

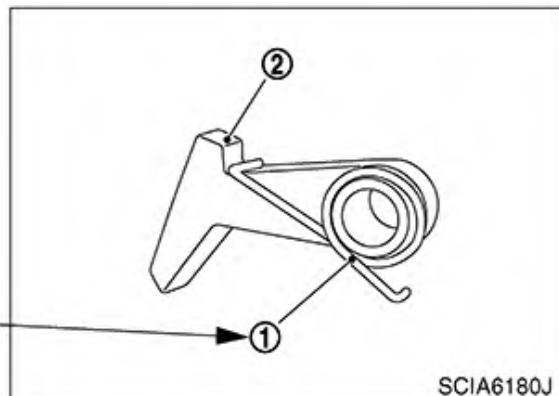
Relation between Illustrations and Descriptions

The following sample explains the relationship between the part description in an illustration, the part name in the text and the service procedures.

< Example 1 >

1. Remove return spring (1) from parking pawl (2).

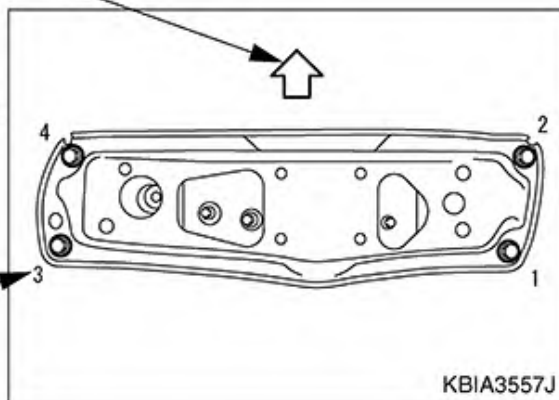
The identifier number of the part name in the text is consistent with the identifier part number in the illustration.



< Example 2 >

-  : Vehicle front
- Tighten rear member mounting bolts following the numerical order shown in the illustration.
- Note : View upward

The numbers in the illustration are consistent with the service operation instructions.

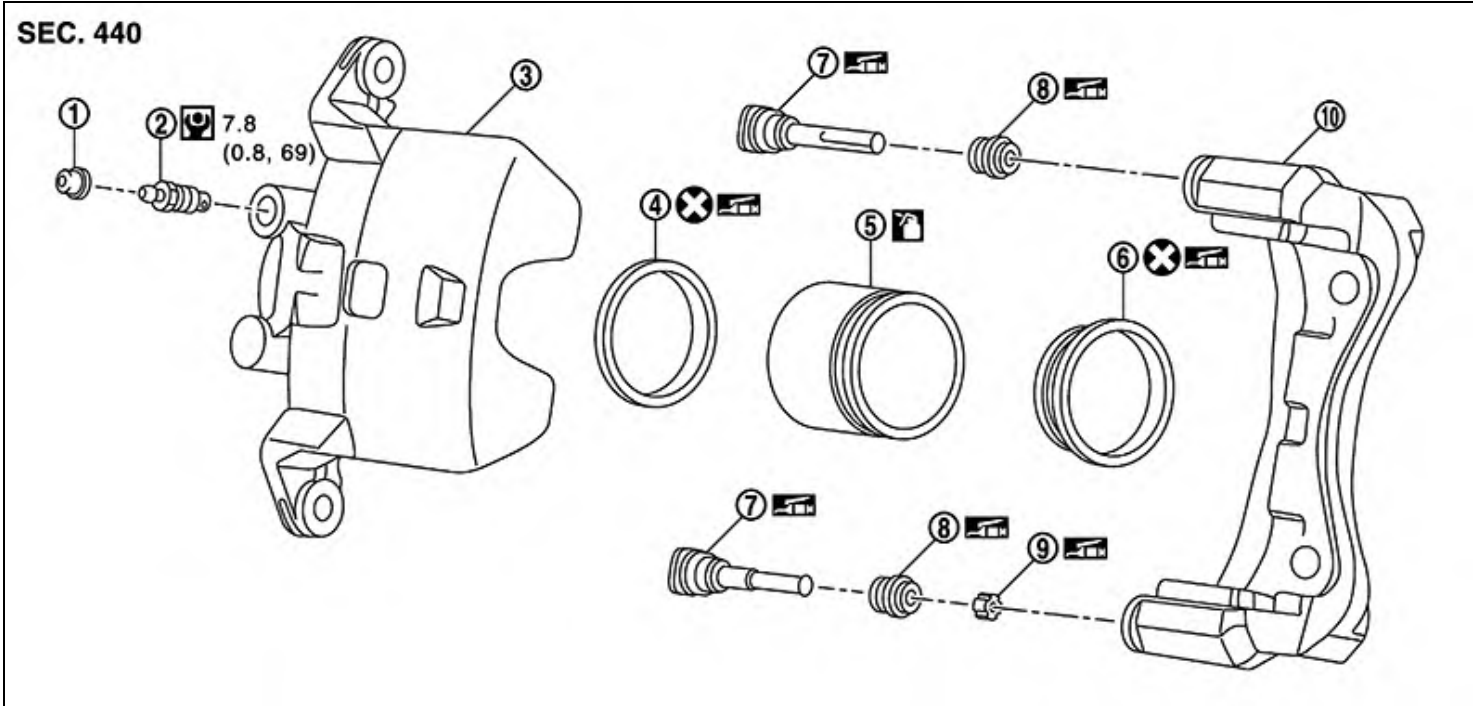


Components

- **THE LARGE ILLUSTRATIONS** are exploded views (see the following) and contain tightening torques, lubrication points, section number of the **PARTS CATALOG** (e.g. SEC. 440) and other information necessary to perform repairs.

The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG**.

Components shown in an illustration may be identified by a circled number. When this style of illustration is used, the text description of the components will follow the illustration.



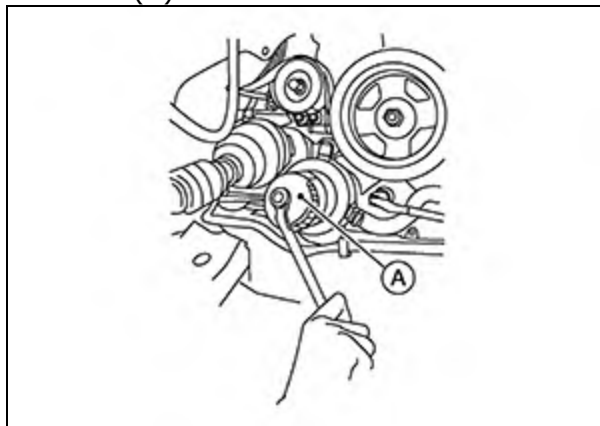
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1.	Cap	2.	Bleeder valve	3.	Cylinder body
4.	Piston seal	5.	Piston	6.	Piston boot
7.	Sliding pin	8.	Sliding pin boot	9.	Bushing
10.	Torque member				
	: Apply rubber grease.				
	: Apply brake fluid.				
	: N·m (kg·m, in-lb)				
	: Always replace after every disassembly				

SYMBOLS

REMOVAL

- 1 Drain engine oil. Refer to [Changing Engine Oil](#).
- 2 Remove front fender protector side cover (RH). Refer to [Exploded View](#).
- 3 Remove the oil filter using suitable tool (A) as shown.



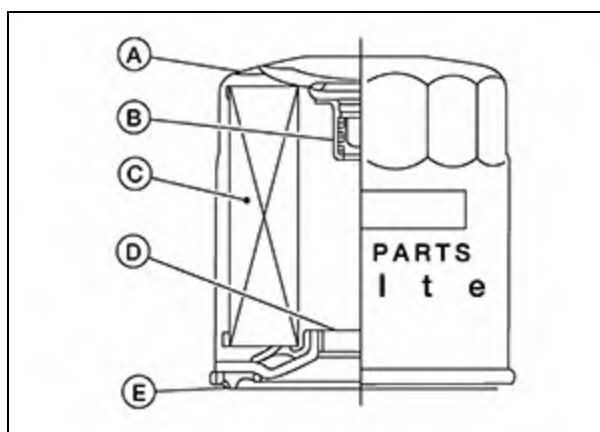
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WARNING:

Be careful not to get burned; the engine oil may be hot.

CAUTION:

- Position a shop cloth to absorb any oil leaks or spills.
- Do not allow engine oil to contact the drive belts.
- Completely wipe off any oil that contacts to the engine or the vehicle.
- The oil filter is provided with a relief valve. Use a genuine NISSAN oil filter or equivalent



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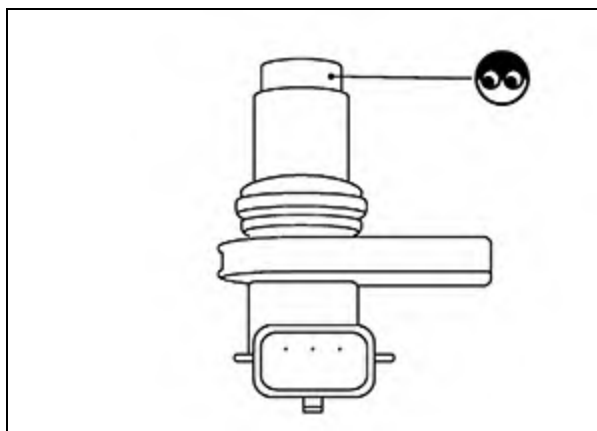
(A)	Oil filter body
(B)	Relief valve
(C)	Filtering paper
(D)	Screw

Component Inspection (Exhaust Valve Timing Control Position Sensor)

SIEMD-4798478

1. EXHAUST VALVE TIMING CONTROL POSITION SENSOR - 1

1. Turn ignition switch OFF.
2. Disconnect exhaust valve timing control position sensor harness connector.
3. Loosen the fixing bolt of the sensor.
4. Remove the sensor. Refer to [Exploded View](#).
5. Visually check the sensor for chipping.



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Is the inspection result normal?

YES>>

[GO TO 2.](#)

NO>>

Replace malfunctioning exhaust valve timing control position sensor. Refer to [Exploded View](#).

2. EXHAUST VALVE TIMING CONTROL POSITION SENSOR - 2

Check resistance exhaust valve timing control position sensor terminals as follows.

Exhaust valve timing control position sensor		Condition		Resistance
+	-			
Terminal				
1	2	Temperature	25°C (77°F)	Except 0 Ω or ∞Ω
1	3			
2	3			

Is the inspection result normal?

YES>>

INSPECTION END

DTC	A/F sensor 1			ECM		Continuity
	Bank	Connector	Terminal	Connector	Terminal	
P0172	1	F12	3	F14	66	Existed
			4		67	
P0175	2	F61	3		76	
			4		77	

5. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

DTC	A/F sensor 1			Ground	Continuity
	Bank	Connector	Terminal		
P0172	1	F12	3	Ground	Not existed
			4		
P0175	2	F61	3		
			4		

DTC	ECM		Ground	Continuity
	Connector	Terminal		
P0172	F14	66	Ground	Not existed
		67		
P0175		76		
		77		

6. Also check harness for short to power.

Is the inspection result normal?

YES>>

[GO TO 4.](#)

NO>>

Repair open circuit, short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

1. Release fuel pressure to zero. Refer to [Work Procedure](#).
2. Install fuel pressure gauge kit [SST: — (J-44321)] and check fuel pressure. Refer to [Work Procedure](#).

[At idling: Approximately 350 kPa \(3.5 bar, 3.57 kg/cm², 51 psi\)](#)

Is the inspection result normal?

YES>>

[GO TO 5.](#)

NO>>

Replace “fuel filter and fuel pump assembly”. Refer to [Removal and Installation](#).

DTC DETECTION LOGIC

- An excessively low voltage from the APP sensor 1 is sent to ECM.
- An excessively high voltage from the APP sensor 1 is sent to ECM.

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	
P2122	APP SEN 1/CIRC (Throttle/Pedal position sensor/switch "D" circuit low)	Signal (terminal)	Voltage signal transmitted from APP sensor 1 to ECM
		Threshold	An excessively low voltage is sent to ECM
		Diagnosis delay time	—
P2123	APP SEN 1/CIRC (Throttle/Pedal position sensor/switch "D" circuit high)	Diagnosis condition	Start engine and let it idle
		Signal (terminal)	Voltage signal transmitted from APP sensor 1 to ECM
		Threshold	An excessively high voltage is sent to ECM
		Diagnosis delay time	—

POSSIBLE CAUSE

DTC P2122

- Harness or connectors
(APP sensor 1 circuit is open or shorted.)
- Accelerator pedal position sensor
(APP sensor 1)

DTC P2123

- Harness or connectors
(APP sensor 1 circuit is open or shorted.)
- Accelerator pedal position sensor
(APP sensor 1)

FAIL-SAFE

Engine operating condition in fail-safe mode	
Fail safe mode	Vehicle behavior
Accelerator pedal position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.

DTC DETECTION LOGIC

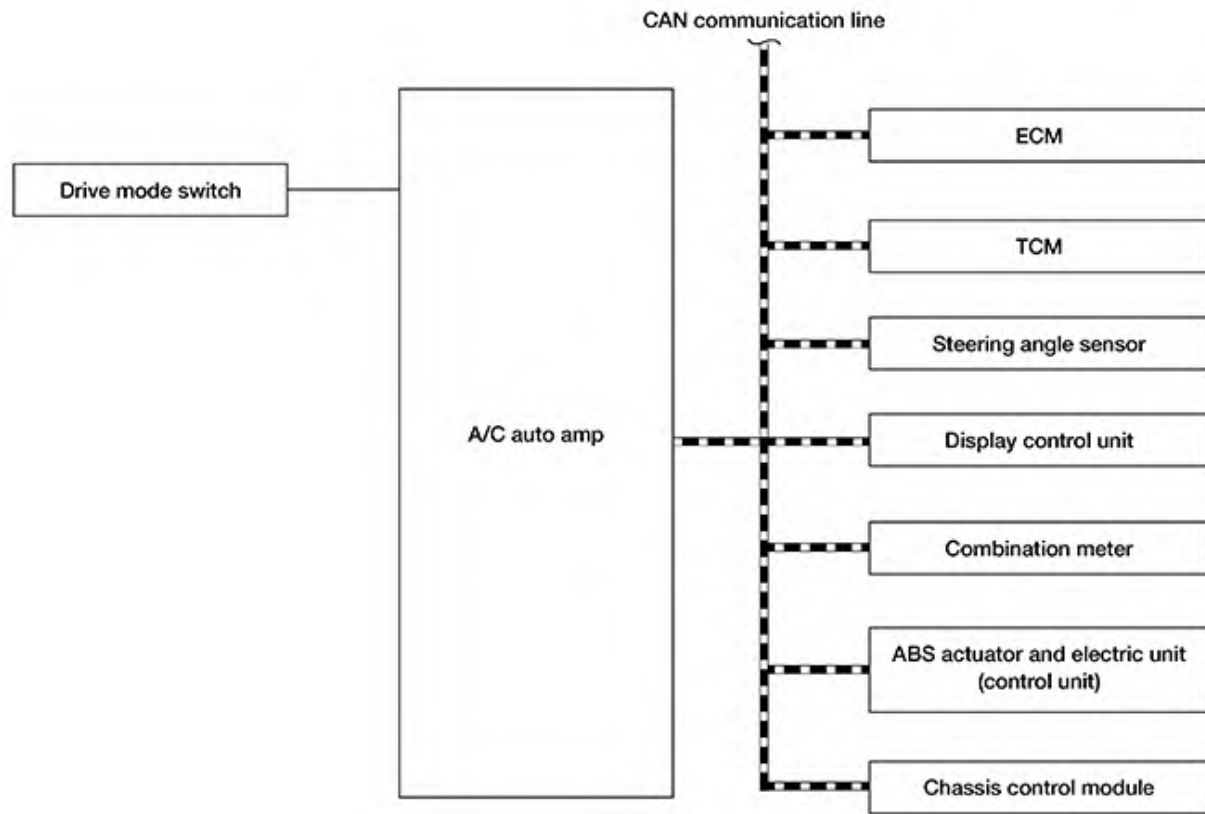
DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0712	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor A Circuit Low)	Diagnosis condition	TCM power supply voltage: More than 11 V
		Signal	CVT fluid temperature sensor signal
		Threshold	Fluid temperature sensor detection voltage: 0.15 V or less
		Diagnosis delay time	Maintained for 5 seconds

POSSIBLE CAUSE

- Harness or connector (CVT fluid temperature sensor circuit is shorted to ground)
- CVT fluid temperature sensor

FAIL-SAFE

- Engine coolant temperature when engine start: Temp. $\geq 10^{\circ}\text{C}$ (50°F)
 - Start is slow
 - Acceleration is slow
- Engine coolant temperature when engine start: -35°C (-31°F) $\leq$ Temp. $< 10^{\circ}\text{C}$ (50°F)
 - Selector shock is large
 - Start is slow
 - Acceleration is slow
- Engine coolant temperature when engine start: Temp. $< -35^{\circ}\text{C}$ (-31°F)
 - Selector shock is large
 - Start is slow
 - Acceleration is slow



SIEMD-4784321-04-LFIA0599GB

INPUT SIGNAL AND OUTPUT SIGNAL

Major signal transmission between each unit via communication lines is shown in the following table.

Component	Signal description
ECM	Mainly transmits the following signals to chassis control module via CAN communication: • Accelerator pedal position signal • Engine torque signal • Engine speed signal
TCM	Mainly transmits the following signal to chassis control module via CAN communication: • Current gear position signal
ABS actuator and electric unit (control unit)	Mainly transmits the following signals to chassis control module via CAN communication: • Front LH wheel speed signal • Front RH wheel speed signal • Rear LH wheel speed signal • Rear RH wheel speed signal

REMOVAL

CAUTION:

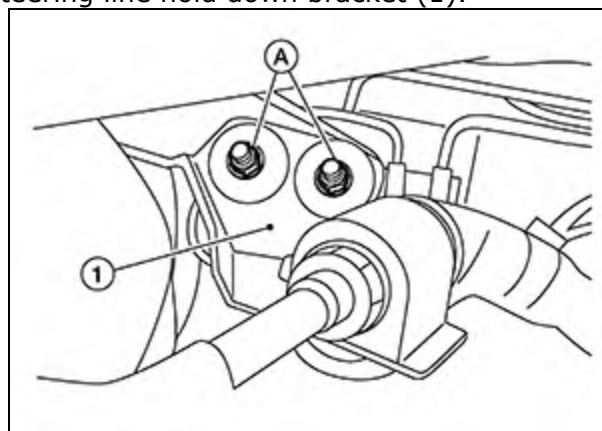
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged.
- Do not remove actuator by holding harness.



NOTE:

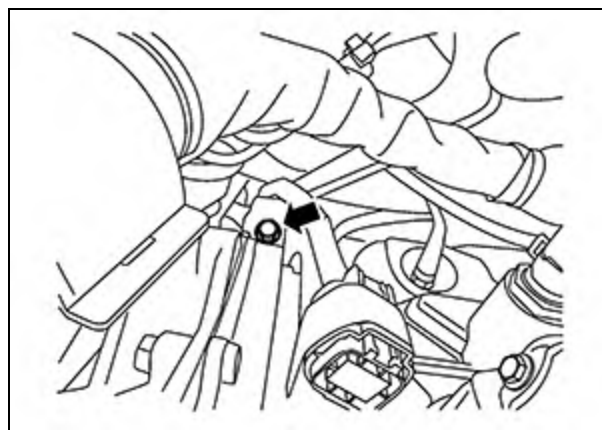
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1 Disconnect battery negative terminal. Refer to [Battery Disconnect](#).
- 2 Remove cowl top and cowl top extension. Refer to [Removal and Installation](#).
- 3 Remove nuts (A) and power steering line hold down bracket (1).



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- 4 Disconnect harness connector from ABS actuator and electric unit (control unit) and position aside.
- 5 Loosen brake tube flare nuts using a suitable tool, then remove brake tubes from ABS actuator and electric unit (control unit) and position aside. Refer to [Exploded View](#).
- 6 Remove harness bracket bolt.



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- 7 Remove ABS actuator and electric unit (control unit) and bracket as an assembly.

1. CHECK FUSE

Check fuses [Nos. 14, 21 and 30, located in the fuse block (J/B)].



NOTE:
Refer to [Wiring Diagram](#).

Is the inspection result normal?

YES>>

[GO TO 2.](#)

NO>>

Replace the blown fuse after repairing the affected circuit.

2. CHECK A/C AUTO AMP. POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect A/C auto amp. connector.
3. Check voltage between A/C auto amp. harness connector and ground.

+		—	Voltage		
A/C auto amp.			Ignition switch position		
Connector	Terminal		OFF	ACC	ON
M37	3	Ground	Battery voltage	Battery voltage	Battery voltage
	13		Approx. 0 V	Battery voltage	Battery voltage
	23		Approx. 0 V	Approx. 0 V	Battery voltage

Is the inspection result normal?

YES>>

[GO TO 3.](#)

NO>>

Repair harness or connector between A/C auto amp. and fuse block (J/B).

3. CHECK A/C AUTO AMP. GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/C auto amp. harness connector and ground.

1. CHECK SELF DIAGNOSTIC RESULT 1

CONSULT

1. Select "Self Diagnostic Result" mode of "BCM".
2. Erase DTC.
3. Perform DTC CONFIRMATION PROCEDURE for DTC B2195. Refer to [DTC Description](#).

Is DTC detected?

YES>>

[GO TO 2.](#)

NO>>

Inspection End.

2. CHECK EQUIPMENT OF THE VEHICLE

Check that unspecified accessory part related to engine start is not installed.

Is unspecified accessory part related to engine start installed?

YES>>

[GO TO 3.](#)

NO>>

[GO TO 4.](#)

3. CHECK SELF DIAGNOSTIC RESULT 2

CONSULT

1. Obtain the customers approval to remove unspecified accessory part related to engine start, and then remove it.
2. Select "Self Diagnostic Result" mode of "BCM".
3. Erase DTC.
4. Perform DTC CONFIRMATION PROCEDURE for DTC B2195. Refer to [DTC Description](#).

Is DTC detected?

YES>>

[GO TO 4.](#)

NO>>

Inspection End.

2. Disconnect optical sensor connector and BCM connector.

3. Check continuity between optical sensor harness connector and BCM harness connector.

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M66	3	M21	17	Yes

Is the inspection result normal?

YES>>

Replace BCM. Refer to [Removal and Installation](#).

NO>>

Repair or replace harness.

7. CHECK OPTICAL SENSOR SIGNAL CIRCUIT (OPEN)

1. Turn ignition switch OFF.

2. Disconnect optical sensor connector and BCM connector.

3. Check continuity between optical sensor harness connector and BCM harness connector.

Optical sensor		BCM		Continuity
Connector	Terminal	Connector	Terminal	
M66	2	M21	4	Yes

Is the inspection result normal?

YES>>

[GO TO 8.](#)

NO>>

Repair or replace harness.

8. CHECK OPTICAL SENSOR CIRCUIT (SHORT)

Check continuity between optical sensor harness connector and ground.

Optical sensor		Ground	Continuity
Connector	Terminal		
M66	2		No

Is the inspection result normal?

YES>>

Replace BCM. Refer to [Removal and Installation](#).

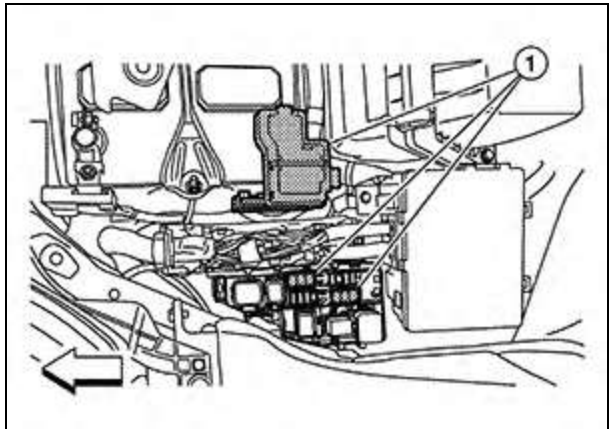
NO>>

Repair or replace harness.

DATA MONITOR

Monitor Item [Unit]	Main	Description
REQ SW -DR [On/Off]	×	Indicates condition of door request switch LH
REQ SW -AS [On/Off]	×	Indicates condition of door request switch RH
REQ SW -BD/TR [On/Off]	×	Indicates condition of trunk opener request switch
PUSH SW [On/Off]		Indicates condition of push button ignition switch
SHFTLCK SLNID PWR SPLY [On/Off]		Indicates condition of shiftlock solenoid power supply
BRAKE SW 1 [On/Off]	×	Indicates condition of brake switch
BRAKE SW 2 [On/Off]		Indicates condition of brake switch
DETE/CANCL SW [On/Off]	×	Indicates condition of P position
SFT PN/N SW [On/Off]	×	Indicates condition of P or N position
UNLK SEN -DR [On/Off]	×	Indicates condition of door unlock sensor
PUSH SW -IPDM [On/Off]		Indicates condition of push button ignition switch received from IPDM E/R on CAN communication line
IGN RLY1 -F/B [On/Off]		Indicates condition of ignition relay 1 received from IPDM E/R on CAN communication line
DETE SW -IPDM [On/Off]		Indicates condition of detent switch received from TCM on CAN communication line
SFT PN -IPDM [On/Off]		Indicates condition of P or N position from TCM on CAN communication line
SFT P -MET [On/Off]		Indicates condition of P position from TCM on CAN communication line
SFT N -MET [On/Off]		Indicates condition of N position from IPDM E/R on CAN communication line
ENGINE STATE [Stop/Start/Crank/Run]	×	Indicates condition of engine state from ECM on CAN communication line
VEH SPEED 1 [mph/km/h]	×	Indicates condition of vehicle speed signal received from ABS on CAN communication line
VEH SPEED 2 [mph/km/h]	×	Indicates condition of vehicle speed signal received from combination meter on CAN communication line
DOOR STAT-DR [LOCK/READY/UNLK]	×	Indicates condition of driver side door status.
DOOR STAT-AS [LOCK/READY/UNLK]	×	Indicates condition of passenger side door status.
DOOR STAT-RR [LOCK/READY/UNLK]	×	Indicates condition of rear right side door status.
DOOR STAT-RL [LOCK/READY/UNLK]	×	Indicates condition of rear left side door status.
ID OK FLAG [Set/Reset]		Indicates condition of Intelligent Key ID
PRMT ENG STRT [Set/Reset]		Indicates condition of engine start possibility from Intelligent Key
I-KEY OK FLAG [Set/Reset]		Indicates condition of Intelligent Key ID.

A melted fusible link can be detected either by visual inspection or by feeling with finger tip. If its condition is questionable, use circuit tester or test lamp.

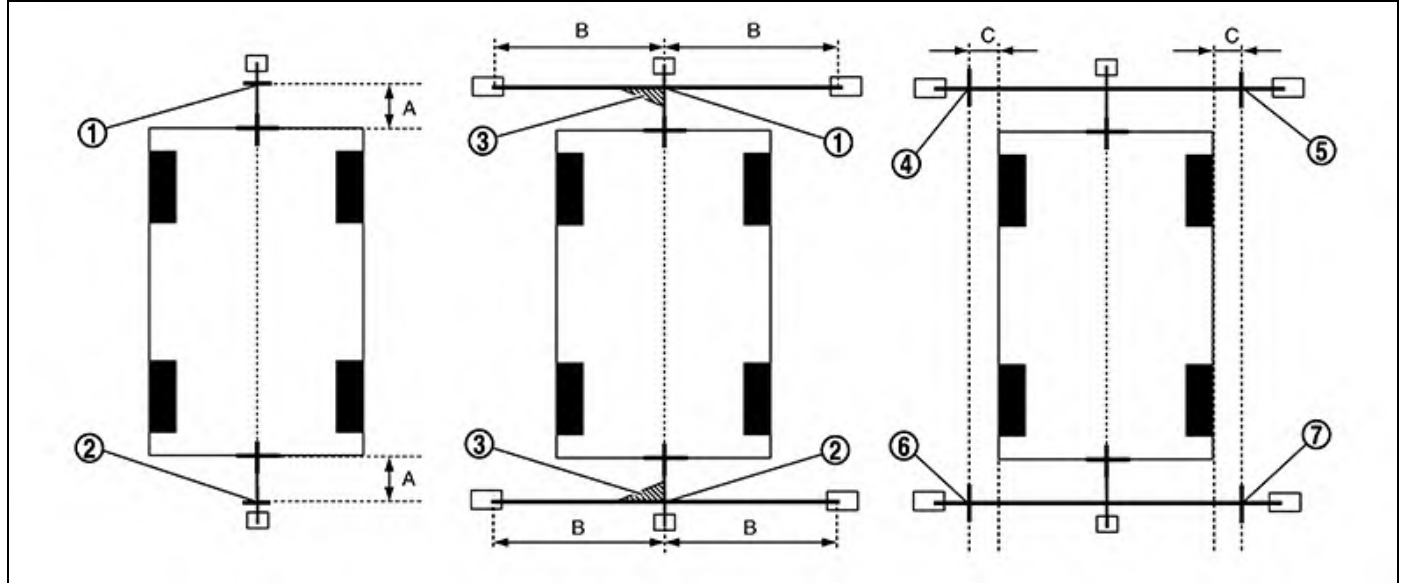


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1	: Fusible link
 : Vehicle front	

CAUTION:

- **If fusible link should melt, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such a case, carefully check and eliminate cause of malfunction.**
- **Never wrap outside of fusible link with vinyl tape. Important: Never let fusible link touch any other wiring harness, vinyl or rubber parts.**

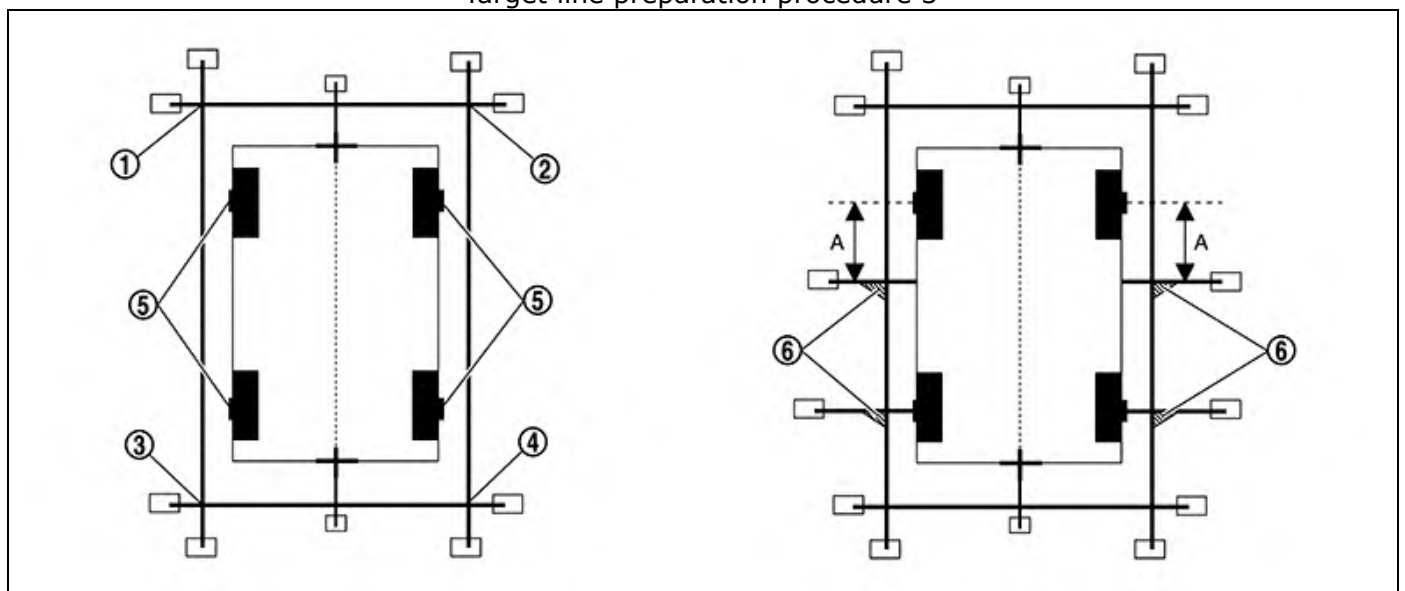


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1.	Point FM	2.	Point RM	3.	Triangle scale
4.	Point FL (mark)	5.	Point FR (mark)	6.	Point RL (mark)
7.	Point RR (mark)				
A.	75 cm (29.53 in)	B.	Approximately 1.5 m (59.06 in)	C:	30 cm (11.81 in) [A half of the vehicle width plus 30 cm (11.81 in) from the points FM and RM]

6. Draw the lines of the points FL – RL and FR – RR with the vinyl string, and fix them with packing tape.
7. Put a mark at the center of front axle. Use a triangle ruler to draw a line at the position 1 m (39.37 in) backward from the mark placed at the center of front axle so that the line becomes perpendicular to the line drawn between point FL-RL and point FR-RR and fix with packing tape.
8. Put a mark at the center of rear axle. Use a triangle ruler to draw a line at the position 1 m (39.37 in) backward from the mark placed at the center of rear axle so that the line becomes perpendicular to the line drawn between point FL-RL and point FR-RR and fix with packing tape.

Target line preparation procedure 3



SIEMD-4788079-06-SNIA6184ZZ

1.	Point FL	2.	Point FR	3.	Point RL
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