat) is fastened	Yes
		Seat belt buckle (driver seat) is not fastened	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace seat belt buckle switch (driver seat). Refer to SR-30, "Removal and Installation".

SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

Component Function Check

INFOID:0000000009134319

1.CHECK SEAT BELT BUCKLE SWITCH CIRCUIT (PASSENGER SEAT)

Check BUCKLE SW RH on DATA MONITOR.

Data Monitor Item	Condition	CONSULT
BUCKLE SW RH	Seat belt buckle (passenger seat) fastened	ON
	Seat belt buckle (passenger seat) unfastened	OFF

Is the inspection result normal?

YES >> Inspection End.
NO >> Check seat belt buckle switch (passenger seat). Refer to SBC-52, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000009134320

Regarding Wiring Diagram information, refer to SBC-17, "Wiring Diagram".

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

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch (passenger seat) harness connector.
3. Turn ignition switch ON.
4. Check voltage between seat belt buckle switch (passenger seat) harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
Seat belt buckle switch (passenger seat)			
Connector	Terminal		
B303	2	Ground	5

Is the inspection result normal?

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

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

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

Pre-crash seat belt control unit (passenger side)		Seat belt buckle switch (passenger seat)		Continuity
Connector	Terminal	Connector	Terminal	
B160	6	B303	2	Yes

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

Pre-crash seat belt control unit (passenger side)		Ground	Continuity
Connector	Terminal		
B160	6		No

Is the inspection result normal?

YES >> Replace pre-crash seat belt control unit (passenger side). Refer to SR-29, "Removal and Installation".
NO >> Repair or replace harness or connector.

3.CHECK SEAT BELT BUCKLE SWITCH (PASSENGER SEAT) GROUND CIRCUIT

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

Seat belt buckle switch (passenger seat)		Ground	Continuity
Connector	Terminal		
B303	3		Yes

Is the inspection result normal?

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

4.CHECK SEAT BELT BUCKLE SWITCH (PASSENGER SEAT)

Check seat belt buckle switch (passenger seat). Refer to SBC-53, "Component Inspection".

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace seat belt buckle switch (passenger seat). Refer to SR-30, "Removal and Installation".

Component Inspection

INFOID:0000000009134321

1.CHECK SEAT BELT BUCKLE SWITH (PASSENGER SEAT)

1. Turn ignition switch OFF.
2. Disconnect seat belt buckle switch (passenger seat) harness connector.
3. Check continuity between seat belt buckle switch (passenger seat) terminals.

Seat belt buckle switch (passenger seat)		Condition	Continuity
Terminal			
3	4	Seat belt buckle (passenger seat) is fastened	No
		Seat belt buckle (passenger seat) is not fastened	Yes
	2	Seat belt buckle (passenger seat) is fastened	Yes
		Seat belt buckle (passenger seat) is not fastened	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace seat belt buckle switch (passenger seat). Refer to SR-30, "Removal and Installation".

SYMPTOM DIAGNOSIS

PRE-CRASH SEAT BELT DOES NOT OPERATE

Diagnosis Procedure

INFOID:0000000009134322

1. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check power supply and ground circuit. Refer to SBC-48, "Diagnosis Procedure".

Is the inspection result normal?

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

2. CHECK SEAT BELT BUCKLE SWITCH (LH)

Check seat belt buckle switch (LH). Refer to SBC-50, "Component Function Check".

Is the inspection result normal?

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

3. CHECK SEAT BELT BUCKLE SWITCH (RH)

Check seat belt buckle switch (RH). Refer to SBC-52, "Component Function Check".

Is the inspection result normal?

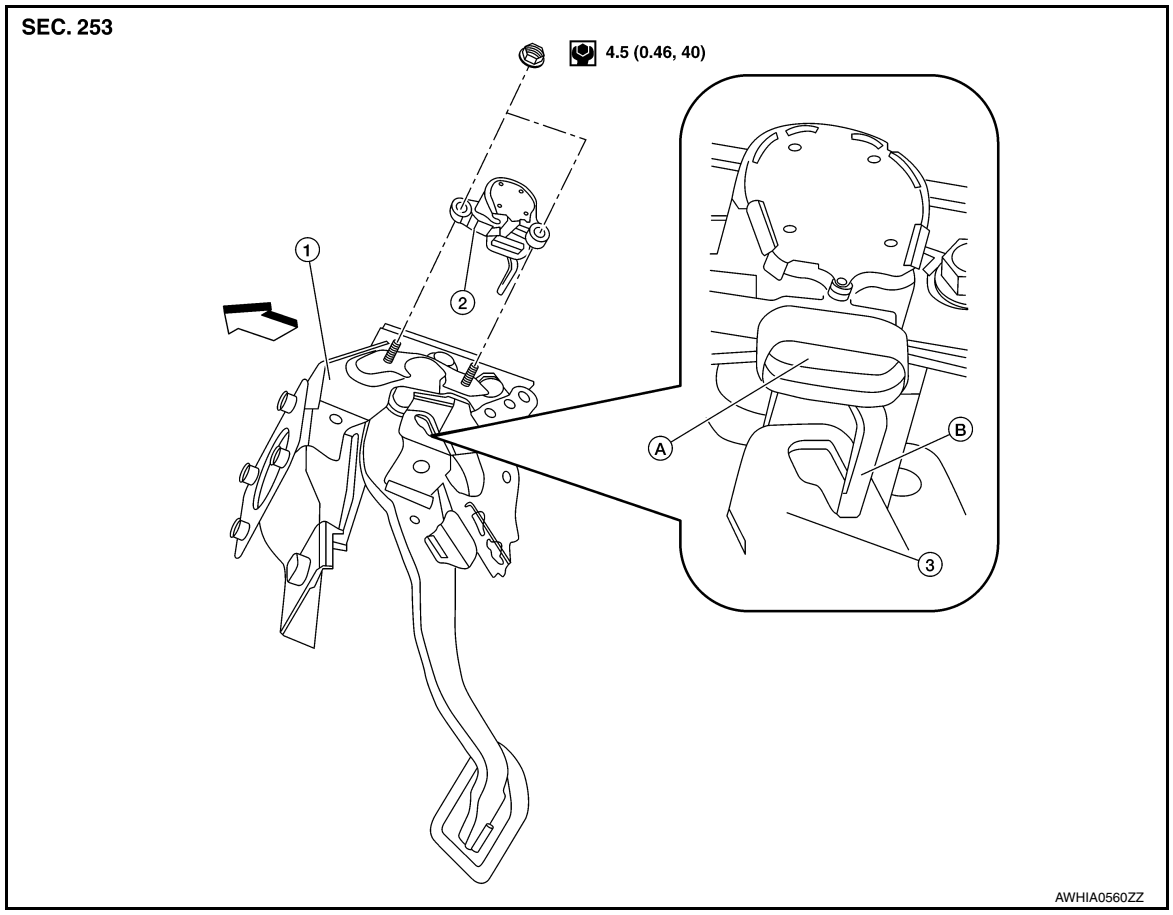
YES >> Inspection End.
NO >> Repair or replace the malfunctioning parts.

REMOVAL AND INSTALLATION

BRAKE PEDAL STROKE SENSOR

Exploded View

INFOID:0000000009134323



1. Brake pedal assembly
2. Brake pedal stroke sensor
3. Brake pedal sensor bracket
A. Brake pedal stroke sensor connector
B. Brake pedal stroke sensor lever
⇦ Front

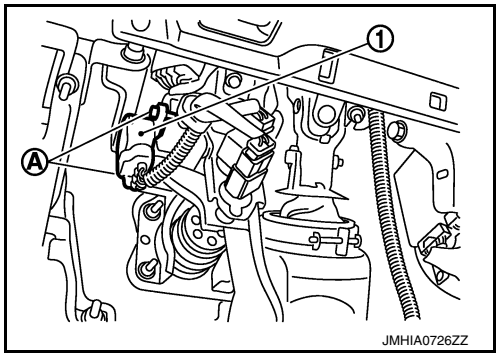
Removal and Installation

INFOID:0000000009134324

CAUTION:
- **Replace the brake pedal stroke sensor if it has been dropped or sustained an impact.**
- **Do not use air tools or electric tools for servicing.**

REMOVAL

1. Remove the instrument lower panel LH. Refer to IP-25, "Removal and Installation".
2. Disconnect the harness connector from brake pedal stroke sensor.
3. Remove brake booster rod cotter pin and clevis pin.
4. Remove the two brake pedal stroke sensor nuts (A).
5. Remove the brake pedal stroke sensor (1).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

1. **Align brake pedal stroke sensor lever with the slot in brake pedal sensor bracket, or damage may occur.**
2. **Confirm output voltage of brake pedal stroke signal 1 and 2 using CONSULT. Refer to SBC-11, "Reference Value".**

NOTE:

After installation, press the brake pedal approximately 10 mm to break the stroke sensor pin.