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PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000010779471

- With the adoption of Auto ACC function, ACC power is automatically supplied by operating the intelligent key or remote keyless entry or by opening/closing the driver side door. In addition, ACC power is supplied even after the ignition switch is turned to the OFF position, i.e. ACC power is supplied for a certain fixed time.
- When disconnecting the 12V battery terminal, turn off the ACC power before disconnecting the 12V battery terminal, observing "How to disconnect 12V battery terminal" described below.

NOTE:

Some ECUs operate for a certain fixed time even after ignition switch is turned OFF and ignition power supply is stopped. If the battery terminal is disconnected before ECU stops, accidental DTC detection or ECU data damage may occur.

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

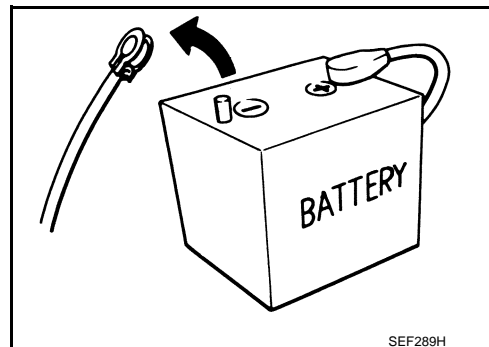
NOTE:

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

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

NOTE:

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



HOW TO DISCONNECT 12V BATTERY TERMINAL

Disconnect 12V battery terminal according to Instruction 1 or Instruction 2 described below.

For vehicles parked by ignition switch OFF, refer to Instruction 2.

INSTRUCTION 1

1. Open the hood.
2. Turn key switch to the OFF position with the driver side door opened.
3. Get out of the vehicle and close the driver side door.
4. Wait at least 3 minutes. For vehicle with the engine listed below, remove the battery terminal after a lapse of the specified time.

D4D engine	: 20 minutes
HRA2DDT	: 12 minutes
K9K engine	: 4 minutes
M9R engine	: 4 minutes
R9M engine	: 4 minutes
V9X engine	: 4 minutes

CAUTION:

While waiting, never operate the vehicle such as locking, opening, and closing doors. Violation of this caution results in the activation of ACC power supply according to the Auto ACC function.

5. Remove 12V battery terminal.

CAUTION:

After installing 12V battery, always check self-diagnosis results of all ECUs and erase DTC.

INSTRUCTION 2 (FOR VEHICLES PARKED BY IGNITION SWITCH OFF)

1. Unlock the door with intelligent key or remote keyless entry.

NOTE:

At this moment, ACC power is supplied.

2. Open the driver side door.
3. Open the hood.
4. Close the driver side door.
5. Wait at least 3 minutes.

PRECAUTIONS

< PRECAUTION >

[GASOLINE ENGINE MODEL]

CAUTION:

While waiting, never operate the vehicle such as locking, opening, and closing doors. Violation of this caution results in the activation of ACC power supply according to the Auto ACC function.

6. Remove 12V battery terminal.

CAUTION:

After installing 12V battery, always check self-diagnosis results of all ECUs and erase DTC.

General Precautions

INFOID:0000000010778217

WARNING:

When replacing fuel line parts, be sure to observe the following.

- Put a "CAUTION: FLAMMABLE" sign in the workshop.
- Be sure to work in a well ventilated area and furnish workshop with a CO2 fire extinguisher.
- Never smoke while servicing fuel system. Keep open flames and sparks away from the work area.

CAUTION:

- Use gasoline required by the regulations for octane number. Refer to [GI-30. "Fuel"](#).
- Before removing fuel line parts, perform out the following procedures:
 - Put drained fuel in an explosion-proof container and put the lid on securely. Keep the container in safe area.
 - Release fuel pressure from the fuel lines. Refer to [EC-152. "Work Procedure"](#) (MR20DD) or [EC-558. "Work Procedure"](#) (QR25DE).
 - Disconnect the battery cable from the negative terminal.
- Always replace O-ring and clamps with new ones.
- Never kink or twist tubes when they are being installed.
- Never tighten hose clamps excessively to avoid damaging hoses.
- After installing tubes, check there is no fuel leakage at connections in the following steps.
- Apply fuel pressure to fuel lines with turning ignition switch "ON" (with engine stopped). Then check for fuel leakage at connections.
- Start engine and rev it up and check for fuel leakage at connections.
- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the "MIL" may come on.

PREPARATION

PREPARATION

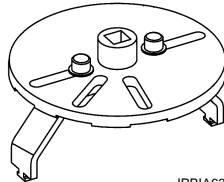
Special Service Tools

INFOID:0000000010778218

A

FL

Tool number Tool name	Description
KV101207S0 Unified fuel lock ring wrench	Removing and installing lock ring



C

D

E

F

G

H

I

J

K

L

M

N

O

P

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

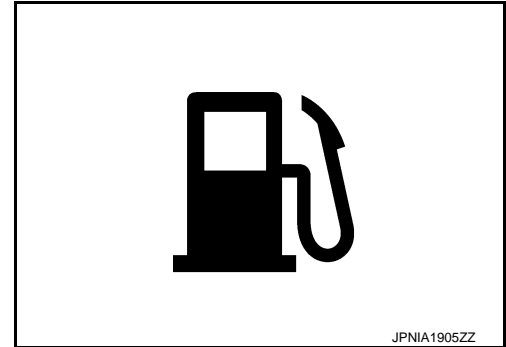
SYSTEM

WARNING/INDICATOR (ON INFORMATION DISPLAY)

WARNING/INDICATOR (ON INFORMATION DISPLAY) : Low fuel warning INFOID:0000000010778219

DESIGN/PURPOSE

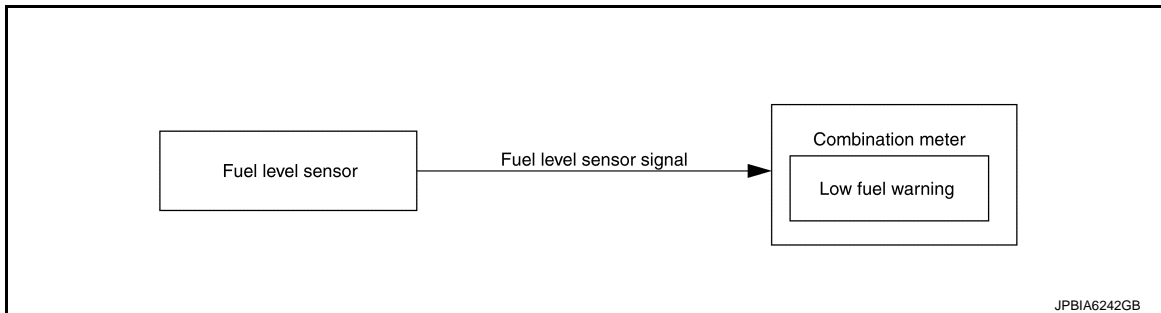
This warns the driver that the fuel level is low.



OPERATION AT COMBINATION METER CAN COMMUNICATION CUT-OFF OR UNUSUAL SIGNAL

For the operation for CAN communications blackout or abnormal signal reception, refer to [MWI-19, "METER SYSTEM : Fail-Safe"](#).

SYSTEM DIAGRAM



SIGNAL PATH

The combination meter receives fuel level sensor signal (resistance value) from the fuel level sensor unit and indicates low fuel level warning on the vehicle information display when fuel level sensor signal (resistance value) is less than the specified value.

LIGHTING CONDITION

When all of the following conditions are satisfied:

- After a lapse of 15 seconds after the ignition switch is turned ON.
- Fuel level is lower than the specified level.

Fuel level warning indication timing (Vehicle: Parked on the level)	
Fuel level	Approx. 10.8 ℓ (2-3/8 Imp gal) or less (fuel tank dead amount included)
Fuel tank dead amount	Approx. 2.8 ℓ (2-4/8 Imp qt)

SHUTOFF CONDITION


When any of the following conditions was satisfied:

- Ignition switch is OFF.
- Fuel level is the specified level or more.

WARNING/INDICATOR/CHIME LIST

WARNING/INDICATOR/CHIME LIST : Warning/Indicator (On Information Display)

INFOID:0000000010778220

Name	Design	Arrangement/Function
Low fuel warning		Regarding the arrangement. Refer to MWI-10. "METER SYSTEM : Design" .
		Regarding the function. Refer to MWI-15. "METER SYSTEM : System Description" .

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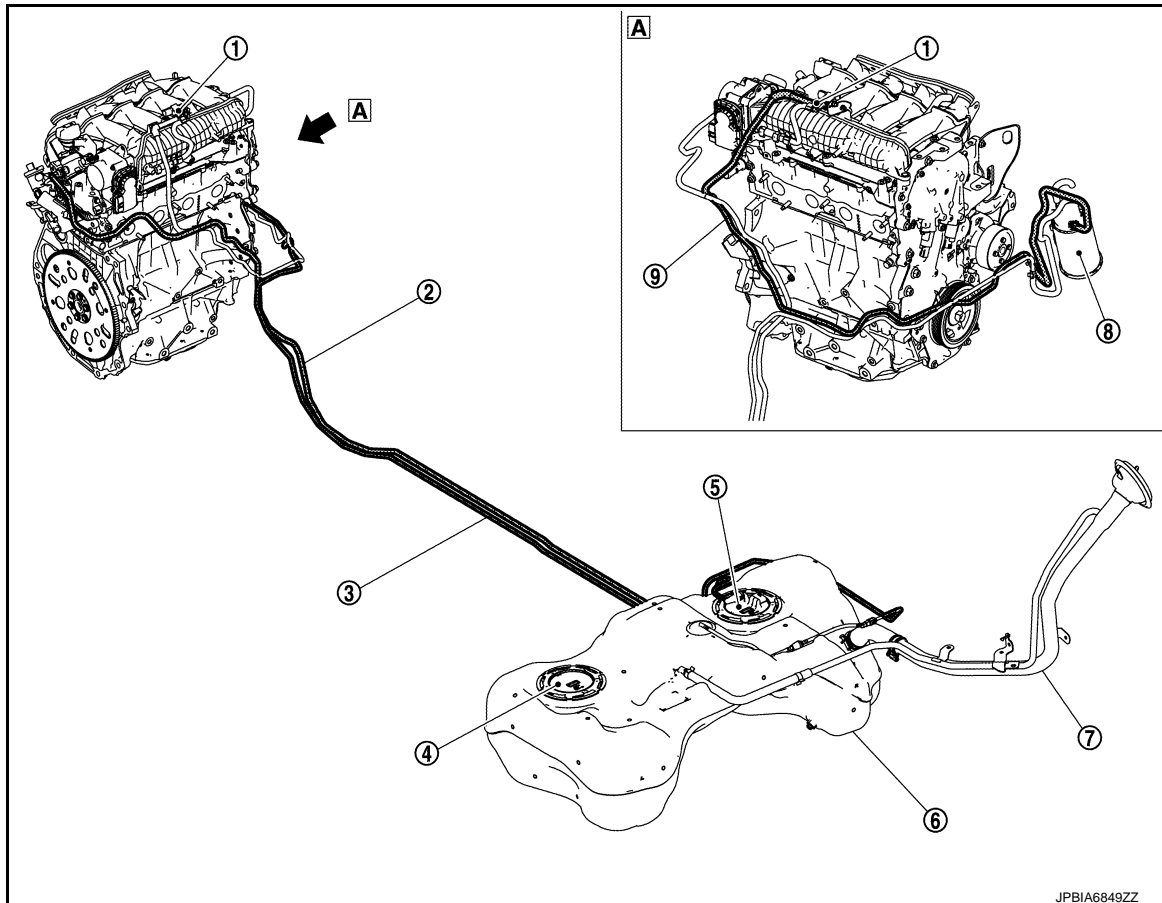
PERIODIC MAINTENANCE

FUEL SYSTEM

Hydraulic Layout

INFOID:0000000010778221

MR20DD models



- | | | |
|---|--|--|
| ① EVAP canister purge volume control solenoid valve | ② Fuel feed line | ③ EVAP line (Fuel tank to EVAP canister) |
| ④ Sub fuel level sensor assembly | ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly | ⑥ Fuel tank |
| ⑦ Fuel filler tube | ⑧ EVAP canister | ⑨ EVAP line (EVAP canister to EVAP canister purge volume control solenoid valve) |

A : View **A**

CAUTION:

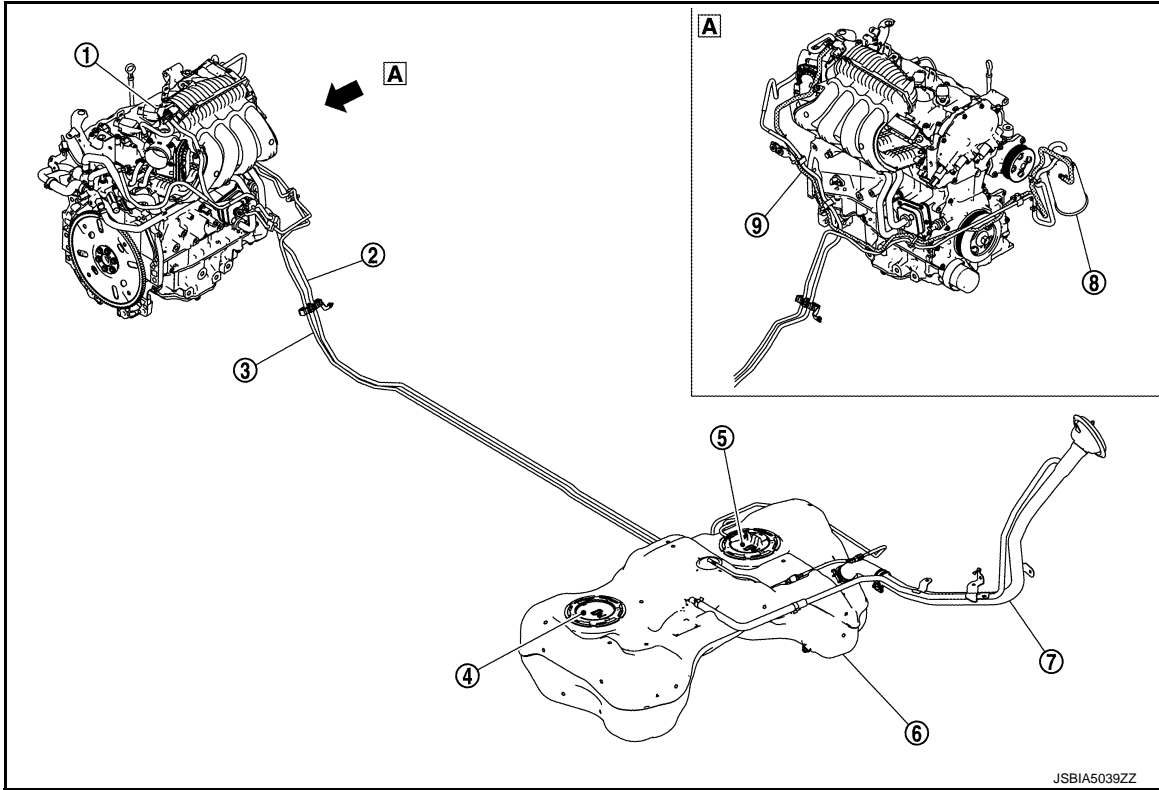
Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

FUEL SYSTEM

< PERIODIC MAINTENANCE >

[GASOLINE ENGINE MODEL]

QR25DE models



- | | | |
|---|--|--|
| ① EVAP canister purge volume control solenoid valve | ② Fuel feed line | ③ EVAP line (Fuel tank to EVAP canister) |
| ④ Sub fuel level sensor assembly | ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly | ⑥ Fuel tank |
| ⑦ Fuel filler tube | ⑧ EVAP canister | ⑨ EVAP line (EVAP canister to EVAP canister purge volume control solenoid valve) |

Ⓐ : View Ⓐ

CAUTION:

Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

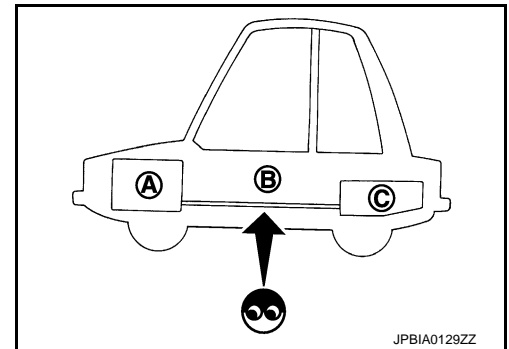
Inspection

INFOID:0000000010778222

Inspect fuel lines, fuel filler cap, and fuel tank for improper attachment, leakage, cracks, damage, loose connections, chafing or deterioration.

- Ⓐ : Engine
 Ⓑ : Fuel line
 Ⓒ : Fuel tank

If necessary, repair or replace damaged parts.



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INFOID:0000000010778223

Quick Connector

CAUTION:

FUEL SYSTEM

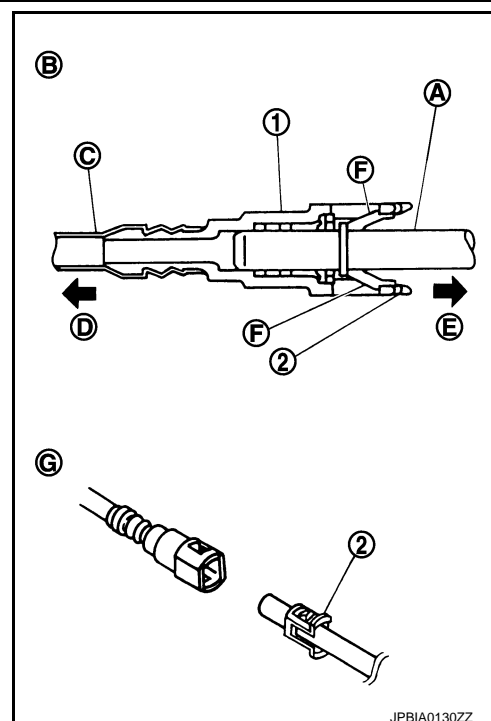
< PERIODIC MAINTENANCE >

[GASOLINE ENGINE MODEL]

- After connecting fuel tube quick connectors, check quick connectors are secure.

- ① : Quick connector
- ② : Retainer
- Ⓐ : Hard tube (or the equivalent)
- Ⓑ : Connection (cross-section)
- Ⓒ : Resin tube
- Ⓓ : To under floor fuel line
- Ⓔ : To fuel tank
- Ⓕ : Tab
- Ⓖ : Disconnection

- Ensure that connector and resin tube never contact any adjacent parts.



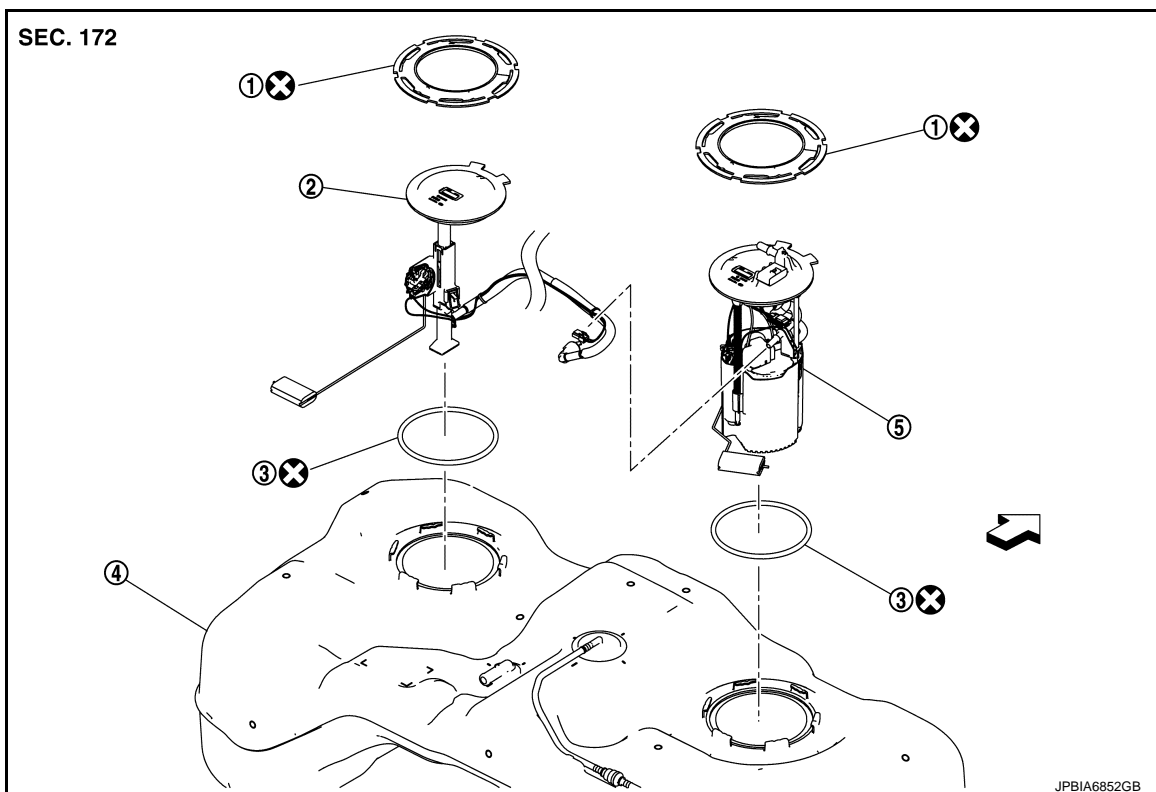
REMOVAL AND INSTALLATION

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

Exploded View

INFOID:0000000010778224

REMOVAL

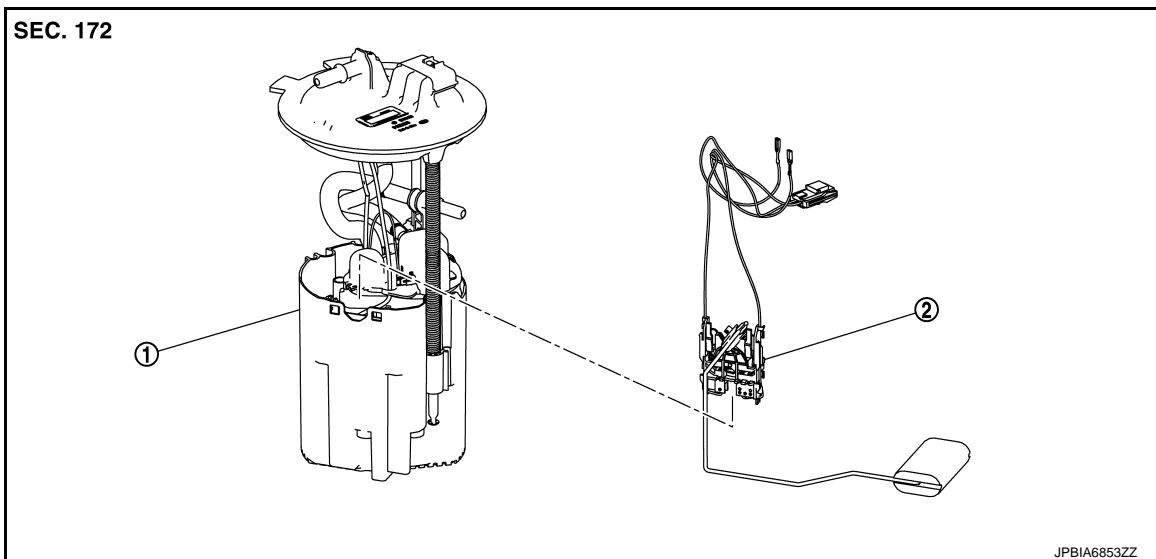


- ① Lock ring
- ② Sub fuel level sensor assembly
- ③ O-ring
- ④ Fuel tank
- ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly

⇐ : Vehicle front

⊗ : Always replace after every disassembly.

DISASSEMBLY



- ① Fuel filter and fuel pump assembly ② Fuel level sensor unit

Removal and Installation

INFOID:0000000010778225

WARNING:

Read “General Precautions” when working on the fuel system. Refer to [FL-4, "General Precautions"](#).

REMOVAL

CAUTION:

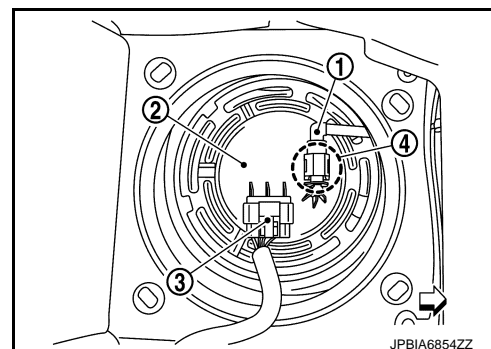
Perform the operation with vehicle on level ground.

1. Release fuel pressure. Refer to [EC-152, "Work Procedure"](#) (MR20DD) or [EC-558, "Work Procedure"](#) (QR25DE).
2. Check fuel level on a level ground. If the fuel level is 7/8 of the fuel tank (full or nearly full), draw appropriate amount of fuel from the fuel tank.

Guideline : Draw approximately 10 liters (2-1/4 Imp gal) from a full-tank condition.

- In the event of malfunction in fuel pump, insert a hose measuring 20 mm (0.79 in) in diameter into the filler opening to draw approximately 10 liters (2-1/4 Imp gal) fuel.
3. Open fuel filler lid.
 4. Open the fuel filler cap and release the pressure inside the fuel tank.
 5. Remove rear seat cushion. Refer to [SE-52, "Exploded View"](#).
 6. Remove inspection hole cover.
 - Using a screwdriver, remove it by turning clips clockwise by 90 degrees.
 7. Disconnect harness connector ③ and quick connector ④.

- ① : Fuel feed tube
 ② : Fuel level sensor unit, fuel filter and fuel pump assembly
 ⇐ : Vehicle front



Disconnect quick connector as follows:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

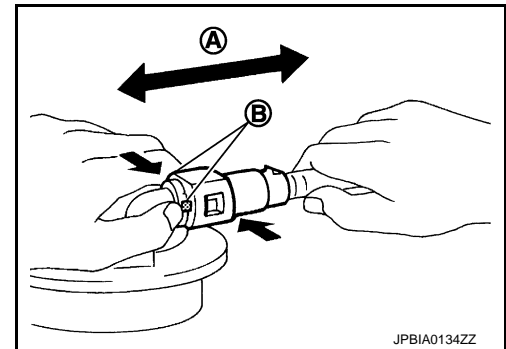
< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

- Hold the sides of connector, push in tabs (B) and pull out fuel feed tube.

(A) : Pull

- If quick connector sticks to tube of fuel level sensor unit, fuel filter and fuel pump assembly, push and pull quick connector several times until they start to move. Then disconnect them by pulling.



CAUTION:

- Quick connector (1) can be disconnected when the tabs (F) are completely depressed. Never twist it more than necessary.

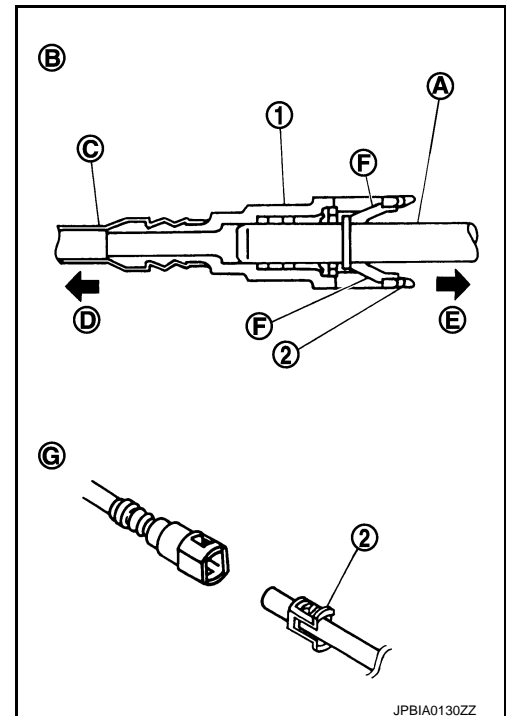
(B) : Connection (cross-section)

(D) : To under floor fuel line

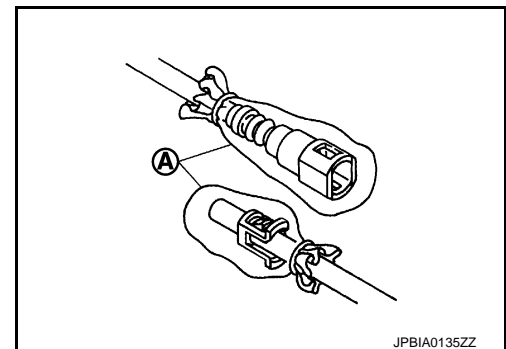
(E) : To fuel tank

(G) : Disconnection

- Never use any tools to disconnected quick connector.
- Keep resin tube (C) away from heat. Be especially careful when welding near the resin tube.
- Prevent acid liquid such as battery electrolyte, etc. from getting on resin tube.
- Never bend or twist resin tube during installation and disconnection.
- Never remove the remaining retainer (2) on hard tube (or the equivalent) (A) except when resin tube or retainer is replaced.
- When resin tube or hard tube (or the equivalent) is replaced, also replace retainer with new one.



- To keep the connecting portion clean and to avoid damage and foreign materials, cover them completely with plastic bags (A) or something similar.



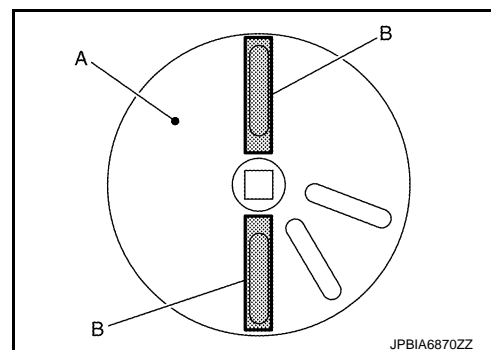
8. Remove lock ring according to the following instructions:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

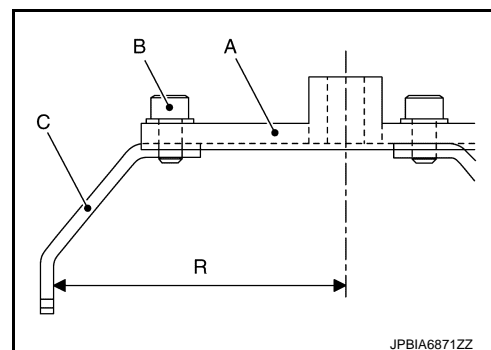
[GASOLINE ENGINE MODEL]

- a. Install pawl (B) of unified fuel lock ring wrench [SST: KV101207S0] (A) to the position shown in the figure.



- b. Temporarily tighten mounting bolt (B) of the pawl according to the measurement (R) from the center of unified fuel lock ring wrench [SST: KV101207S0] (A) to the end of pawl (C).

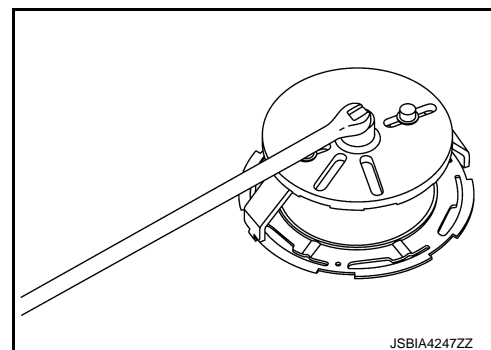
R : 82 mm (3.23 in)



- c. Set unified fuel lock ring wrench [SST: KV101207S0] (A) to lock ring and tighten the mounting bolt of the pawl.
- d. Remove lock ring.

CAUTION:

- To prevent lock ring wrench from being detached, securely hold down spinner handle (B) by hand.
- To reduce impact caused by removal operation, use long spinner handle [handle length: 60 cm (23.62 in) or more] and slowly turn it counterclockwise.



9. Raise fuel level sensor unit, fuel filter and fuel pump assembly.

CAUTION:

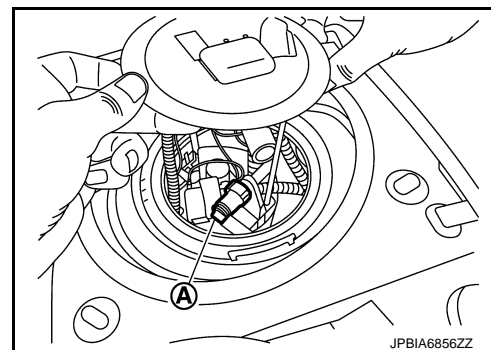
- Never bend float arm during removal.
- Never pollute the inside by residue fuel. Draw out avoiding inclination by supporting with a cloth.
- Never cause impacts such by dropping when handling components.

10. Separate fuel tube as per the following steps to remove fuel level sensor unit, fuel filter and fuel pump assembly.

- Pinch quick connector (A) square-part with your fingers, and pull out the quick connector by hand.
- If quick connector and tube on sender unit are stuck, push several times until they move, and pull out.

NOTE:

When separating the fuel tube, tie a gasoline-resistance rope to the tip of the fuel tube and leave the rope on the fuel tank side to easily pull the fuel tube for installation.

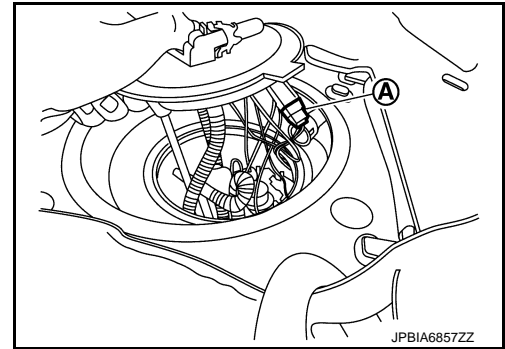


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

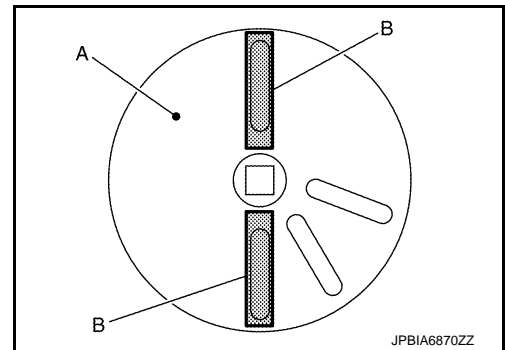
[GASOLINE ENGINE MODEL]

- Disconnect harness connector (A).



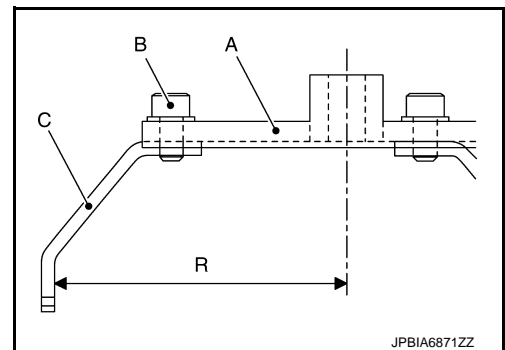
Sub Fuel Level Sensor Assembly

1. Remove fuel level sensor unit, fuel filter and fuel pump assembly.
2. Remove lock ring according to the following instructions:
 - a. Install pawl (B) of unified fuel lock ring wrench [SST: KV101207S0] (A) to the position shown in the figure.



- b. Temporarily tighten mounting bolt (B) of the pawl according to the measurement (R) from the center of unified fuel lock ring wrench [SST: KV101207S0] (A) to the end of pawl (C).

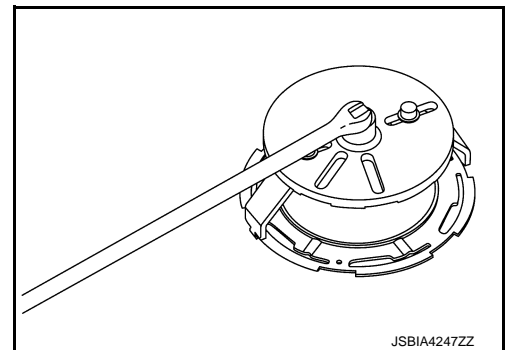
R : 82 mm (3.23 in)



- c. Set unified fuel lock ring wrench [SST: KV101207S0] (A) to lock ring and tighten the mounting bolt of the pawl.
- d. Remove lock ring.

CAUTION:

- To prevent lock ring wrench from being detached, securely hold down spinner handle (B) by hand.
- To reduce impact caused by removal operation, use long spinner handle [handle length: 60 cm (23.62 in) or more] and slowly turn it counterclockwise.



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

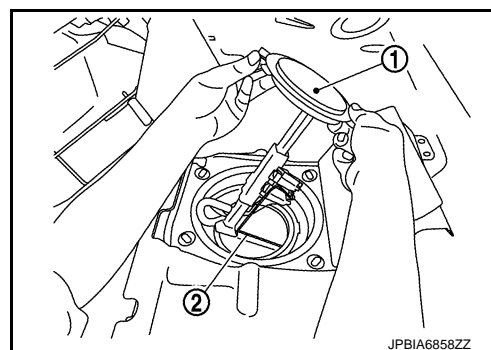
3. Remove sub fuel level sensor assembly ①.

CAUTION:

- Never disassemble a fuel tube ② from sub fuel sensor assembly.
- Never bend float arm during removal.
- Never pollute the inside by residue fuel. Draw out avoiding inclination by supporting with a cloth.
- Never cause impacts such by dropping when handling components.

NOTE:

Tie a gasoline-resistance rope to a tip of the tube. Draw and leave the rope to the fuel tank side so that the rope can be the guide for installation.



INSTALLATION

Note to the following, and install in the reverse order of removal.

Sub Fuel Level Sensor Assembly

1. Install new O-ring to fuel tank without any twist.

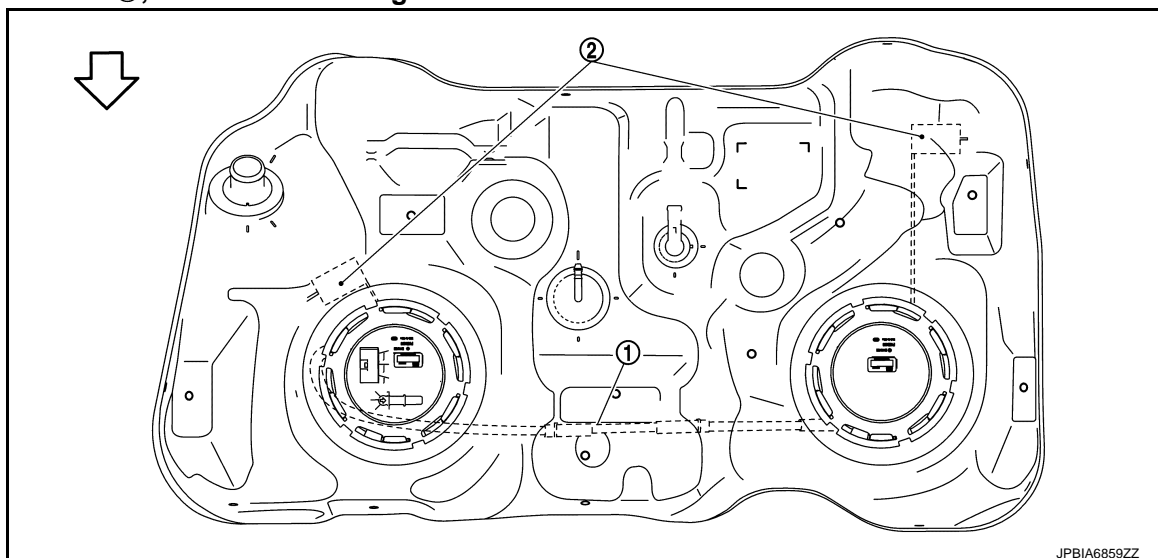
CAUTION:

Do not reuse O-rings.

2. Using the rope left on the fuel tank side at removal, run the fuel tube inside the fuel tank to install the sub fuel level sensor assembly to the fuel tank.

CAUTION:

- Never bend float arm during installation.
- To install, fuel tube ① must run to the front (↔) of the vehicle to avoid the interference with the float arm ②, as shown in the figure.

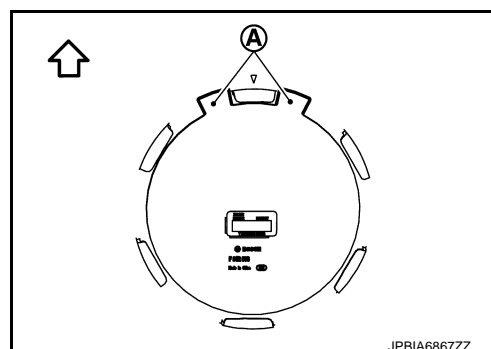


3. Install the sub fuel level sensor assembly on the fuel tank with the sub fuel level sensor assembly top surface (A) faced the front of the vehicle.

↔ : Vehicle front

CAUTION:

- Never allow seal packing to drop.
- Never bend float arm during installing.

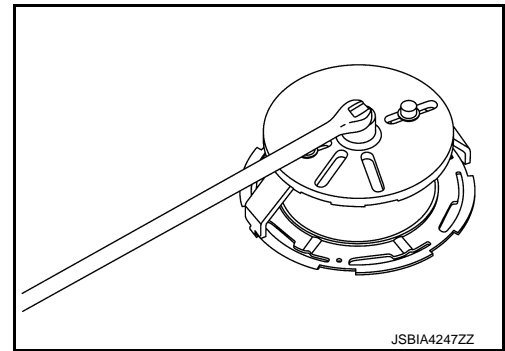


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

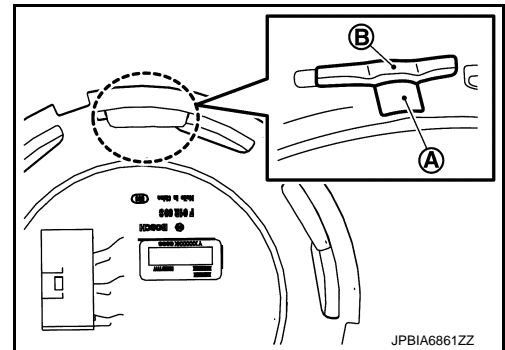
[GASOLINE ENGINE MODEL]

4. Install lock ring for sub fuel level sensor assembly with unified fuel lock ring wrench [SST:KV101207S0] by turning clockwise.



CAUTION:

- Install lock ring horizontally.
- Turn the lock ring ① until it is engaged in the fuel tank side ② as shown in the figure.



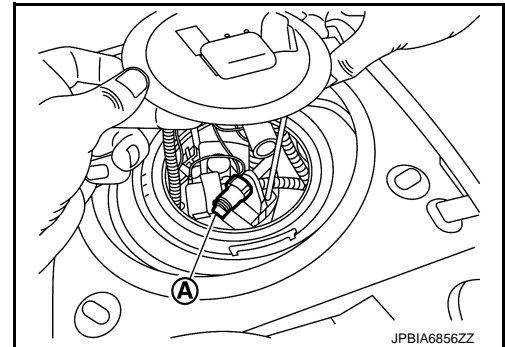
Fuel Level Sensor Unit, Fuel Filter and Fuel Pump Assembly

1. Install new O-ring to fuel tank without any twist.

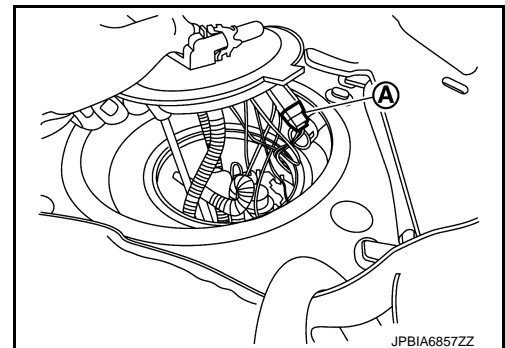
CAUTION:

Do not reuse O-rings.

2. Connect the fuel tube as per the following steps.
 - Insert the quick connector ① straight to the fuel level sensor unit, fuel filter and fuel pump assembly.
 - Judge a good fit from connecting sound and tactile feedback.
 - Pull the fuel tube by hand to check a secure fit.



3. Connect harness connector ①.



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

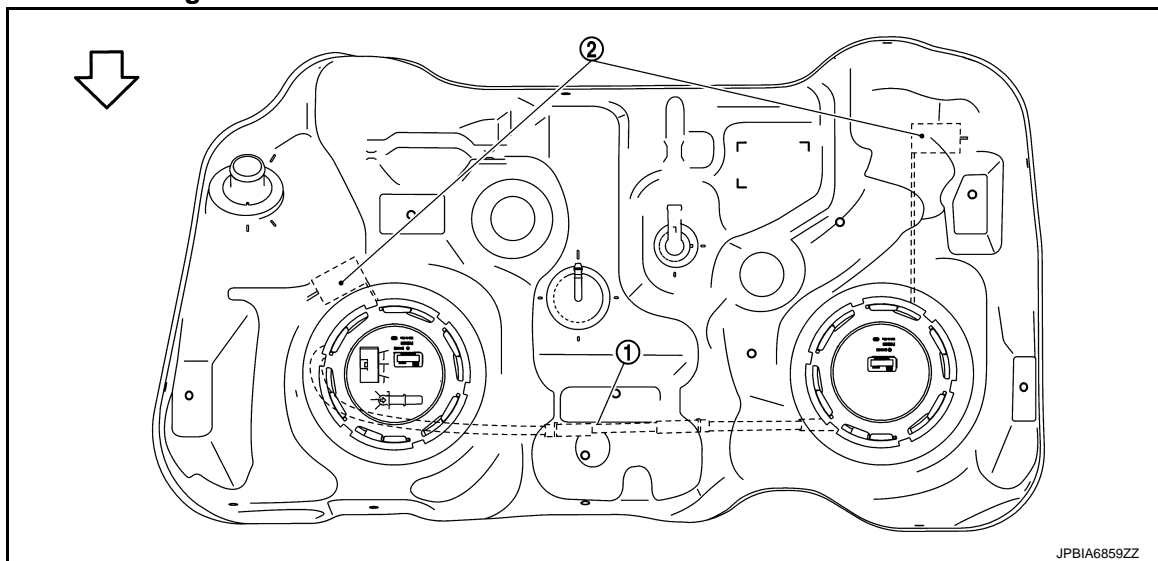
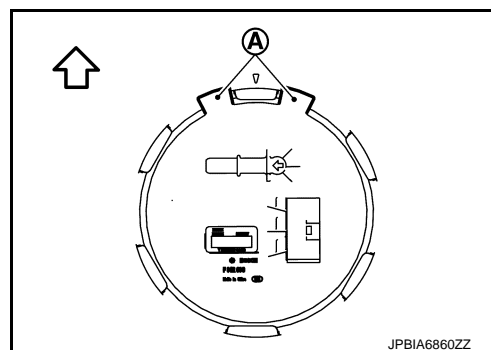
[GASOLINE ENGINE MODEL]

4. Install the fuel level sensor unit, fuel filter and fuel pump assembly on the fuel tank with the fuel level sensor unit, fuel filter and fuel pump assembly top surface ① faced the front of the vehicle.

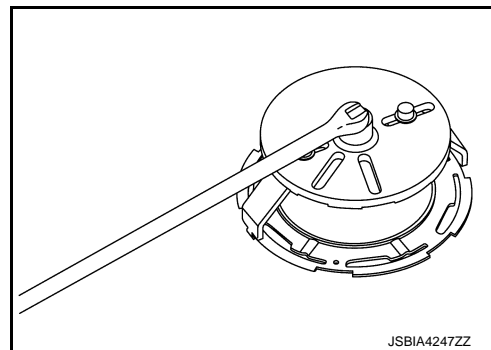
↔ : Vehicle front

CAUTION:

- Never allow seal packing to drop.
- Never bend float arm during installing.
- To install, fuel tube ① must run to the front (↔) of the vehicle to avoid the interference with the float arm ②, as shown in the figure.



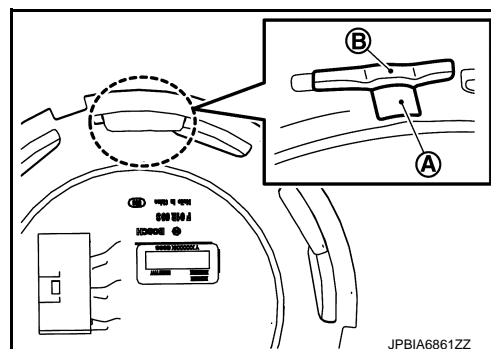
5. Install lock ring for fuel level sensor unit, fuel filter and fuel pump assembly with unified fuel lock ring wrench [SST:KV101207S0] by turning clockwise.



CAUTION:

- Install lock ring horizontally.
- Turn the lock ring ① until it is engaged in the fuel tank side ② as shown in the figure.

6. Connect quick connector of fuel feed tube as per following procedures.
 - a. Check the connection for damage or any foreign materials.
 - b. Align the connector with the tube, then insert the connector straight into the tube until a “click” sound is heard.
 - c. After connecting, check that the connection is secured with following procedures.
 - Visually confirm that the two tabs are connected to the connector.

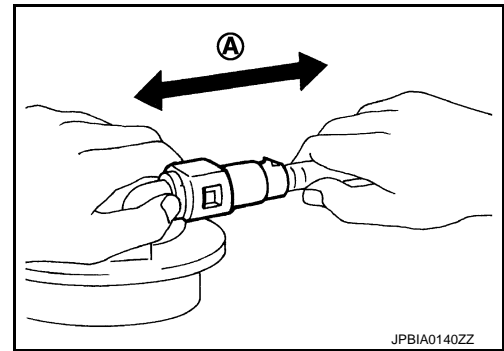


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

- Pull (A) the tube and the connector to check that they are securely connected.
7. Connect harness connector.



Inspection Hole Cover

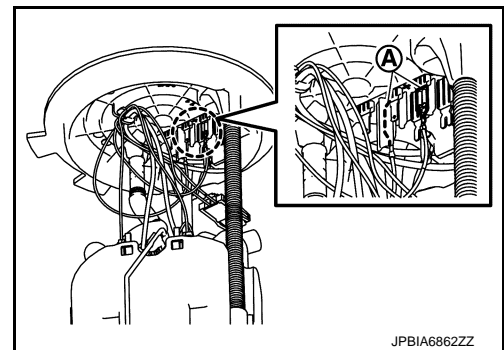
- Before installing inspection hole cover, check that the connecting part has no fuel leakage. Refer to [FL-20](#), "[Inspection](#)".
1. Install inspection hole covers with the front mark (arrow) facing front of vehicle.
 2. Lock clips by turning counterclockwise.

Disassembly and Assembly

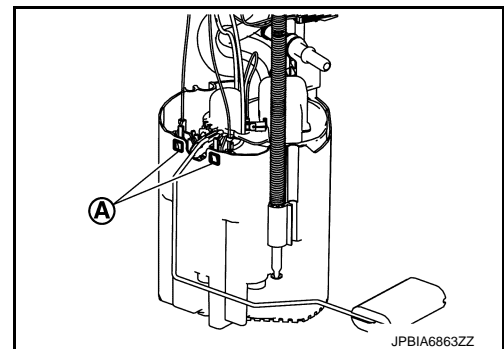
INFOID:000000010778226

DISASSEMBLY

1. Disconnect fuel level sensor harness connector (A).



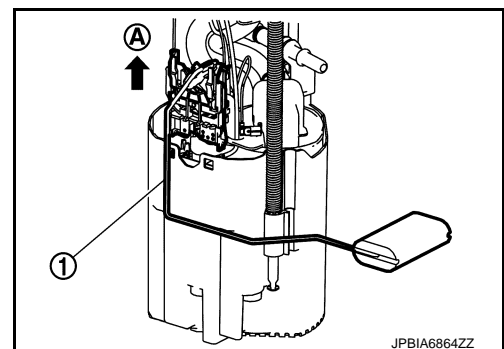
2. Remove fuel level sensor from fuel filter and fuel pump assembly, according to the following steps.
 - a. Remove fuel level sensor harness from fuel filter and fuel pump assembly.
 - b. Press into pawl (A) of fuel level sensor mounting area.



- c. With the fuel level sensor unlocked, slide it in the direction (A).

CAUTION:

 - Be careful not to damage the fuel level sensor.
 - Never disassemble fuel filter and fuel pump assembly.



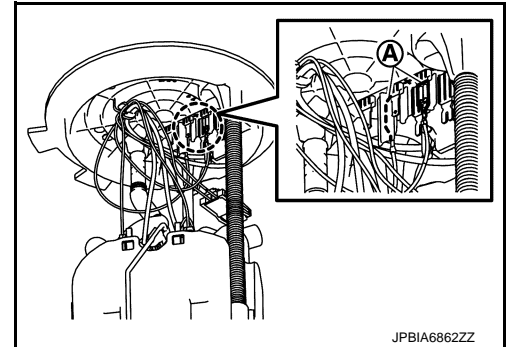
FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

ASSEMBLY

1. Install fuel level sensor all the way. Tactually and aurally check the fit.
2. Connect fuel level sensor harness connector (A).
3. Install fuel level sensor harness to fuel filter and fuel pump assembly.



Inspection

INFOID:000000010778227

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

1. Turn ignition switch "ON" (with engine stopped), then check connections for leakage by applying fuel pressure to fuel piping.
2. Start engine and let it idle and check there are no fuel leakage at the fuel system connections.

FUEL TANK

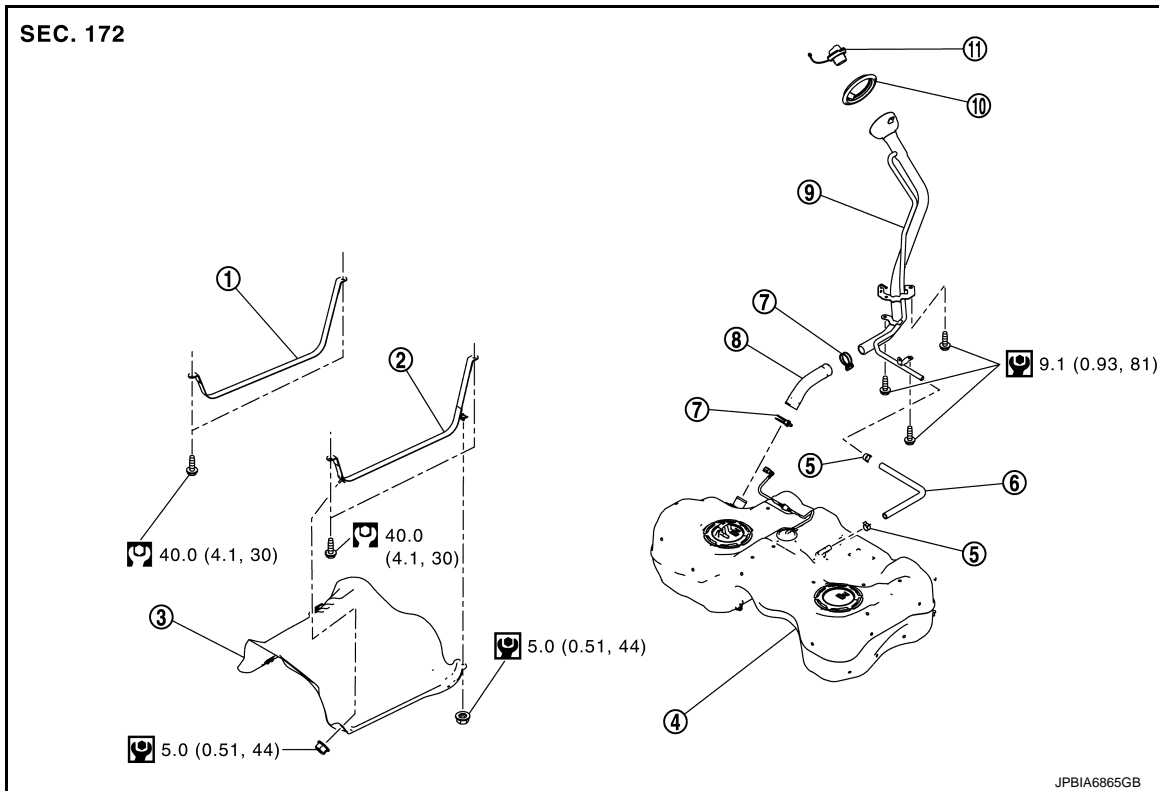
< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

FUEL TANK

Exploded View

INFOID:0000000010778228



- | | | |
|-----------------------|-----------------------|--------------------|
| ① Fuel tank band (RH) | ② Fuel tank band (LH) | ③ Protector |
| ④ Fuel tank | ⑤ Clamp | ⑥ Vent hose |
| ⑦ Clamp | ⑧ Fuel filler hose | ⑨ Fuel filler tube |
| ⑩ Grommet | ⑪ Fuel filler cap | |

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000010778229

WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to [FL-4, "General Precautions"](#).

REMOVAL

- Perform the steps 1 to 7 of "REMOVAL" in "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY". Refer to [FL-12, "Removal and Installation"](#).
- Drain fuel from fuel tank if necessary. Refer to [FL-12, "Removal and Installation"](#).

CAUTION:

- Because fuel tank forwardly inclines and becomes unstable when installing/removing, fuel should be drained if found the remaining quantity.
- Situate vehicle on a flat and solid surface.

- Remove main muffler. Refer to [EX-6, "Exploded View"](#) (MR20DD) or [EX-12, "Exploded View"](#) (QR25DE).
- Remove rear propeller shaft. Refer to [DLN-214, "Exploded View"](#). (4WD models)
- Remove protector from fuel tank.

FUEL TANK

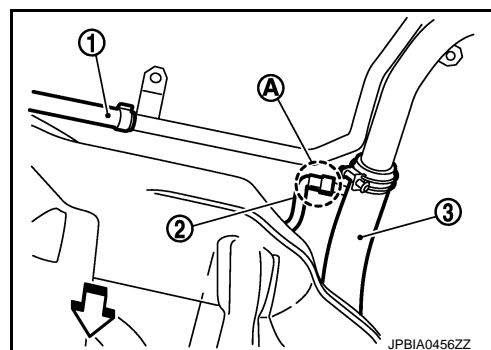
< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

- Disconnect vent hose ①, EVAP tube ②, and fuel filler hose ③ at rear side of fuel tank.

⇐ : Vehicle front

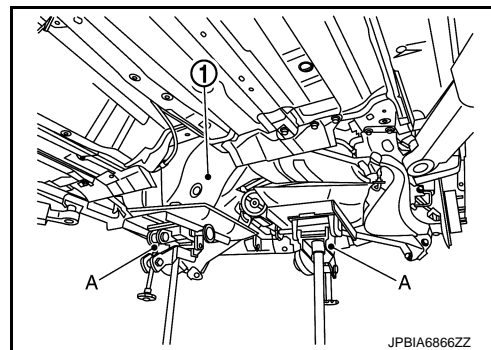
- Instruction for quick connector ① of EVAP tube. Refer to [FL-12, "Removal and Installation"](#).



- Remove suspension bar. Refer to [RSU-13, "Exploded View"](#). (4WD models)
- Support the lower part of fuel tank ① with transmission jack (A).

CAUTION:

Support the position that fuel tank mounting bands never engage.



- Remove fuel tank band (RH and LH).
- Lower transmission jack carefully to remove fuel tank while holding it by hand.

CAUTION:

Fuel tank may be in an unstable condition because of the shape of fuel tank bottom. Never rely on jack too much. Be sure to hold tank securely.

INSTALLATION

Note the following, and install in the reverse order of removal.

- Surely clamp fuel hoses and insert hose to the length below.

Fuel filler hose	: 35 mm (1.38 in)
The other hoses	: 25 mm (0.98 in)

- Be sure hose clamp is not placed on swelled area of fuel tube.
- Tighten fuel filler hose clamp.

	Remaining length of screw thread	Specified torque
Fuel filler tube side	: 7 - 11 mm (0.28 - 0.43 in)	: 2.5 N·m (0.26 kg-m, 22 in-lb)
Fuel tank side	: 5 - 9 mm (0.20 - 0.35 in)	: 2.5 N·m (0.26 kg-m, 22 in-lb)

- To connect quick connector, refer to [FL-12, "Removal and Installation"](#).

Inspection

INFOID:0000000010778230

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

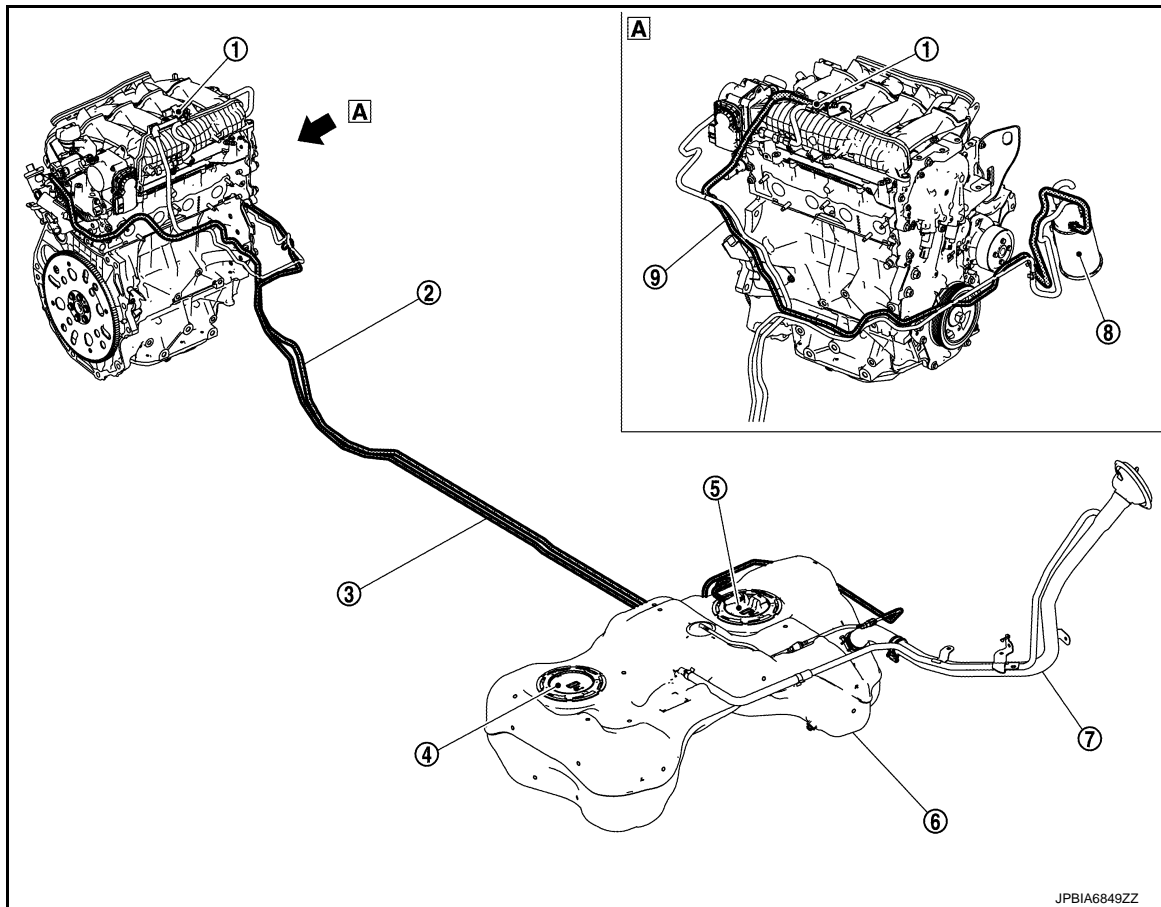
- Turn ignition switch "ON" (with engine stopped), and check connections for leakage by applying fuel pressure to fuel piping.
- Start engine and rev it up and check there are no fuel leakage at the fuel system tube and hose connections.

EVAP CANISTER

Hydraulic Layout

INFOID:0000000010778231

MR20DD models



- | | | |
|---|--|--|
| ① EVAP canister purge volume control solenoid valve | ② Fuel feed line | ③ EVAP line (Fuel tank to EVAP canister) |
| ④ Sub fuel level sensor assembly | ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly | ⑥ Fuel tank |
| ⑦ Fuel filler tube | ⑧ EVAP canister | ⑨ EVAP line (EVAP canister to EVAP canister purge volume control solenoid valve) |

[A] : View [A]

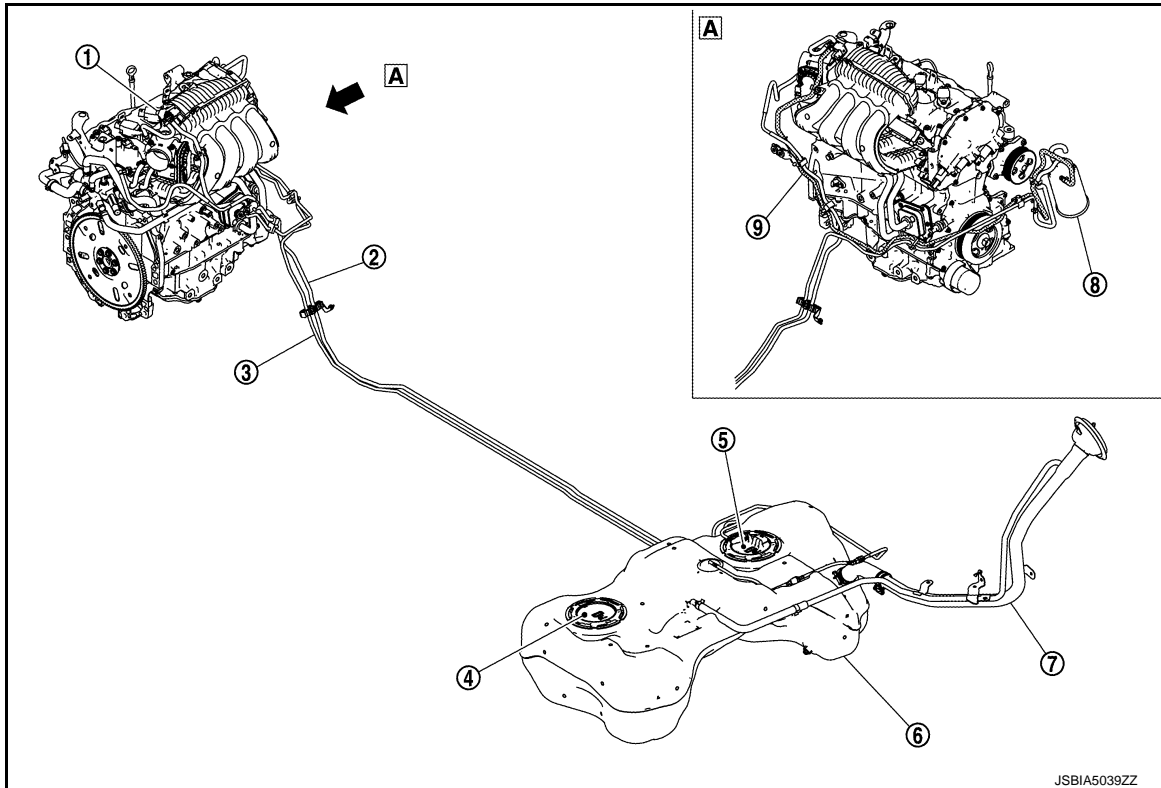
CAUTION:
Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

EVAP CANISTER

< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

QR25DE models



- | | | |
|---|--|--|
| ① EVAP canister purge volume control solenoid valve | ② Fuel feed line | ③ EVAP line (Fuel tank to EVAP canister) |
| ④ Sub fuel level sensor assembly | ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly | ⑥ Fuel tank |
| ⑦ Fuel filler tube | ⑧ EVAP canister | ⑨ EVAP line (EVAP canister to EVAP canister purge volume control solenoid valve) |

A : View **A**

CAUTION:

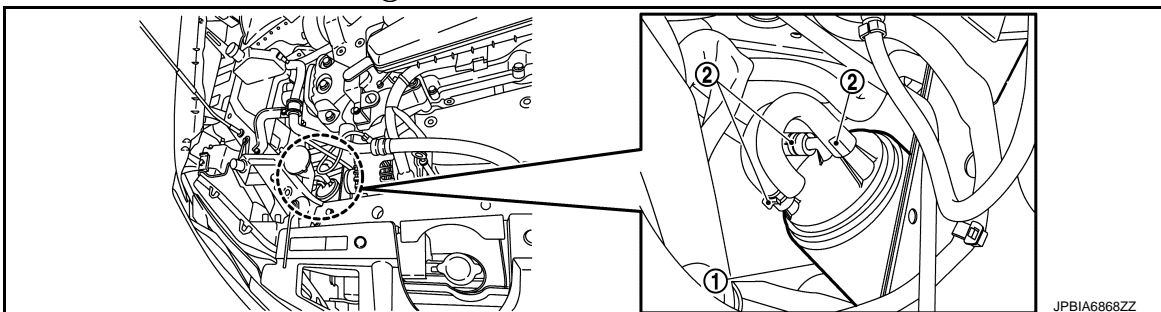
Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

Removal and Installation

INFOID:0000000010778232

REMOVAL

1. Disconnect EVAP canister hoses ②.



- ① : EVAP canister

2. Remove EVAP canister, slide it upward.

INSTALLATION

Install in the reverse order of removal.

EVAP CANISTER

< REMOVAL AND INSTALLATION >

[GASOLINE ENGINE MODEL]

CAUTION:

Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

Inspection

INFOID:0000000010778233

Check EVAP canister. Refer to [EC-428, "Inspection"](#) (MR20DD) or [EC-804, "Inspection"](#) (QR25DE).

A

FL

C

D

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H

I

J

K

L

M

N

O

P

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[GASOLINE ENGINE MODEL]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Fuel Tank

INFOID:0000000010778234

Standard and Limit

Fuel tank capacity	Approx. 60 ℓ (13-2/8 Imp gal)
Fuel recommendation	Refer to GI-30, "Fuel"

PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

INFOID:0000000010779472

- With the adoption of Auto ACC function, ACC power is automatically supplied by operating the intelligent key or remote keyless entry or by opening/closing the driver side door. In addition, ACC power is supplied even after the ignition switch is turned to the OFF position, i.e. ACC power is supplied for a certain fixed time.
- When disconnecting the 12V battery terminal, turn off the ACC power before disconnecting the 12V battery terminal, observing "How to disconnect 12V battery terminal" described below.

NOTE:

Some ECUs operate for a certain fixed time even after ignition switch is turned OFF and ignition power supply is stopped. If the battery terminal is disconnected before ECU stops, accidental DTC detection or ECU data damage may occur.

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

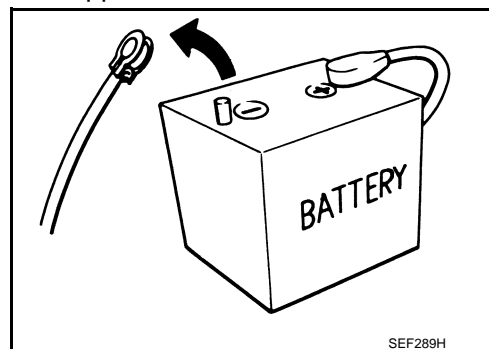
NOTE:

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

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

NOTE:

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



HOW TO DISCONNECT 12V BATTERY TERMINAL

Disconnect 12V battery terminal according to Instruction 1 or Instruction 2 described below.

For vehicles parked by ignition switch OFF, refer to Instruction 2.

INSTRUCTION 1

1. Open the hood.
2. Turn key switch to the OFF position with the driver side door opened.
3. Get out of the vehicle and close the driver side door.
4. Wait at least 3 minutes. For vehicle with the engine listed below, remove the battery terminal after a lapse of the specified time.

D4D engine	: 20 minutes
HRA2DDT	: 12 minutes
K9K engine	: 4 minutes
M9R engine	: 4 minutes
R9M engine	: 4 minutes
V9X engine	: 4 minutes

CAUTION:

While waiting, never operate the vehicle such as locking, opening, and closing doors. Violation of this caution results in the activation of ACC power supply according to the Auto ACC function.

5. Remove 12V battery terminal.

CAUTION:

After installing 12V battery, always check self-diagnosis results of all ECUs and erase DTC.

INSTRUCTION 2 (FOR VEHICLES PARKED BY IGNITION SWITCH OFF)

1. Unlock the door with intelligent key or remote keyless entry.

NOTE:

At this moment, ACC power is supplied.

2. Open the driver side door.
3. Open the hood.
4. Close the driver side door.
5. Wait at least 3 minutes.

PRECAUTIONS

< PRECAUTION >

[DIESEL ENGINE MODEL]

CAUTION:

While waiting, never operate the vehicle such as locking, opening, and closing doors. Violation of this caution results in the activation of ACC power supply according to the Auto ACC function.

6. Remove 12V battery terminal.

CAUTION:

After installing 12V battery, always check self-diagnosis results of all ECUs and erase DTC.

General Precautions

INFOID:0000000010779537

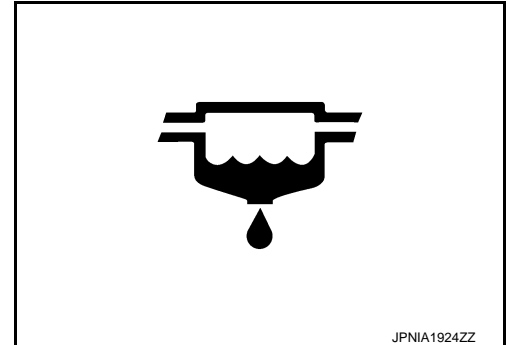
WARNING:

When replacing fuel line parts, be sure to observe the following.

- Put a "CAUTION: FLAMMABLE" sign in the workshop.
- Be sure to work in a well ventilated area and furnish workshop with a CO2 fire extinguisher.
- Never smoke while servicing fuel system. Keep open flames and sparks away from the work area.

CAUTION:

- Use diesel fuel required by the regulations for cetane number. Refer to [GI-30, "Fuel"](#).
- Before removing fuel line parts, perform out the following procedures:
 - Put drained fuel in an explosion-proof container and put the lid on securely. Keep the container in safe area.
 - Disconnect the battery cable from the negative terminal.
 - Always replace O-ring and clamps with new ones.
 - Never kink or twist tubes when they are being installed.
 - Never tighten hose clamps excessively to avoid damaging hoses.
 - After installing tubes, check there is no fuel leakage at connections in the following steps.
 - Apply fuel pressure to fuel lines with turning ignition switch "ON" (with engine stopped). Then check for fuel leakage at connections.
 - Start engine and rev it up and check for fuel leakage at connections.
- Drain water from fuel filter, when the water-in-fuel-filter warning lamp turns ON (with fuel filter warning). Refer to [FL-38, "Draining Water from Fuel Filter"](#).



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PREPARATION

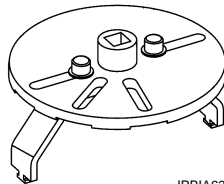
PREPARATION

Special Service Tools

INFOID:0000000010778239

FL

Tool number Tool name	Description
KV101207S0 Unified fuel lock ring wrench	Removing and installing lock ring



JPBI A6384ZZ

SYSTEM DESCRIPTION

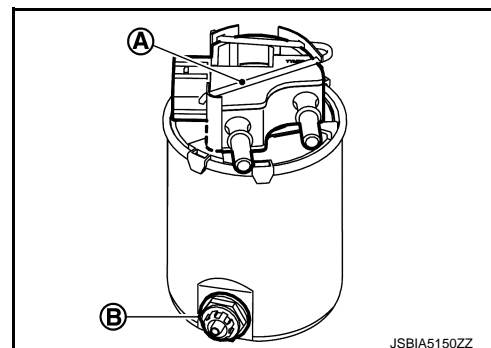
COMPONENT PARTS

Fuel Filter Sensor

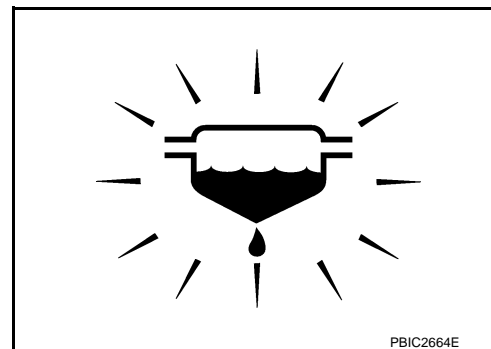
INFOID:0000000010778446

- Fuel filter sensor (A) is integrated in the fuel filter and detects the water in the fuel filter.

(B) : Drain plug



- When the water-in-fuel-filter warning lamp turns ON, drain water from fuel filter. Refer to [FL-38, "Draining Water from Fuel Filter"](#).



NOTE:

If the fuel filter warning lamp turns ON after draining water from fuel filter, perform the following.

- Disconnect fuel filter sensor connector.
- Check condition of the water-in-fuel-filter warning lamp.
- If the warning lamp is ON, check the harness between combination meter and fuel filter sensor. Refer to [MWI-106, "Wiring Diagram"](#).
- If the warning lamp is OFF, replace the fuel filter sensor.

STRUCTURE AND OPERATION

FUEL TRANSPORTATION IN FUEL TANK

FUEL TRANSPORTATION IN FUEL TANK : System Description

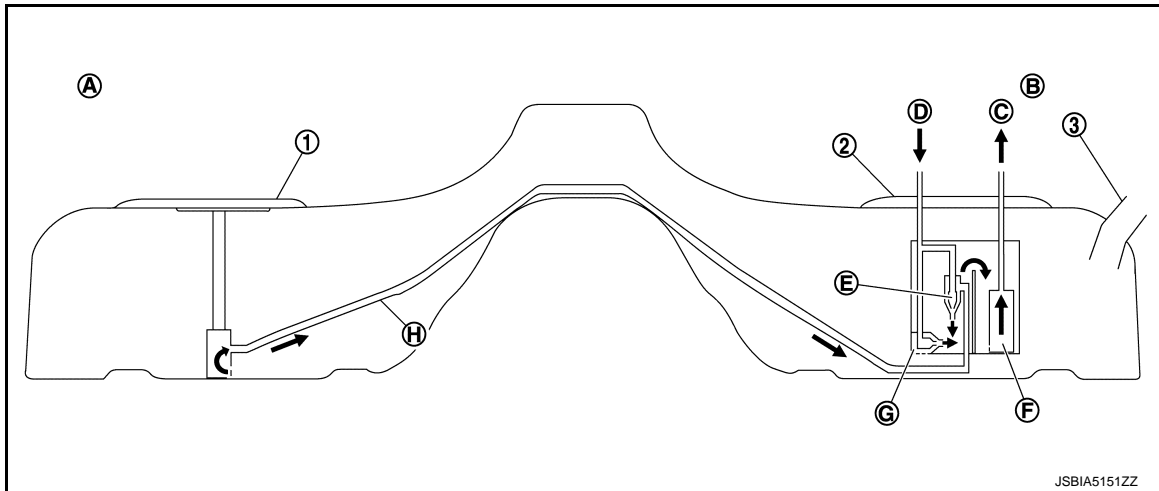
INFOID:0000000010838271

The electric fuel pump and the transfer jet pump are integrated with the main fuel level sensor unit, fuel filter and fuel pump assembly. This is installed to the fuel tank.

The transfer jet pumps draw up fuel using a flow of return fuel. The transfer jet pump (sub side) transfers fuel from the sub side to inside of the fuel pump assembly. The transfer jet pump (main side) transfers fuel from the main side to inside of the fuel pump assembly. The fuel sent to fuel pump assembly is supplied to the engine by an electric fuel pump.

NOTE:

Fuel on the sub side is consumed first.



- | | | |
|---------------------------------|---|----------------------|
| ① Sub fuel level sensor unit | ② Main fuel level sensor unit, fuel filter and fuel pump assembly | ③ Fuel filler hose |
| Ⓐ Sub side | Ⓑ Main side | Ⓒ Feed line |
| Ⓓ Return line | Ⓔ Transfer jet pump (sub side) | Ⓕ Electric fuel pump |
| Ⓖ Transfer jet pump (main side) | Ⓗ Transfer tube | |

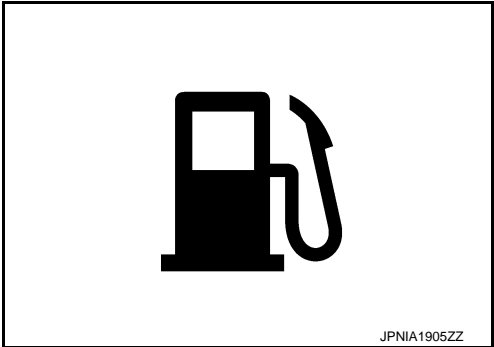
SYSTEM

WARNING/INDICATOR (ON INFORMATION DISPLAY)

WARNING/INDICATOR (ON INFORMATION DISPLAY) : Low fuel warning INFOID:0000000010778240

DESIGN/PURPOSE

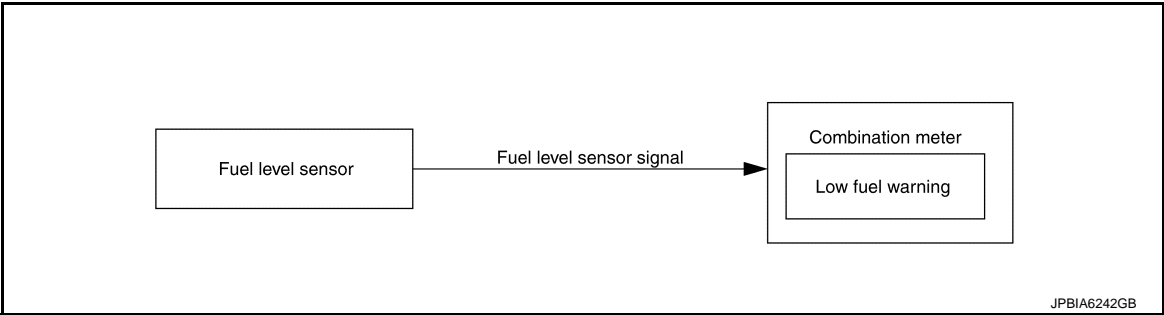
This warns the driver that the fuel level is low.



OPERATION AT COMBINATION METER CAN COMMUNICATION CUT-OFF OR UNUSUAL SIGNAL

For the operation for CAN communications blackout or abnormal signal reception, refer to [MWI-103, "Fail-Safe"](#).

SYSTEM DIAGRAM



SIGNAL PATH

The combination meter receives fuel level sensor signal (resistance value) from the fuel level sensor unit and indicates low fuel level warning on the vehicle information display when fuel level sensor signal (resistance value) is less than the specified value.

LIGHTING CONDITION

When all of the following conditions are satisfied:

- After a lapse of 15 seconds after the ignition switch is turned ON.
- Fuel level is lower than the specified level.

Fuel level warning indication timing (Vehicle: Parked on the level)	
Fuel level	Approx. 10.8 ℓ (2-3/8 Imp gal) or less (fuel tank dead amount included)
Fuel tank dead amount	Approx. 2.8 ℓ (2-4/8 Imp qt)

SHUTOFF CONDITION

When any of the following conditions was satisfied:

- Ignition switch is OFF.
- Fuel level is the specified level or more.

WARNING/INDICATOR/CHIME LIST


SYSTEM

< SYSTEM DESCRIPTION >

[DIESEL ENGINE MODEL]


WARNING/INDICATOR/CHIME LIST : Warning lamps/Indicator lamps

INFOID:0000000010778445

Name	Design	Arrangement/Function
Fuel filter warning lamp		<p>Regarding the arrangement. Refer to MWI-10, "METER SYSTEM : Design".</p> <p>Regarding the function. Refer to MWI-63, "WARNING LAMPS/INDICATOR LAMPS : Water-in-fuel-filter warning lamp".</p>

WARNING/INDICATOR/CHIME LIST : Warning/Indicator (On Information Display)

INFOID:0000000010778241

Name	Design	Arrangement/Function
Low fuel warning		<p>Regarding the arrangement. Refer to MWI-10, "METER SYSTEM : Design".</p> <p>Regarding the function. Refer to FL-32, "WARNING/INDICATOR (ON INFORMATION DISPLAY) : Low fuel warning".</p>

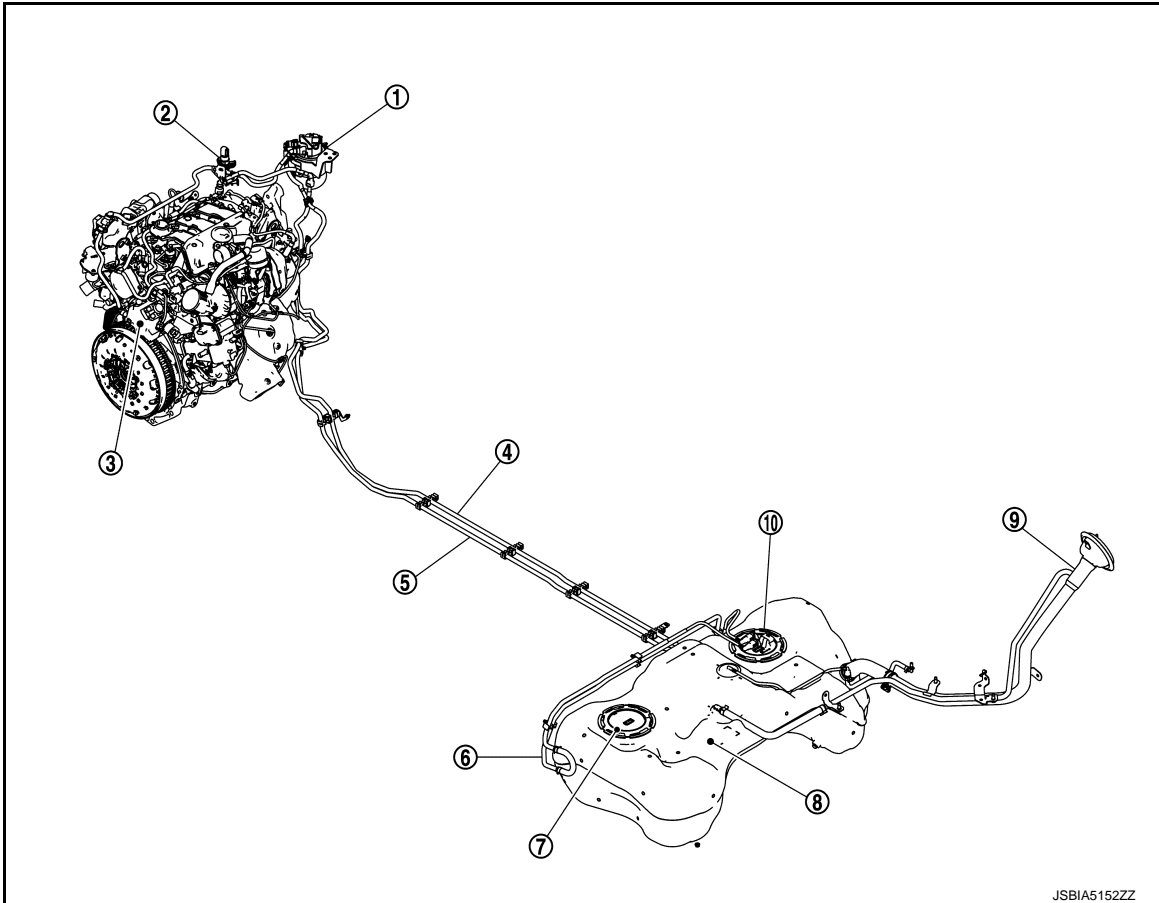
PERIODIC MAINTENANCE

FUEL SYSTEM

Hydraulic Layout

INFOID:0000000010778294

M/T models



JSBIA5152ZZ

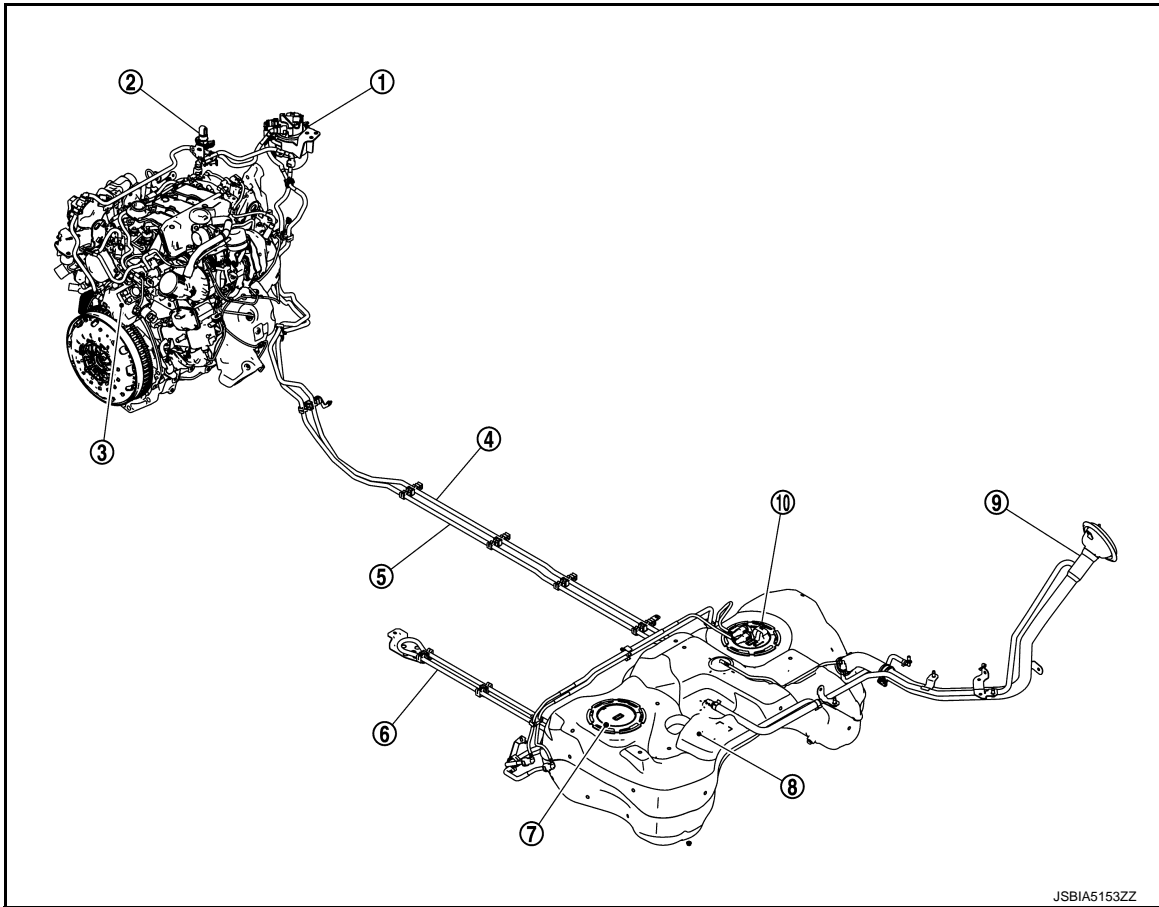
- | | | |
|--|------------------------|---------------------|
| ① Fuel filter | ② Fuel pressure sensor | ③ Fuel pump |
| ④ Fuel feed tube | ⑤ Fuel return tube | ⑥ Fuel cooling tube |
| ⑦ Sub fuel level sensor assembly | ⑧ Fuel tank | ⑨ Fuel filler tube |
| ⑩ Main fuel level sensor, fuel filter and fuel pump assembly | | |

FUEL SYSTEM

< PERIODIC MAINTENANCE >

[DIESEL ENGINE MODEL]

CVT models



- | | | |
|--|------------------------|---------------------|
| ① Fuel filter | ② Fuel pressure sensor | ③ Fuel pump |
| ④ Fuel feed tube | ⑤ Fuel return tube | ⑥ Fuel cooling tube |
| ⑦ Sub fuel level sensor assembly | ⑧ Fuel tank | ⑨ Fuel filler tube |
| ⑩ Main fuel level sensor, fuel filter and fuel pump assembly | | |

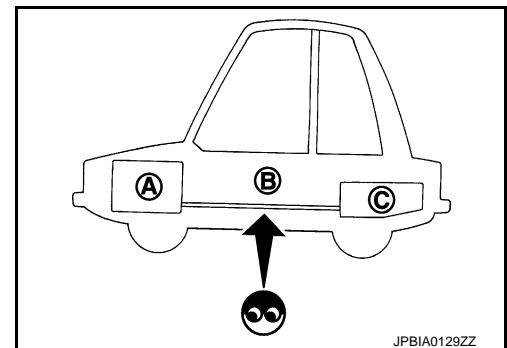
Inspection

INFOID:0000000010778295

- Inspect fuel lines, fuel filler cap and fuel tank for improper attachment, leakage, cracks, damage, loose connections, chafing or deterioration.

- (A) : Engine
 (B) : Fuel line
 (C) : Fuel tank

- If necessary, repair or replace damaged parts.



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INFOID:0000000010778296

Air Bleeding

NOTE:

Degassing from the diesel circuit is automatic.

Quick Connector

INFOID:0000000010778297

CAUTION:

FUEL SYSTEM

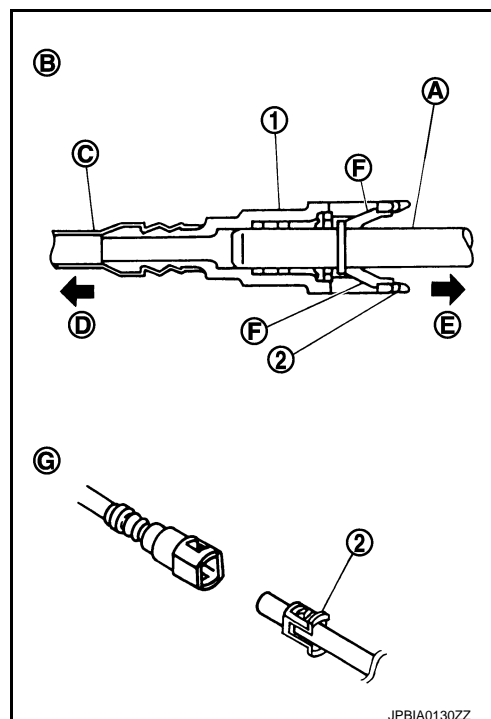
< PERIODIC MAINTENANCE >

[DIESEL ENGINE MODEL]

- After connecting fuel tube quick connectors, check quick connectors are secure.

- ① : Quick connector
- ② : Retainer
- Ⓐ : Hard tube (or the equivalent)
- Ⓑ : Connection (cross-section)
- Ⓒ : Resin tube
- Ⓓ : To under floor fuel line
- Ⓔ : To fuel tank
- Ⓕ : Tab
- Ⓖ : Disconnection

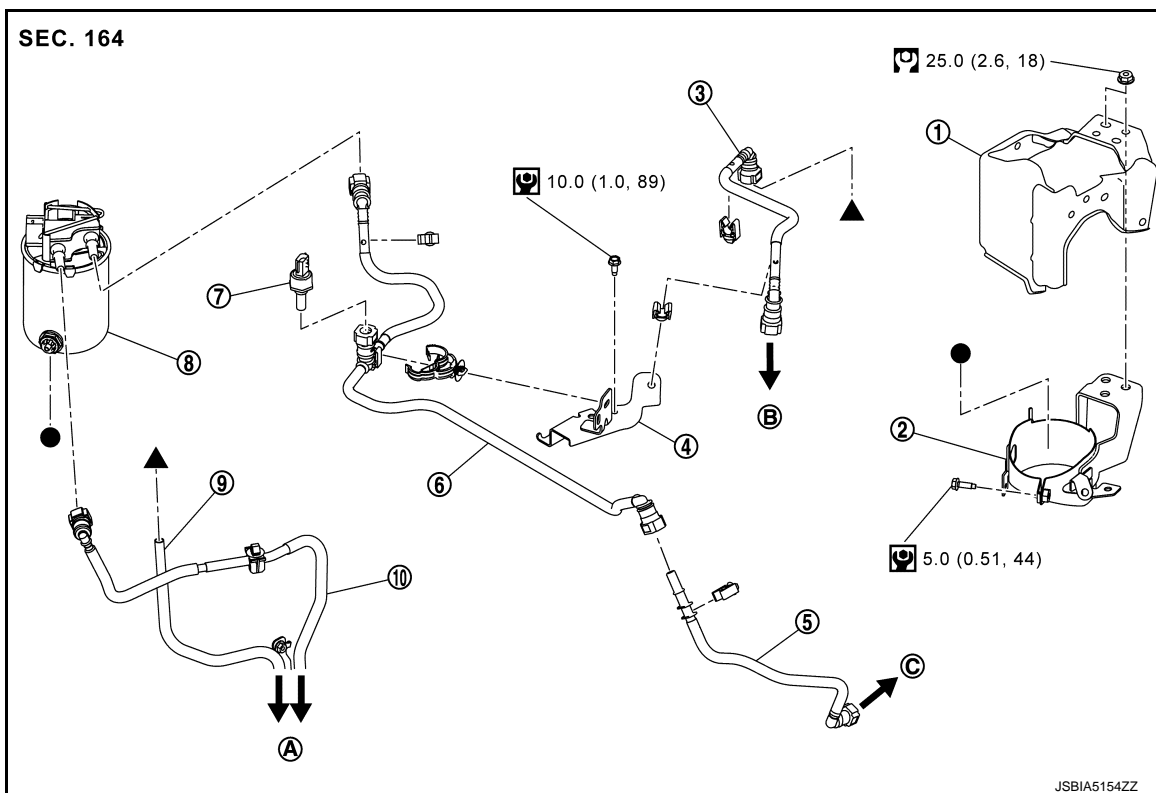
- Ensure that connector and resin tube never contact any adjacent parts.



FUEL FILTER

Exploded View

INFOID:0000000010778298



- | | | |
|-------------------------|-----------------------|--------------------|
| ① Fuel filter protector | ② Fuel filter bracket | ③ Fuel return hose |
| ④ Bracket | ⑤ Fuel feed hose | ⑥ Fuel feed hose |
| ⑦ Fuel pressure sensor | ⑧ Fuel filter | ⑨ Fuel return tube |
| ⑩ Fuel feed tube | | |
| Ⓐ To fuel tank | Ⓑ To fuel tube | Ⓒ To fuel pump |

Ⓜ : N·m (kg-m, in-lb)

Ⓜ : N·m (kg-m, ft-lb)

●, ▲ : Indicates that the part is connected at points with same symbol in actual vehicle.

Removal and Installation

INFOID:0000000010778299

REMOVAL

WARNING:

Be careful of the following when replacing fuel system parts:

- Display "CAUTION: flammable material".
- Keep away from flames, and work in a well-ventilated area.
- Keep a fire extinguisher handy.
- Keep drained fuel in a safe place.

CAUTION:

- Perform the operation with vehicle on level ground.
- Do not bend and twist hose and tube.

1. Remove fuel filter protector.
2. Disconnect fuel feed hoses and fuel return hose from fuel filter.

CAUTION:

Plug the pipe to prevent fuel from draining.

FUEL FILTER

< PERIODIC MAINTENANCE >

[DIESEL ENGINE MODEL]

3. Remove fuel filter.

CAUTION:

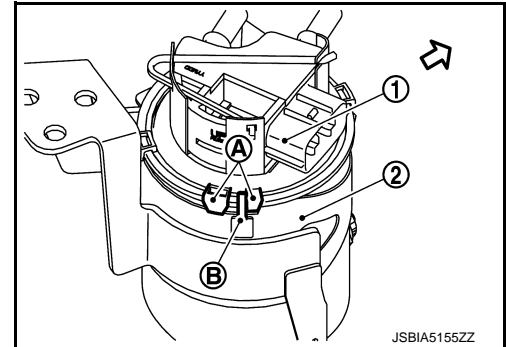
Never splash fuel during removal. If fuel is splashed, immediately wipe it off.

INSTALLATION

Note the following, and install in the reverse order of removal.

- Set fuel filter positioning ring (A) to pawl (B).

- ① : Fuel filter
② : Fuel filter bracket
⇐ : Vehicle front



Draining Water from Fuel Filter

INFOID:0000000010778300

1. Connect drain hose (suitable hose) to the end of drain plug (B).

- (A) : Fuel filter sensor

2. Prepare a tray at the drain plug open end.
3. Loosen drain plug, and operate priming pump to drain water from fuel filter.

CAUTION:

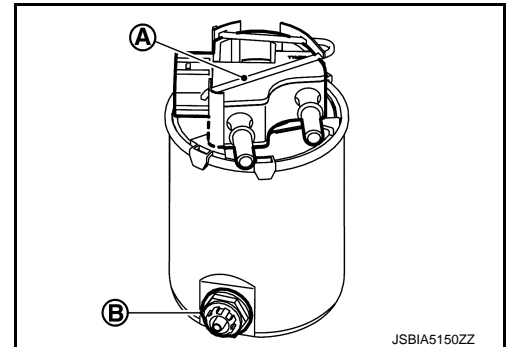
- Water in filter is drained with fuel. Prepare larger capacity pan than fuel filter volume.
- Drained water is mixed with fuel. Prevent fuel from adhering to rubber parts such as engine mounting insulator.

4. After draining, close drain plug by hand.

CAUTION:

If drain plug is tightened excessively, it may be damaged and fuel will leak. Never use tools to tighten drain plug.

5. Start engine and check there is no fuel leakage.



Inspection

INFOID:0000000010778301

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

1. Check fuel leakage at the fuel system tube and hose connections.
2. Start engine and rev it up and check there are no fuel leakage at the fuel system tube and hose connections.

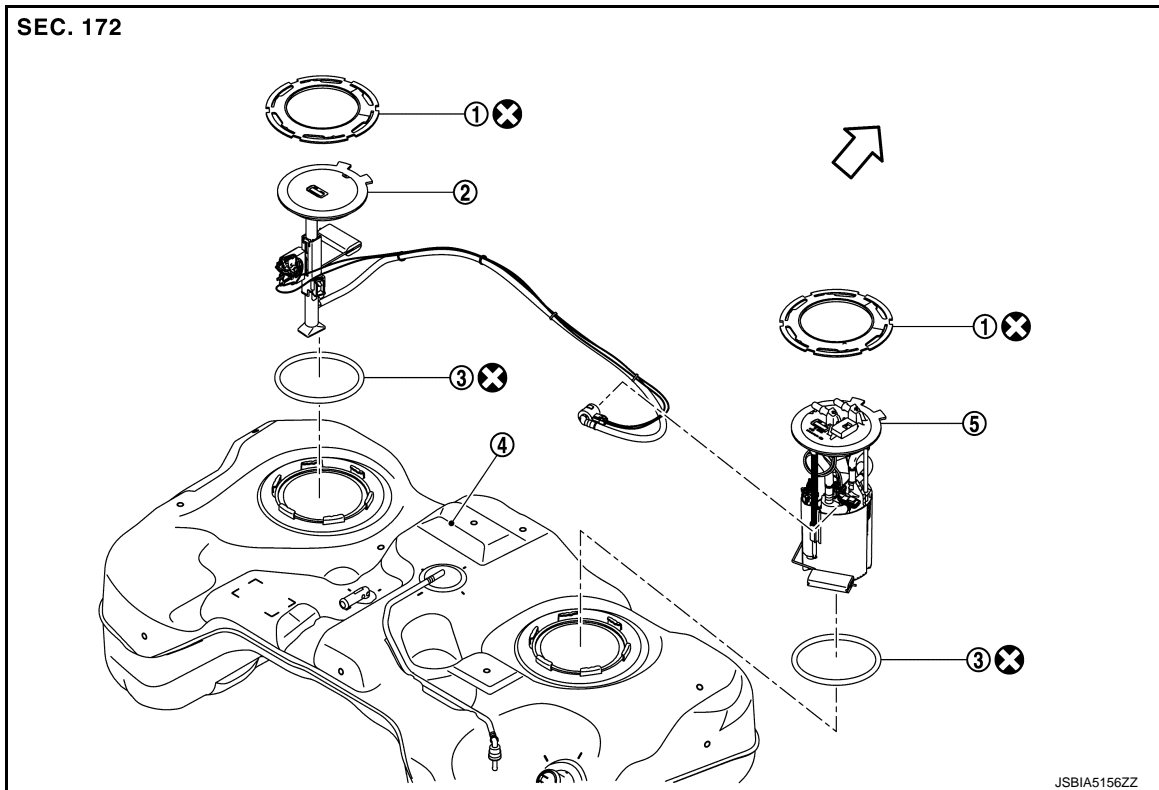
REMOVAL AND INSTALLATION

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

Exploded View

INFOID:0000000010778245

REMOVAL

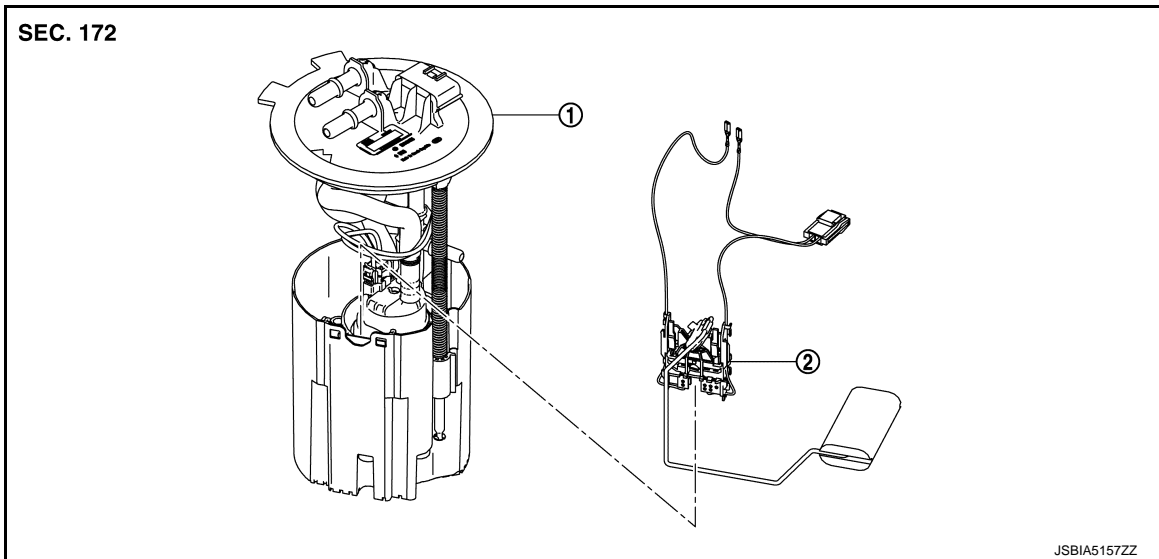


- ① Lock ring
- ② Sub fuel level sensor assembly
- ③ O-ring
- ④ Fuel tank
- ⑤ Fuel level sensor unit, fuel filter and fuel pump assembly

⇐ : Vehicle front

⊗ : Always replace after every disassembly.

DISASSEMBLY



- ① Fuel filter and fuel pump assembly ② Fuel level sensor unit

Removal and Installation

INFOID:0000000010778246

WARNING:

Read "General Precautions" when working on the fuel system. Refer to [FL-28, "General Precautions"](#).

REMOVAL

CAUTION:

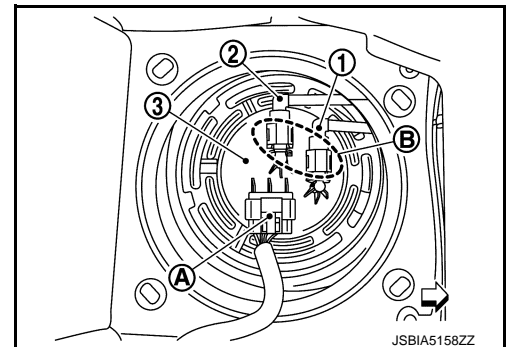
Perform the operation with vehicle on level ground.

1. Release fuel pressure. Refer to [EC-962, "Work Procedure"](#).
2. Check fuel level on a level ground. If the fuel level is 7/8 of the fuel tank (full or nearly full), draw appropriate amount of fuel from the fuel tank.

Guideline : Draw approximately 10 liters (2-1/4 Imp gal) from a full-tank condition.

- In the event of malfunction in fuel pump, insert a hose measuring 20 mm (0.79 in) in diameter into the filler opening to draw approximately 10 liters (2-1/4 Imp gal) fuel.
3. Open fuel filler lid.
 4. Open the fuel filler cap and release the pressure inside the fuel tank.
 5. Remove rear seat cushion. Refer to [SE-52, "Exploded View"](#).
 6. Remove inspection hole cover.
 - Using a screwdriver, remove it by turning clips clockwise by 90 degrees.
 7. Disconnect harness connector (A) and quick connectors (B).

- ① : Fuel feed tube
 ② : Fuel return tube
 ③ : Fuel level sensor unit, fuel filter and fuel pump assembly
 ⇐ : Vehicle front



Disconnect quick connector as follows:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

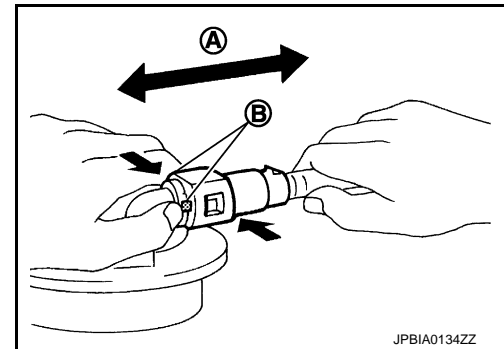
< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

- Hold the sides of connector, push in tabs (B) and pull out fuel feed tube.

(A) : Pull

- If quick connector sticks to tube of fuel level sensor unit, fuel filter and fuel pump assembly, push and pull quick connector several times until they start to move. Then disconnect them by pulling.



CAUTION:

- Quick connector (1) can be disconnected when the tabs (F) are completely depressed. Never twist it more than necessary.

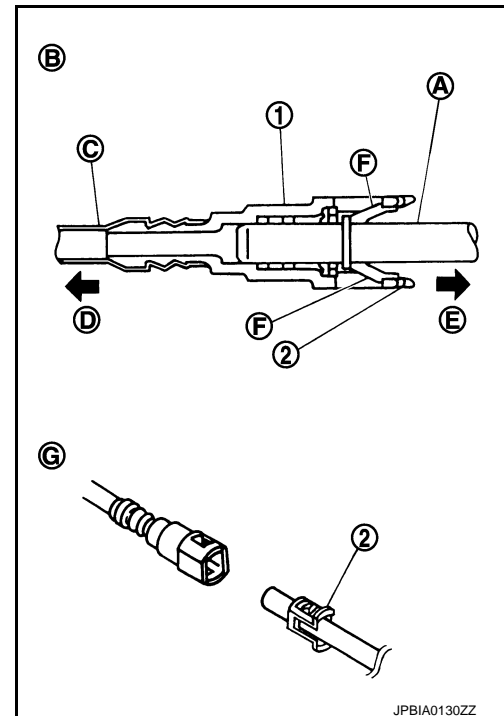
(B) : Connection (cross-section)

(D) : To under floor fuel line

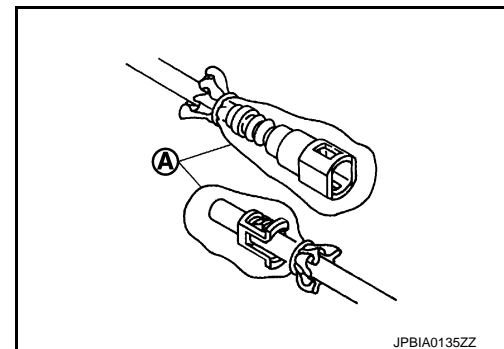
(E) : To fuel tank

(G) : Disconnection

- Never use any tools to disconnected quick connector.
- Keep resin tube (C) away from heat. Be especially careful when welding near the resin tube.
- Prevent acid liquid such as battery electrolyte, etc. from getting on resin tube.
- Never bend or twist resin tube during installation and disconnection.
- Never remove the remaining retainer (2) on hard tube (or the equivalent) (A) except when resin tube or retainer is replaced.
- When resin tube or hard tube (or the equivalent) is replaced, also replace retainer with new one.



- To keep the connecting portion clean and to avoid damage and foreign materials, cover them completely with plastic bags (A) or something similar.



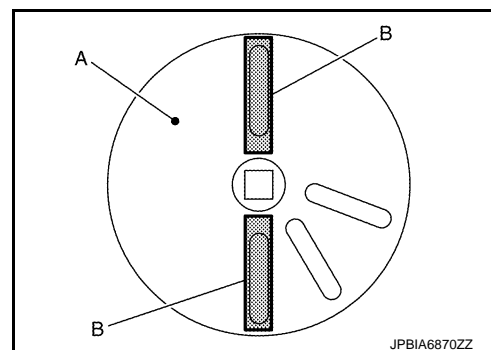
8. Remove lock ring according to the following instructions:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

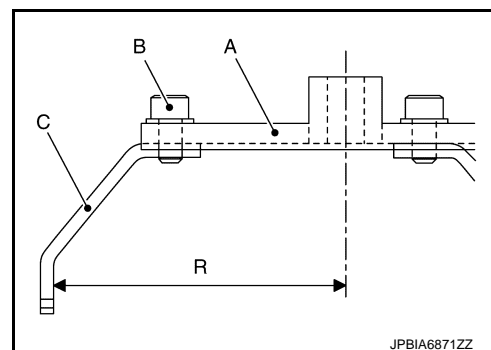
[DIESEL ENGINE MODEL]

- a. Install pawl (B) of unified fuel lock ring wrench [SST: KV101207S0] (A) to the position shown in the figure.



- b. Temporarily tighten mounting bolt (B) of the pawl according to the measurement (R) from the center of unified fuel lock ring wrench [SST: KV101207S0] (A) to the end of pawl (C).

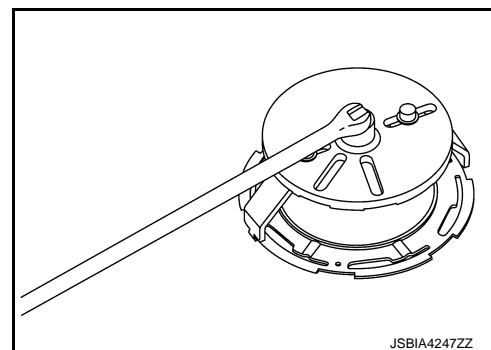
R : 82 mm (3.23 in)



- c. Set unified fuel lock ring wrench [SST: KV101207S0] (A) to lock ring and tighten the mounting bolt of the pawl.
- d. Remove lock ring.

CAUTION:

- To prevent lock ring wrench from being detached, securely hold down spinner handle (B) by hand.
- To reduce impact caused by removal operation, use long spinner handle [handle length: 60 cm (23.62 in) or more] and slowly turn it counterclockwise.



9. Raise fuel level sensor unit, fuel filter and fuel pump assembly.

CAUTION:

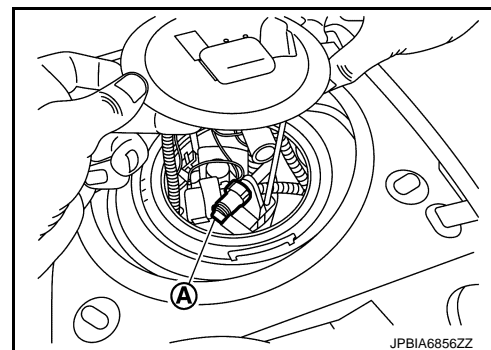
- Never bend float arm during removal.
- Never pollute the inside by residue fuel. Draw out avoiding inclination by supporting with a cloth.
- Never cause impacts such by dropping when handling components.

10. Separate fuel tube as per the following steps to remove fuel level sensor unit, fuel filter and fuel pump assembly.

- Pinch quick connector (A) square-part with your fingers, and pull out the quick connector by hand.
- If quick connector and tube on sender unit are stuck, push several times until they move, and pull out.

NOTE:

When separating the fuel tube, tie a gasoline-resistance rope to the tip of the fuel tube and leave the rope on the fuel tank side to easily pull the fuel tube for installation.

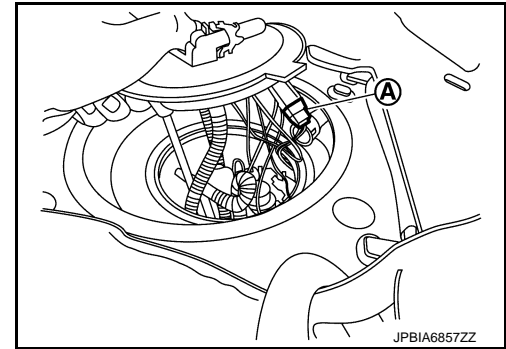


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

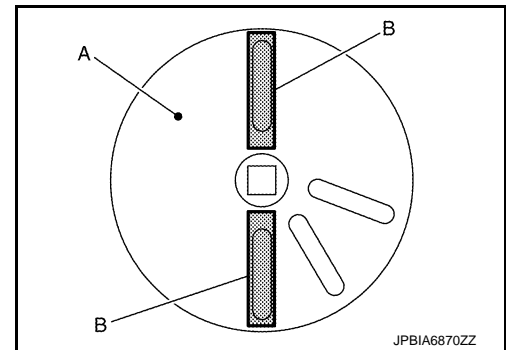
[DIESEL ENGINE MODEL]

- Disconnect harness connector ①.



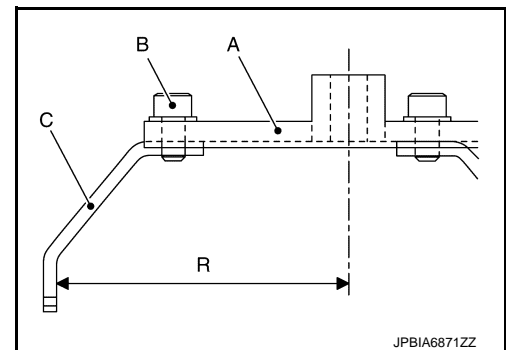
Sub Fuel Level Sensor Assembly

1. Remove fuel level sensor unit, fuel filter and fuel pump assembly.
2. Remove lock ring according to the following instructions:
 - a. Install pawl (B) of unified fuel lock ring wrench [SST: KV101207S0] (A) to the position shown in the figure.



- b. Temporarily tighten mounting bolt (B) of the pawl according to the measurement (R) from the center of unified fuel lock ring wrench [SST: KV101207S0] (A) to the end of pawl (C).

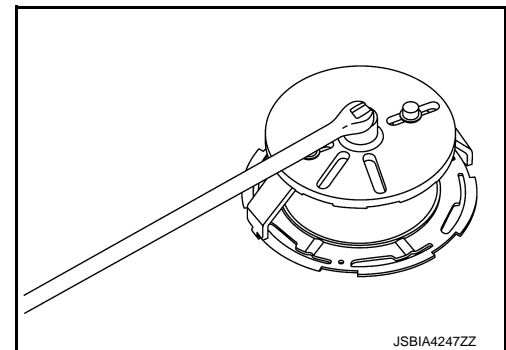
R : 82 mm (3.23 in)



- c. Set unified fuel lock ring wrench [SST: KV101207S0] (A) to lock ring and tighten the mounting bolt of the pawl.
- d. Remove lock ring.

CAUTION:

- To prevent lock ring wrench from being detached, securely hold down spinner handle (B) by hand.
- To reduce impact caused by removal operation, use long spinner handle [handle length: 60 cm (23.62 in) or more] and slowly turn it counterclockwise.



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

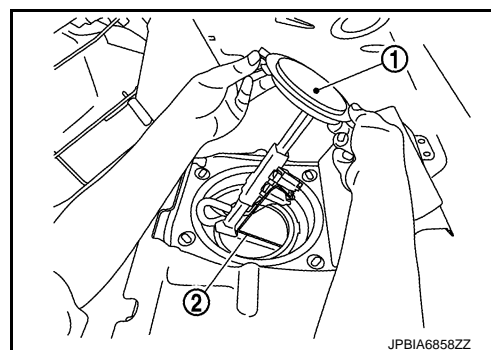
- Remove sub fuel level sensor assembly ①.

CAUTION:

- Never disassemble a fuel tube ② from sub fuel sensor assembly.
- Never bend float arm during removal.
- Never pollute the inside by residue fuel. Draw out avoiding inclination by supporting with a cloth.
- Never cause impacts such by dropping when handling components.

NOTE:

Tie a gasoline-resistance rope to a tip of the tube. Draw and leave the rope to the fuel tank side so that the rope can be the guide for installation.



INSTALLATION

Note to the following, and install in the reverse order of removal.

Sub Fuel Level Sensor Assembly

- Install new O-ring to fuel tank without any twist.

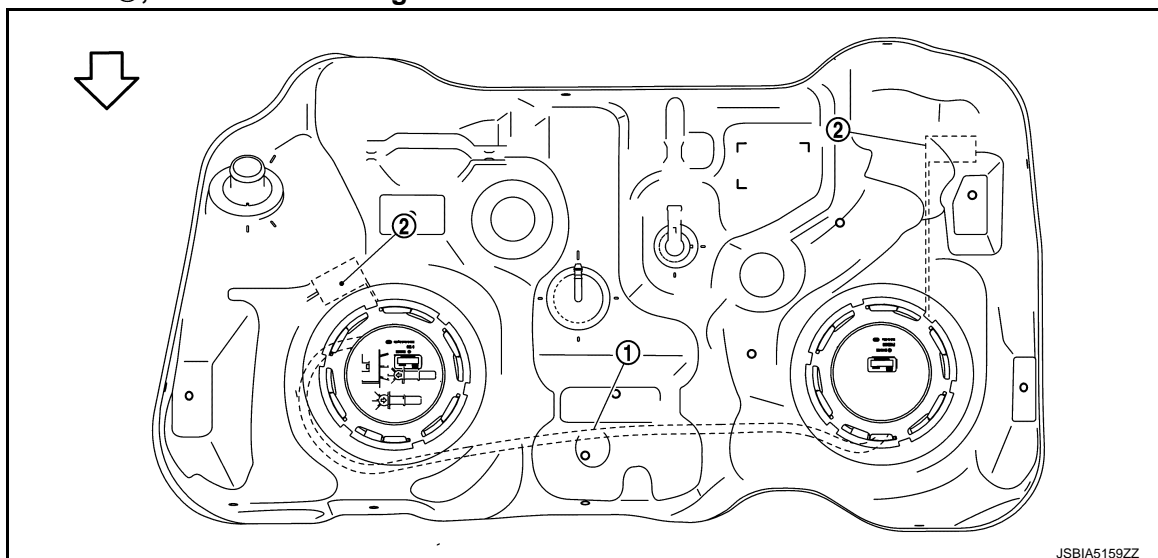
CAUTION:

Do not reuse O-rings.

- Using the rope left on the fuel tank side at removal, run the fuel tube inside the fuel tank to install the sub fuel level sensor assembly to the fuel tank.

CAUTION:

- Never bend float arm during installation.
- To install, fuel tube ① must run to the front (←) of the vehicle to avoid the interference with the float arm ②, as shown in the figure.

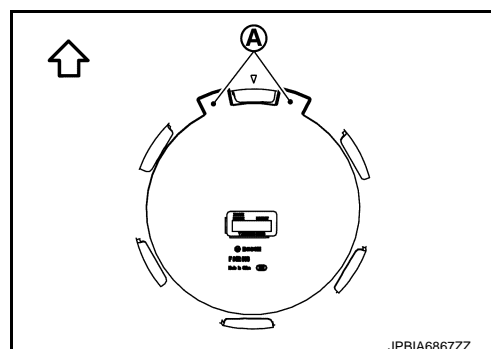


- Install the sub fuel level sensor assembly on the fuel tank with the sub fuel level sensor assembly top surface (A) faced the front of the vehicle.

← : Vehicle front

CAUTION:

- Never allow seal packing to drop.
- Never bend float arm during installing.

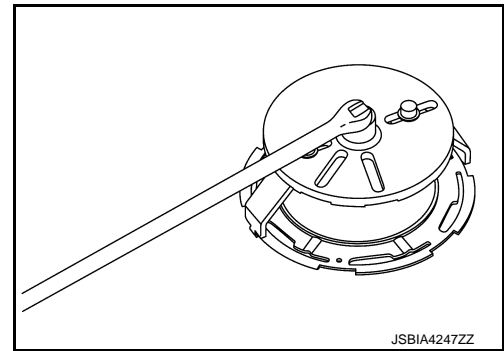


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

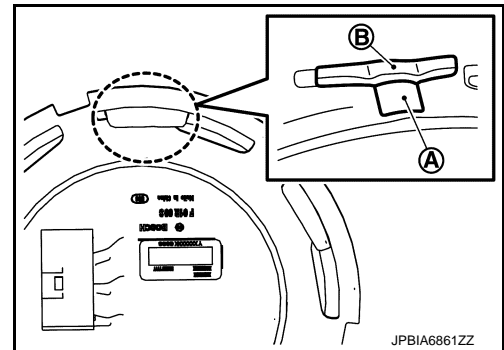
[DIESEL ENGINE MODEL]

4. Install lock ring for sub fuel level sensor assembly with unified fuel lock ring wrench [SST:KV101207S0] by turning clockwise.



CAUTION:

- Install lock ring horizontally.
- Turn the lock ring ① until it is engaged in the fuel tank side ② as shown in the figure.



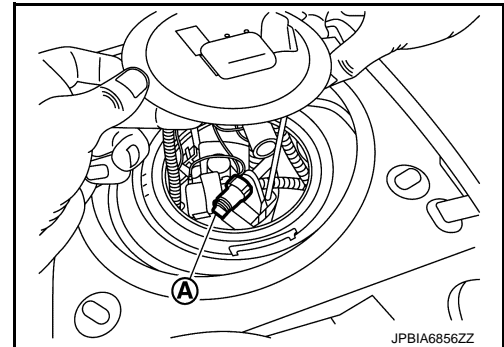
Fuel Level Sensor Unit, Fuel Filter and Fuel Pump Assembly

1. Install new O-ring to fuel tank without any twist.

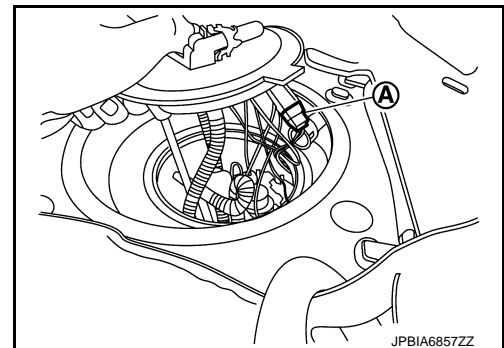
CAUTION:

Do not reuse O-rings.

2. Connect the fuel tube as per the following steps.
 - Insert the quick connector ① straight to the fuel level sensor unit, fuel filter and fuel pump assembly.
 - Judge a good fit from connecting sound and tactile feedback.
 - Pull the fuel tube by hand to check a secure fit.



3. Connect harness connector ①.



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

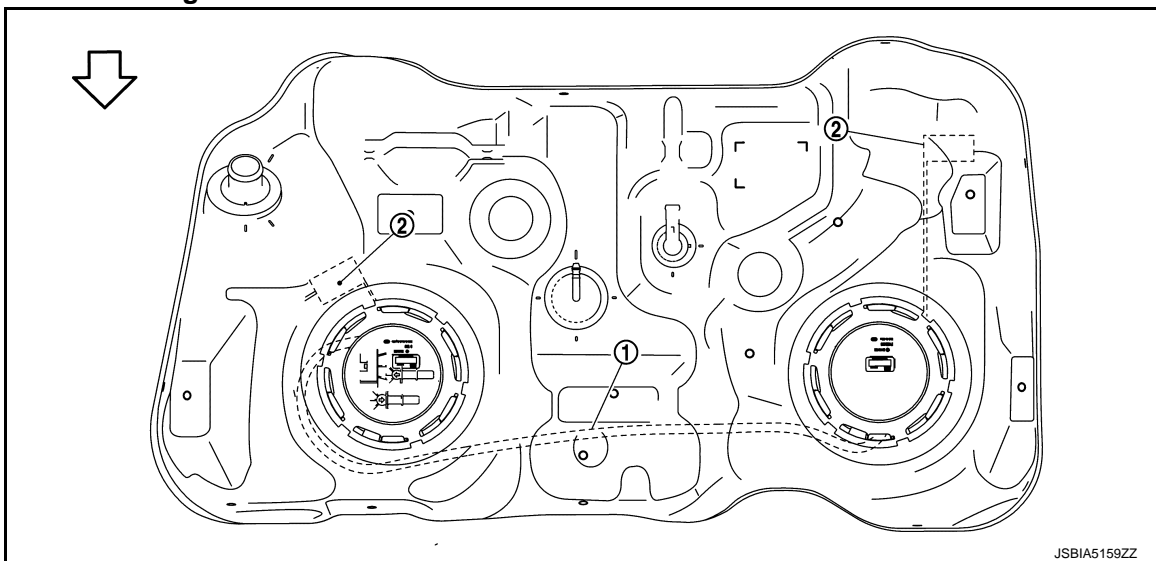
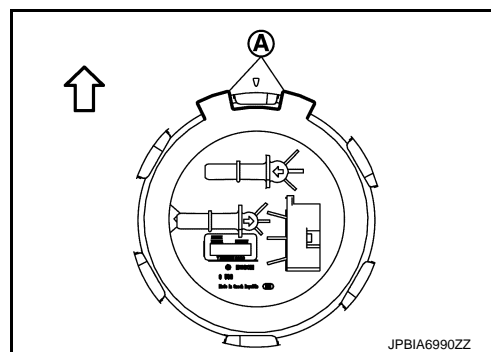
[DIESEL ENGINE MODEL]

4. Install the fuel level sensor unit, fuel filter and fuel pump assembly on the fuel tank with the fuel level sensor unit, fuel filter and fuel pump assembly top surface ① faced the front of the vehicle.

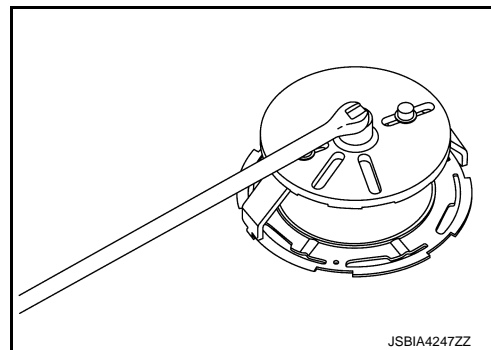
↔ : Vehicle front

CAUTION:

- Never allow seal packing to drop.
- Never bend float arm during installing.
- To install, fuel tube ① must run to the front (↔) of the vehicle to avoid the interference with the float arm ②, as shown in the figure.



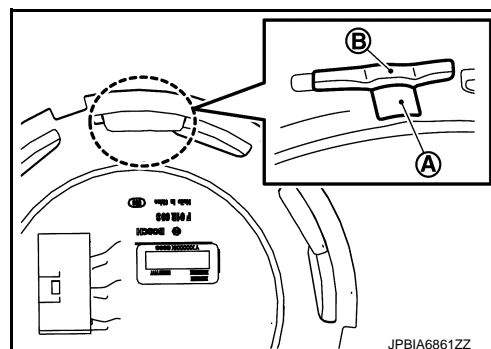
5. Install lock ring for fuel level sensor unit, fuel filter and fuel pump assembly with unified fuel lock ring wrench [SST:KV101207S0] by turning clockwise.



CAUTION:

- Install lock ring horizontally.
- Turn the lock ring ① until it is engaged in the fuel tank side ② as shown in the figure.

6. Connect quick connector of fuel feed tube as per following procedures.
 - a. Check the connection for damage or any foreign materials.
 - b. Align the connector with the tube, then insert the connector straight into the tube until a "click" sound is heard.
 - c. After connecting, check that the connection is secured with following procedures.
 - Visually confirm that the two tabs are connected to the connector.

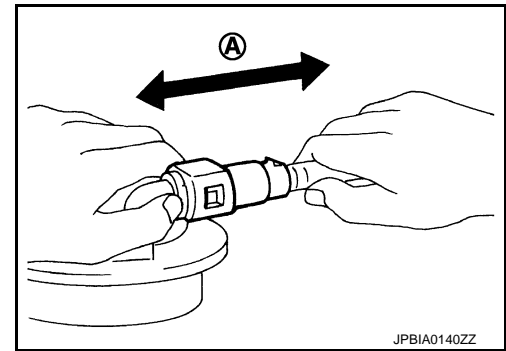


FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

- Pull ① the tube and the connector to check that they are securely connected.
7. Connect harness connector.



Inspection Hole Cover

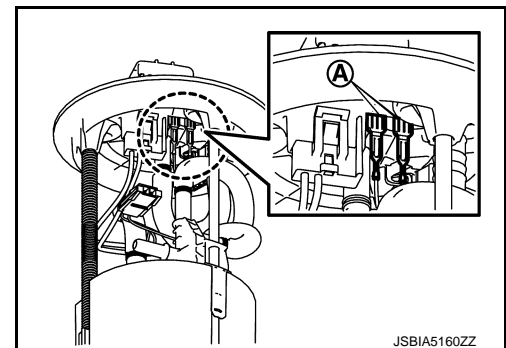
- Before installing inspection hole cover, check that the connecting part has no fuel leakage. Refer to [FL-48](#), "[Inspection](#)".
1. Install inspection hole covers with the front mark (arrow) facing front of vehicle.
 2. Lock clips by turning counterclockwise.

Disassembly and Assembly

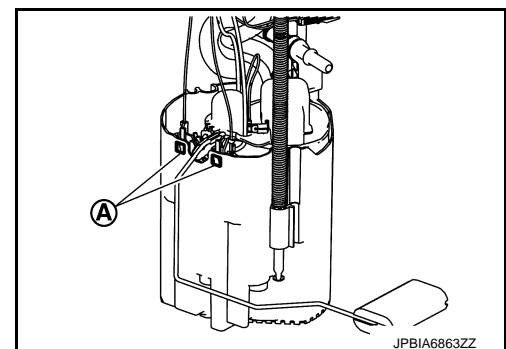
INFOID:000000010778247

DISASSEMBLY

1. Disconnect fuel level sensor harness connector ①.



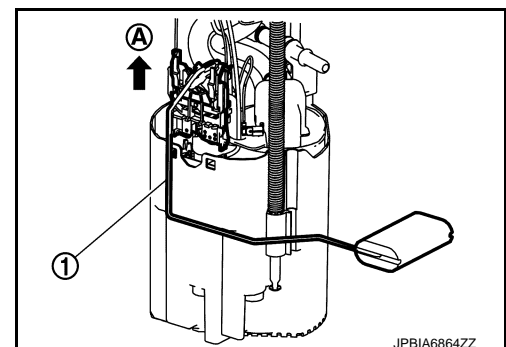
2. Remove fuel level sensor from fuel filter and fuel pump assembly, according to the following steps.
 - a. Remove fuel level sensor harness from fuel filter and fuel pump assembly.
 - b. Press into pawl ① of fuel level sensor mounting area.



- c. With the fuel level sensor unlocked, slide it in the direction ①.

CAUTION:

 - Be careful not to damage the fuel level sensor.
 - Never disassemble fuel filter and fuel pump assembly.



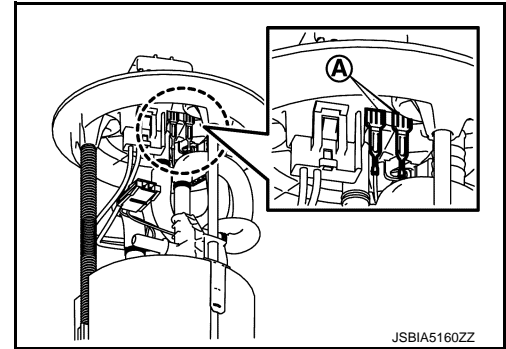
FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

ASSEMBLY

1. Install fuel level sensor all the way. Tactually and aurally check the fit.
2. Connect fuel level sensor harness connector (A).
3. Install fuel level sensor harness to fuel filter and fuel pump assembly.



Inspection

INFOID:0000000010778248

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

1. Turn ignition switch "ON" (with engine stopped), then check connections for leakage by applying fuel pressure to fuel piping.
2. Start engine and let it idle and check there are no fuel leakage at the fuel system connections.

FUEL TANK

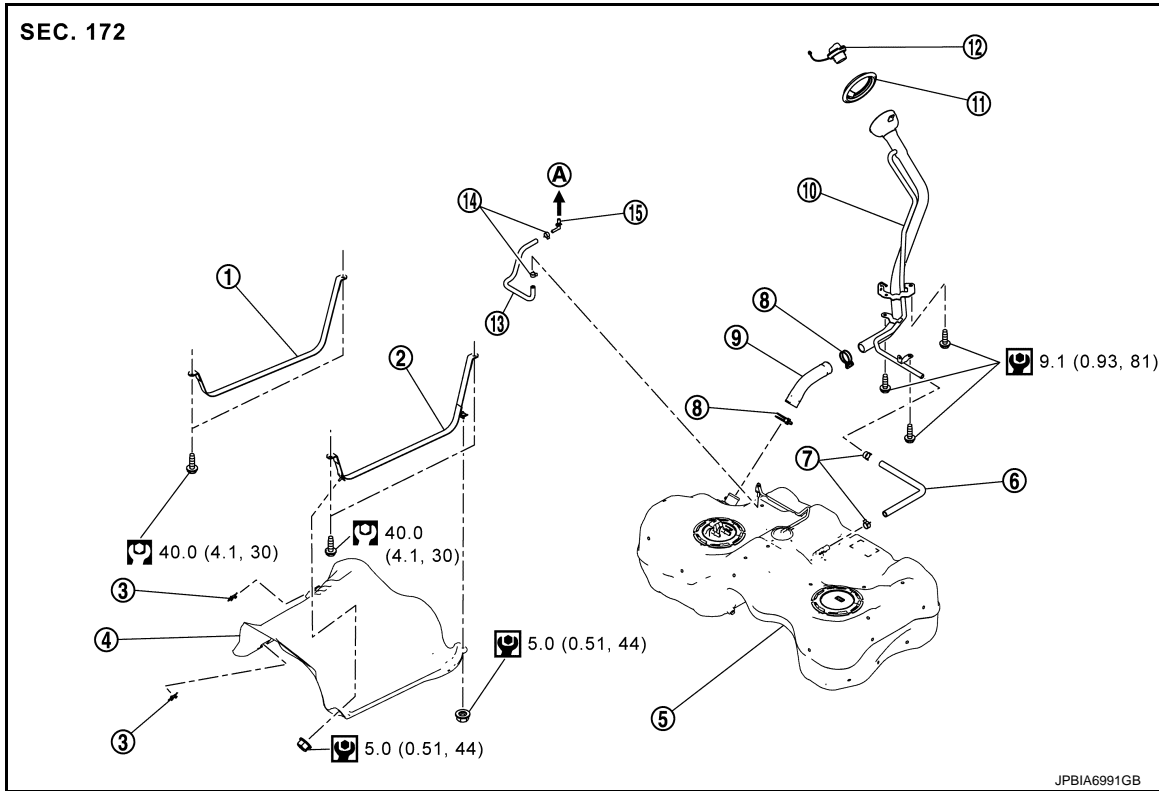
< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

FUEL TANK

Exploded View

INFOID:0000000010778249



- | | | |
|-----------------------|-----------------------|--------------------|
| ① Fuel tank band (RH) | ② Fuel tank band (LH) | ③ Metal clip |
| ④ Protector | ⑤ Fuel tank | ⑥ Vent hose |
| ⑦ Clamp | ⑧ Clamp | ⑨ Fuel filler hose |
| ⑩ Fuel filler tube | ⑪ Grommet | ⑫ Fuel filler cap |
| ⑬ EVAP hose | ⑭ Clamp | ⑮ Connector |
| (A) Floor panel | | |
| : N·m (kg-m, ft-lb) | | |
| : N·m (kg-m, in-lb) | | |

Removal and Installation

INFOID:0000000010778250

WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to [FL-28, "General Precautions"](#).

REMOVAL

1. Perform the steps 1 to 7 of "REMOVAL" in "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY". Refer to [FL-40, "Removal and Installation"](#).
2. Drain fuel from fuel tank if necessary. Refer to [FL-40, "Removal and Installation"](#).

CAUTION:

- Because fuel tank forwardly inclines and becomes unstable when installing/removing, fuel should be drained if found the remaining quantity.
- Situate vehicle on a flat and solid surface.


3. Remove main muffler. Refer to [EX-17, "Exploded View"](#).
4. Remove rear propeller shaft. Refer to [DLN-214, "Exploded View"](#). (4WD models)

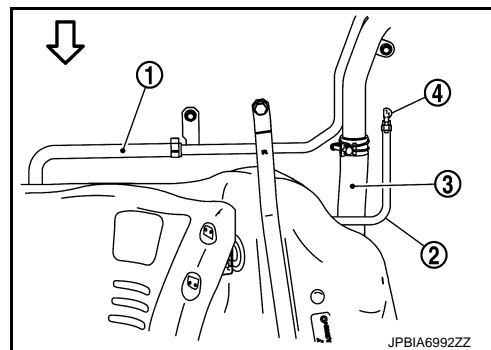
FUEL TANK

< REMOVAL AND INSTALLATION >

[DIESEL ENGINE MODEL]

5. Remove protector from fuel tank.
6. Disconnect vent hose ①, EVAP hose ②, and fuel filler hose ③ at rear side of fuel tank.

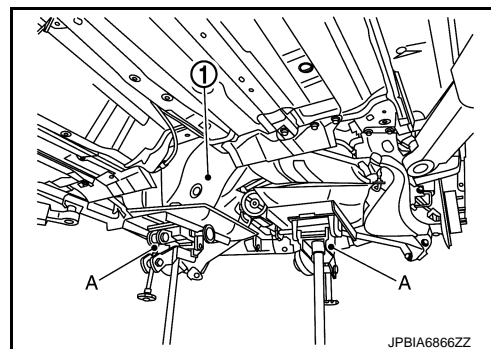
④ : Connector
 : Vehicle front



7. Remove suspension bar. Refer to [RSU-13, "Exploded View"](#). (4WD models)
8. Support the lower part of fuel tank ① with transmission jack (A).

CAUTION:

Support the position that fuel tank mounting bands never engage.



9. Remove fuel tank band (RH and LH).
10. Lower transmission jack carefully to remove fuel tank while holding it by hand.

CAUTION:

Fuel tank may be in an unstable condition because of the shape of fuel tank bottom. Never rely on jack too much. Be sure to hold tank securely.

INSTALLATION

Note the following, and install in the reverse order of removal.

- Surely clamp fuel hoses and insert hose to the length below.

Fuel filler hose : 35 mm (1.38 in)
 The other hoses : 25 mm (0.98 in)

- Be sure hose clamp is not placed on swelled area of fuel tube.
- Tighten fuel filler hose clamp.

	Remaining length of screw thread	Specified torque
Fuel filler tube side	: 7 - 11 mm (0.28 - 0.43 in)	: 2.5 N·m (0.26 kg-m, 22 in-lb)
Fuel tank side	: 5 - 9 mm (0.20 - 0.35 in)	: 2.5 N·m (0.26 kg-m, 22 in-lb)

- To connect quick connector, refer to [FL-40, "Removal and Installation"](#).

Inspection

INFOID:0000000010778251

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

1. Turn ignition switch "ON" (with engine stopped), and check connections for leakage by applying fuel pressure to fuel piping.
2. Start engine and rev it up and check there are no fuel leakage at the fuel system tube and hose connections.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[DIESEL ENGINE MODEL]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Fuel Tank

INFOID:0000000010778255

FL

Standard and Limit

Fuel tank capacity	Approx. 60 ℓ (13-2/8 Imp gal)
Fuel recommendation	Refer to GI-30, "Fuel"

A
C
D
E
F
G
H
I
J
K
L
M
N
O
P