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SECTION FL
FUEL SYSTEM

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PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

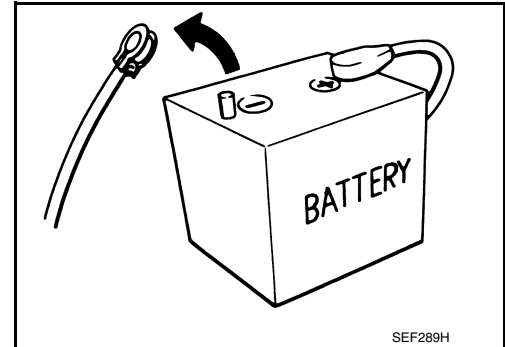
Precautions for Removing Battery Terminal

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

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

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



NOTE:

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

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

NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
 - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
 - Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:

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

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

NOTE:

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

General Precautions

INFOID:000000012351372

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-28, "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-180, "Work Procedure"](#) (VQ37VHR FOR USA AND CANADA), [EC-701, "Work Procedure"](#) (VQ37VHR FOR MEXICO), [EC-1149, "Work Procedure"](#) (VK56VD FOR USA AND CANADA), [EC-1731, "Work Procedure"](#) (VK56VD FOR MEXICO).
 - 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.

PRECAUTIONS

< PRECAUTION >

- 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.
- For servicing "On Board Refueling Vapor Recovery (ORVR)" parts, refer to [EC-55, "On Board Refueling Vapor Recovery \(ORVR\)"](#) (VQ37VHR FOR USA AND CANADA), [EC-1006, "On Board Refueling Vapor Recovery \(ORVR\)"](#) (VK56VD FOR USA AND CANADA).

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PREPARATION

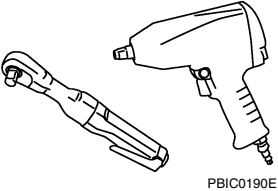
< PREPARATION >

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:000000012351373

Tool name	Description
Power tool  PBIC0190E	Loosening nuts and bolts

FUEL SYSTEM

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE

FUEL SYSTEM

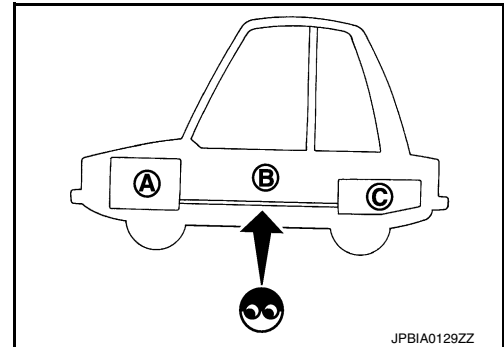
Inspection

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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Quick Connector

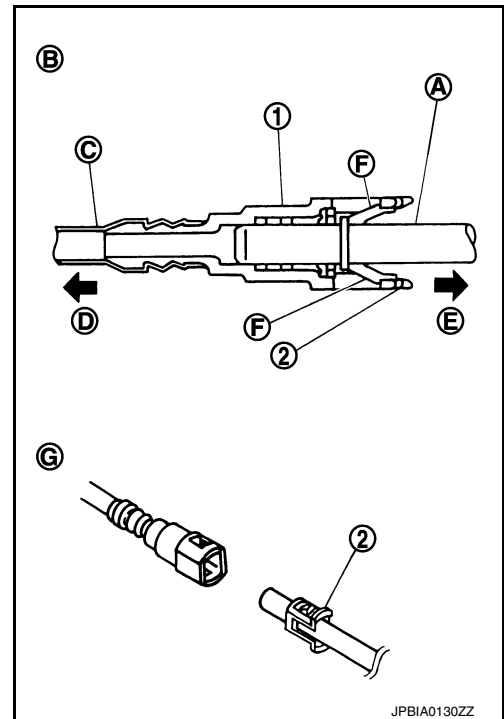
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CAUTION:

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

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

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



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

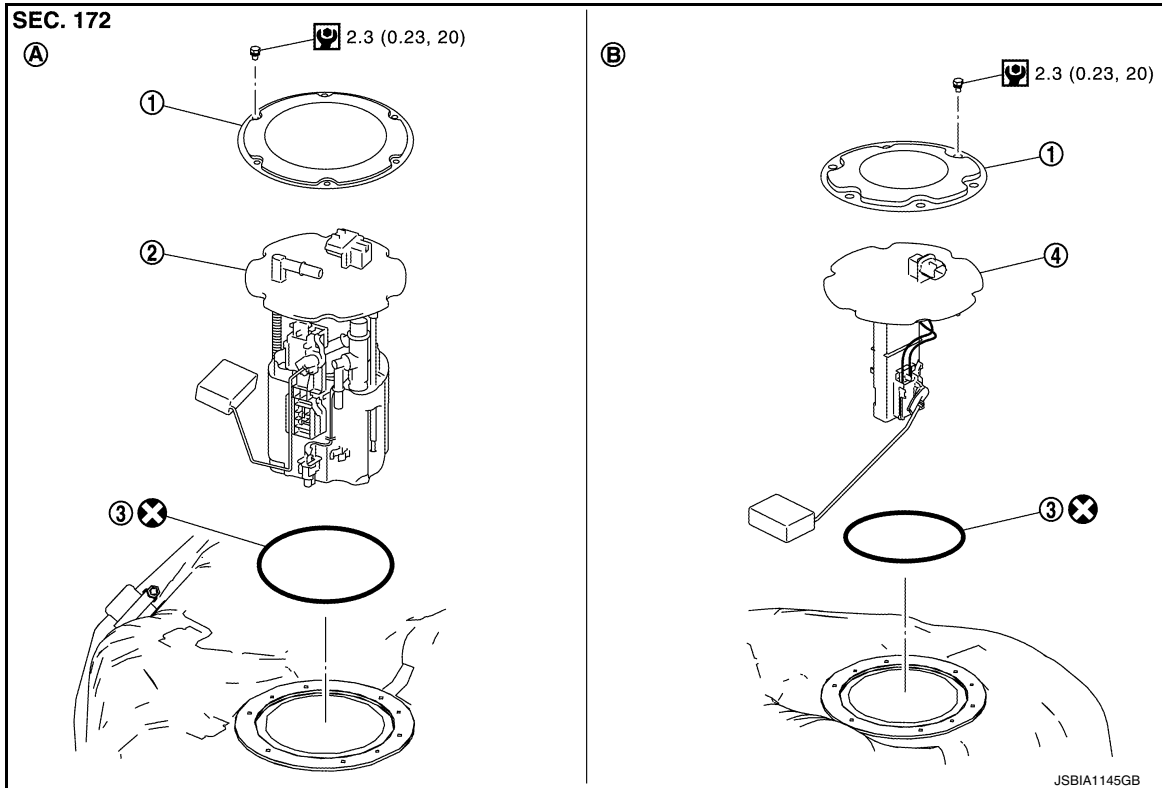
REMOVAL AND INSTALLATION

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

Exploded View

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REMONVAL

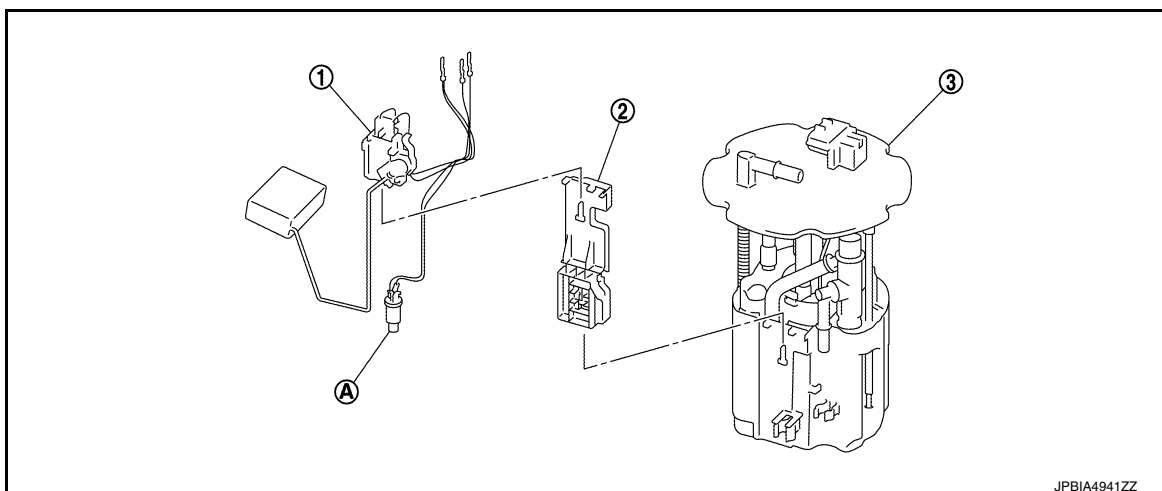


- 1. Retainer
 - 2. Main fuel level sensor unit, fuel filter and fuel pump assembly
 - 3. O-ring
 - 4. Sub fuel level sensor unit
- A. Right side B. Left side

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

DISASSEMBLY



FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

1. Main fuel level sensor unit
 2. Adapter
 3. Fuel filter and fuel pump assembly
- A. Fuel temperature sensor

NOTE:

Sub fuel level sensor unit cannot be disassembled and should be replaced as a unit.

Removal and Installation

INFOID:000000012351377

WARNING:

Read "General Precautions" when working on the fuel system. Refer to [FL-2, "General Precautions"](#).

REMOVAL

1. 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 20 liters (5-1/4 US gal) from a full-tank condition.

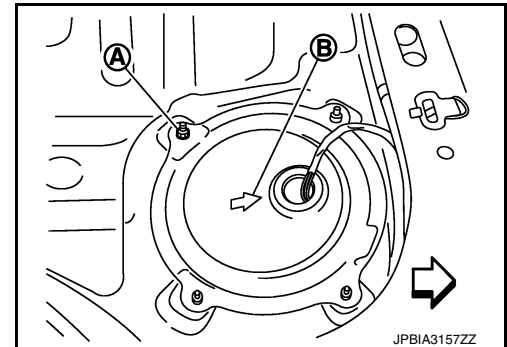
- In the event of malfunction in fuel pump, insert a hose measuring 20mm (0.79 in) in diameter into the filler opening to draw approximately 20 liters (5-1/4 US gal) fuel.
2. Release the fuel pressure from the fuel lines. Refer to [EC-180, "Work Procedure"](#) (VQ37VHR FOR USA AND CANADA), [EC-701, "Work Procedure"](#) (VQ37VHR FOR MEXICO), [EC-1149, "Work Procedure"](#) (VK56VD FOR USA AND CANADA), [EC-1731, "Work Procedure"](#) (VK56VD FOR MEXICO).
 3. Open fuel filler lid.
 4. Open filler cap and release the pressure inside fuel tank.
 5. Remove rear seat cushion. Refer to [SE-134, "Exploded View"](#).
 6. Peel off floor carpet.
 7. Remove mounting nuts (A), and then inspection hole cover.

B : Direction mark

⇐ : Vehicle front

Right side : Main fuel level sensor unit, fuel filter, and fuel pump assembly

Left side : Sub fuel level sensor unit



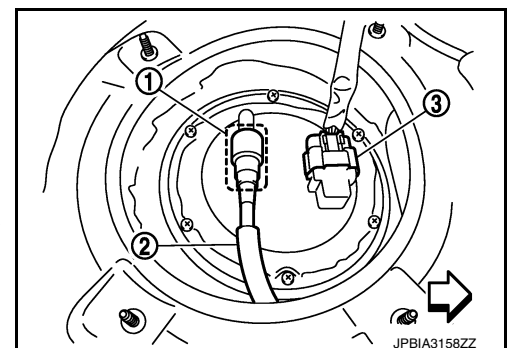
8. Disconnect harness connector (3) and fuel feed tube (2).

1 : Quick connector

⇐ : Vehicle front

NOTE:

- Fuel does not return to the fuel tank.
- The sub fuel level sensor unit includes a harness connector only.
- Figure shows main fuel level sensor unit, fuel filter and fuel pump assembly side of fuel tank.



Disconnect quick connector as follows:

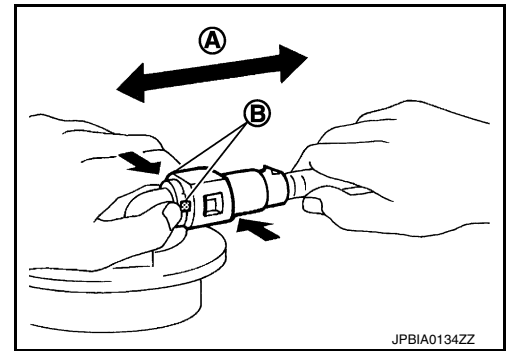
FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

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

A : Pull
B : Push in tabs

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



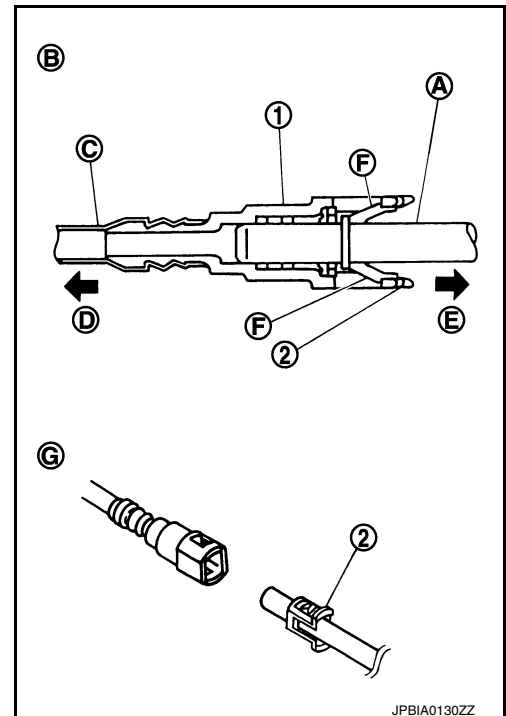
CAUTION:

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

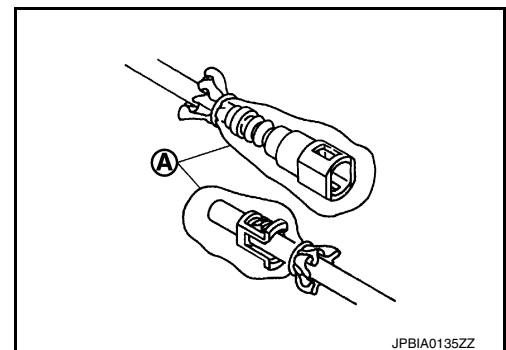
B : Connection (Cross-section)
D : To under floor fuel line
E : To fuel tank
G : Disconnection

- 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.

Retainer color : Green



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



9. Remove main fuel level sensor unit, fuel filter and fuel pump assembly, and sub fuel level sensor unit as follows:

CAUTION:

- Never bend float arm during removal.
- Avoid impacts such as falling when handling components.

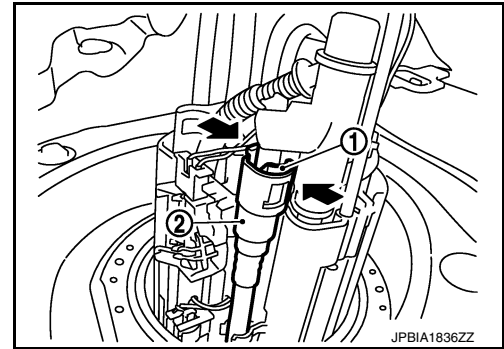
- a. Removal of main fuel level sensor unit, fuel filter and fuel pump assembly:

- i. Remove retainer.
- ii. Raise main fuel level sensor unit, fuel filter and fuel pump assembly, and disconnect quick connector as follows:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

- Push in tabs (1) and pull out fuel tube (2).
- b. Removal of sub fuel level sensor unit:
 - i. Remove retainer.
 - ii. Raise and release sub fuel level sensor unit to remove.



INSTALLATION

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

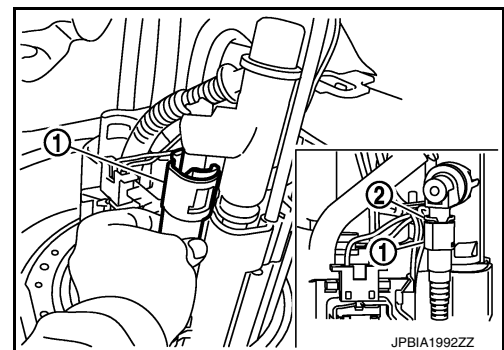
CAUTION:

Do not reuse O-rings.

Fuel hose

- When installing fuel hose connector (1), refer to “Quick Connector”.

2 : Retainer

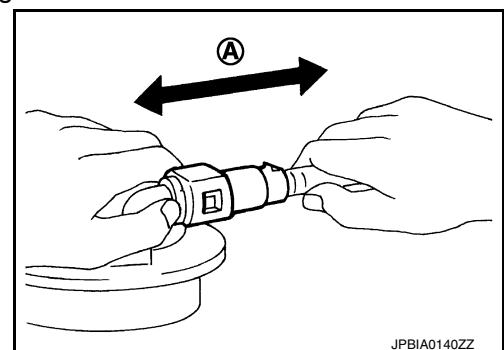


Quick Connector

- Connect quick connector as follows:
 1. Check the connection for damage or any foreign materials.
 2. Align the connector with the tube, then insert the connector straight into the tube until a click sound is heard.
 3. After connecting, check that the connection is secure by following method.
 - Pull the tube and the connector to check they are securely connected.

A : Pull

- Visually confirm that the two retainer tabs are connected to the connector.



Disassembly and Assembly

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DISASSEMBLY

CAUTION:

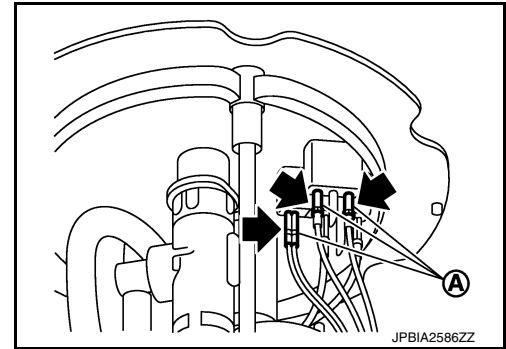
Sub fuel level sensor unit cannot be disassembled and should be replaced as a unit.

Remove main fuel level sensor unit as follows:

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< REMOVAL AND INSTALLATION >

1. Disconnect harness connector (A).
 - a. Hold connector by fingers and push stopper release tab.
 - b. Pull it out connector.



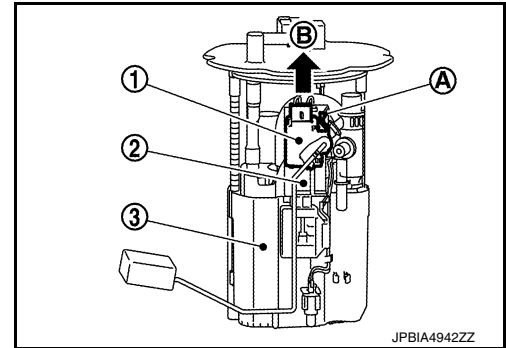
2. Remove main fuel level sensor unit (1) from adapter (2) as follows:

3 : Fuel filter and fuel pump assembly

- a. Push in tab (A) to release the lock.
- b. After fixing tabs are disengaged, slide main fuel level sensor unit out in direction shown by the arrow (B).

CAUTION:

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



3. Remove adapter from the fuel filter and fuel pump assembly, if necessary, in the same procedure used in removing main fuel level sensor unit.

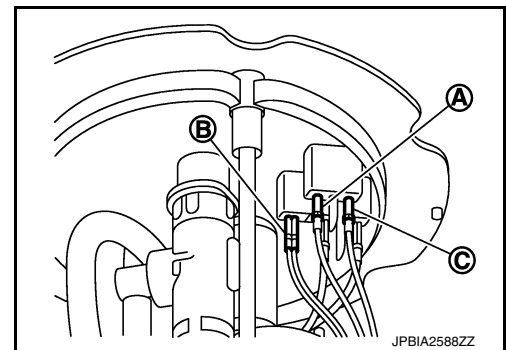
ASSEMBLY

CAUTION:

Sub fuel level sensor unit cannot be disassembled and should be replaced as a unit.

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

1. Check for damage of main fuel level sensor unit installation position on the side of adapter.
2. Slide main fuel level sensor unit until it aligns to installation groove, then insert it until it stops.
 - After inserting, apply force in reverse direction (removal direction) to ensure it cannot be pulled out.
3. Connect the white (A), black (B), and red (C) harnesses so that they are in the positions shown in the figure.
 - Securely insert harness connector until it stops.



Inspection

INFOID:000000012351379

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

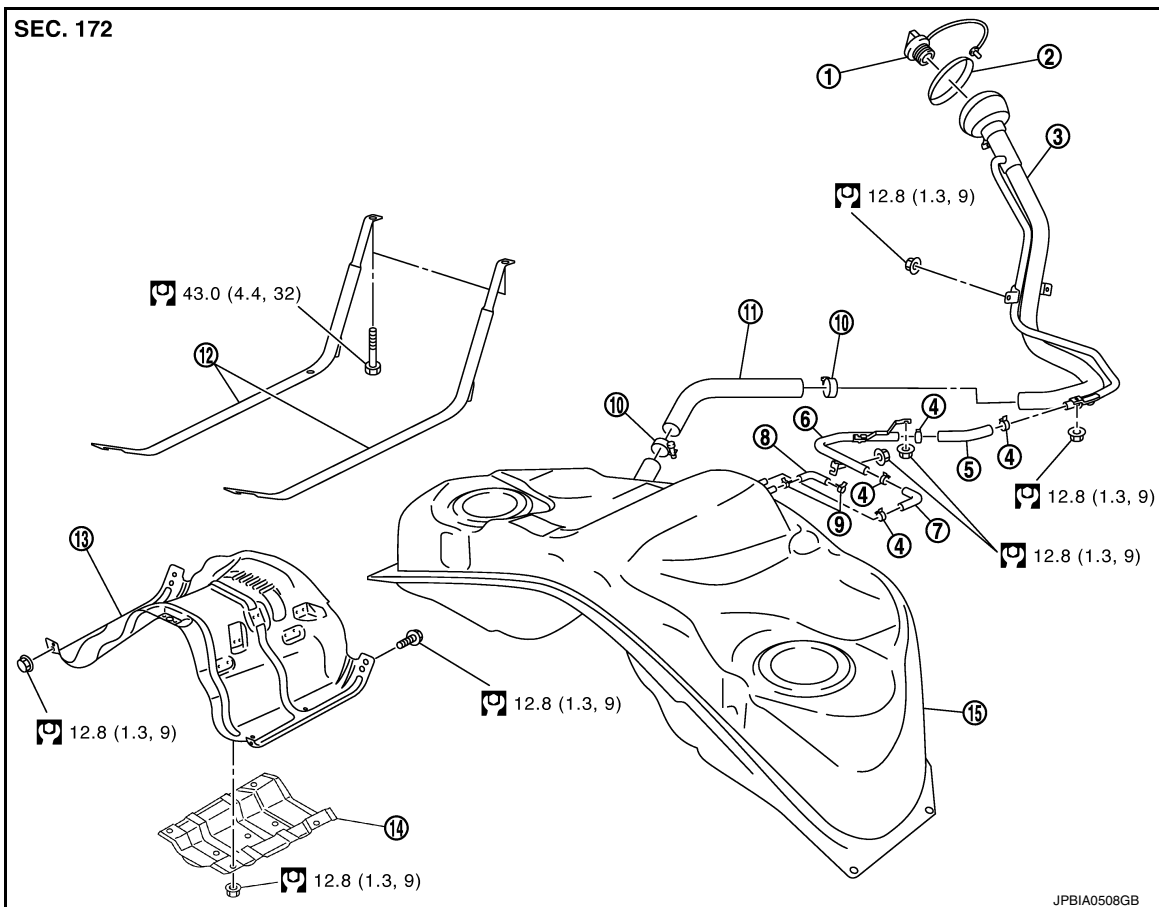
< REMOVAL AND INSTALLATION >

FUEL TANK


Exploded View

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FOR MEXICO



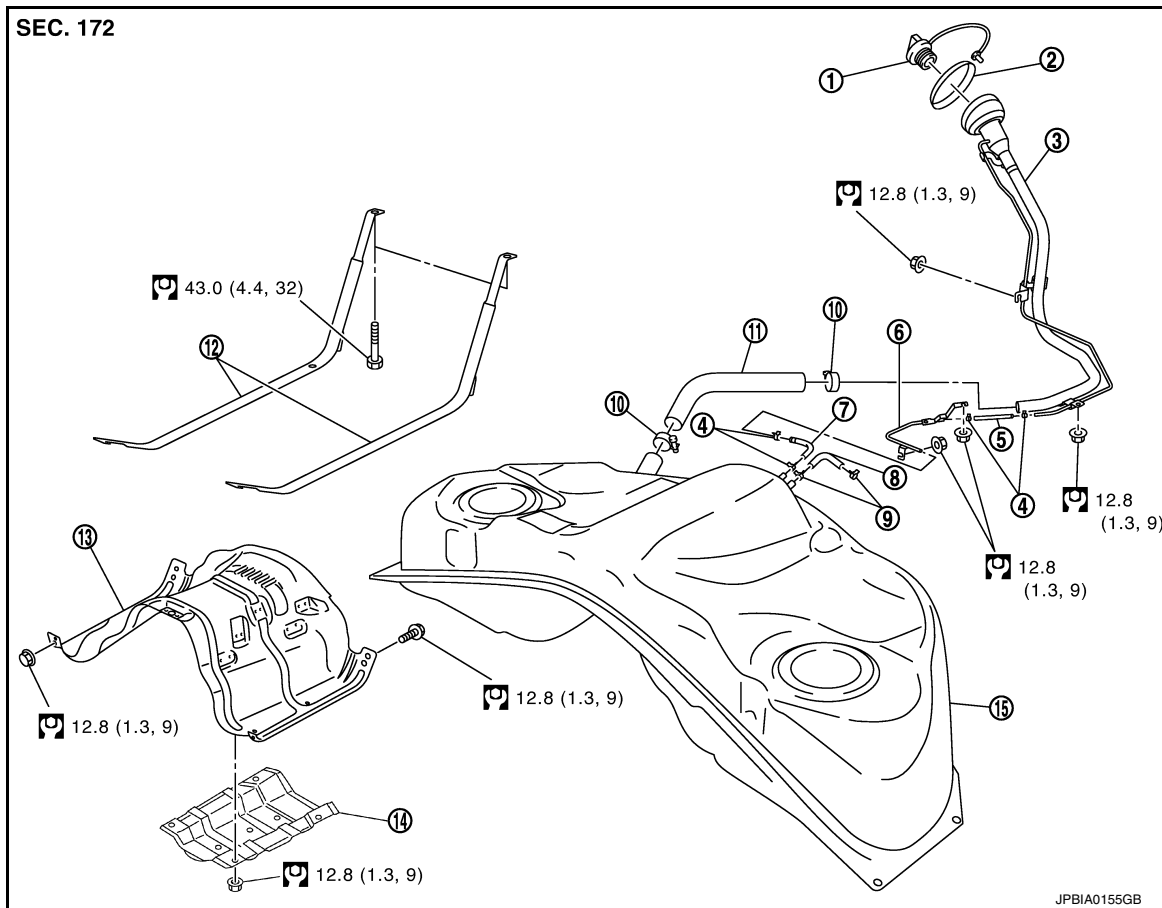
- | | | |
|-------------------------|----------------------|-----------------------------|
| 1. Fuel filler cap | 2. Grommet | 3. Fuel filler tube |
| 4. Clamp | 5. Vent hose | 6. Vent tube |
| 7. Vent hose | 8. EVAP hose | 9. Clamp |
| 10. Clamp | 11. Fuel filler hose | 12. Fuel tank mounting band |
| 13. Fuel tank protector | 14. Insulator | 15. Fuel tank |

 : N·m (kg-m, ft-lb)


FUEL TANK

< REMOVAL AND INSTALLATION >

EXCEPT FOR MEXICO



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|-------------------------|----------------------|-----------------------------|
| 1. Fuel filler cap | 2. Grommet | 3. Fuel filler tube |
| 4. Clamp | 5. Vent hose | 6. Vent tube |
| 7. EVAP hose | 8. Evap hose | 9. Clamp |
| 10. Clamp | 11. Fuel filler hose | 12. Fuel tank mounting band |
| 13. Fuel tank protector | 14. Insulator | 15. Fuel tank |

 : N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000012351381

WARNING:

Be sure to read “General Precautions” when working on the fuel system. Refer to [FL-2, “General Precautions”](#).

REMOVAL

- Drain fuel from fuel tank if necessary. Refer to [FL-11, “Exploded View”](#).
 - Perform work on level place.
1. Perform steps 2 to 7 of “REMOVAL” in “FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY” on main and sub fuel level sensor units. Refer to [FL-6, “Exploded View”](#).
 2. Remove center muffler and main muffler. Refer to [EX-5, “VQ37VHR : Exploded View”](#) (VQ37VHR models), [EX-7, “VK56VD : Exploded View”](#) (VK56VD models).
 3. Remove propeller shaft. Refer to [DLN-104, “Exploded View”](#) (2WD models) or [DLN-113, “Exploded View”](#) (AWD models).
 4. Remove parking rear brake cables. Refer to [PB-7, “Exploded View”](#).
 5. Remove rear suspension assembly. Refer to [RSU-21, “Exploded View”](#).

NOTE:

For this service, drive shaft, final drive, and rear suspension member are required not to be separate one another during removal.

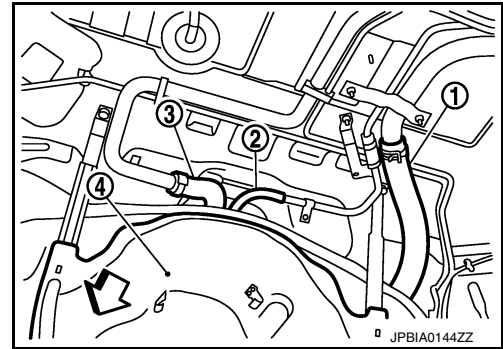
FUEL TANK

< REMOVAL AND INSTALLATION >

6. Disconnect fuel filler hose (1), EVAP hose (2), and vent hose (3) at fuel tank side.

4 : Fuel tank protector

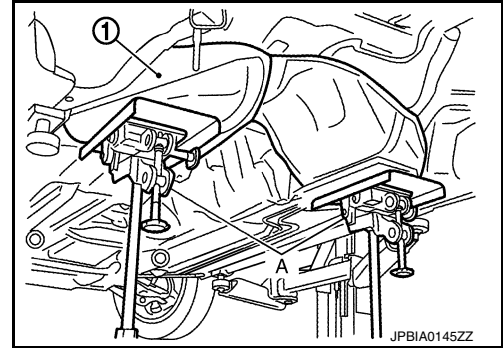
↔ : Vehicle front



7. Remove fuel tank protector.
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 mounting bands.
10. Supporting with hands, descend transmission jack carefully, and remove fuel tank.

CAUTION:

- Check that all connection points have been disconnected.
- Confirm there is no interference with vehicle.

11. Remove fuel filler tube if necessary.

INSTALLATION

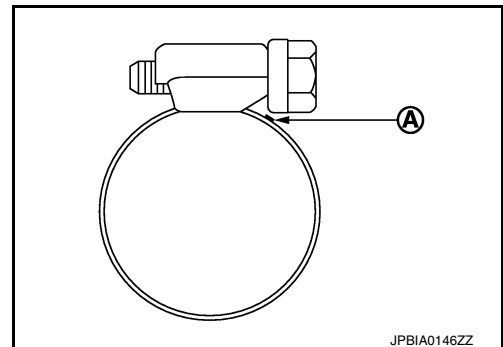
Note the following, and install in the reverse order of removal.

- 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 the clamp hand with the top mark (A) until the mark is on the bolt head flange.



- To connect quick connector, refer to [FL-5. "Quick Connector"](#).

Inspection

INFOID:000000012351382

INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leakage.

FUEL TANK

< REMOVAL AND INSTALLATION >

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.
- After removing/installing rear suspension assembly, check to adjust wheel alignment and then, adjust neutral position of steering angle sensor. Refer to [RSU-6, "Inspection"](#) and [ST-14, "Inspection"](#).

EVAP CANISTER

< REMOVAL AND INSTALLATION >

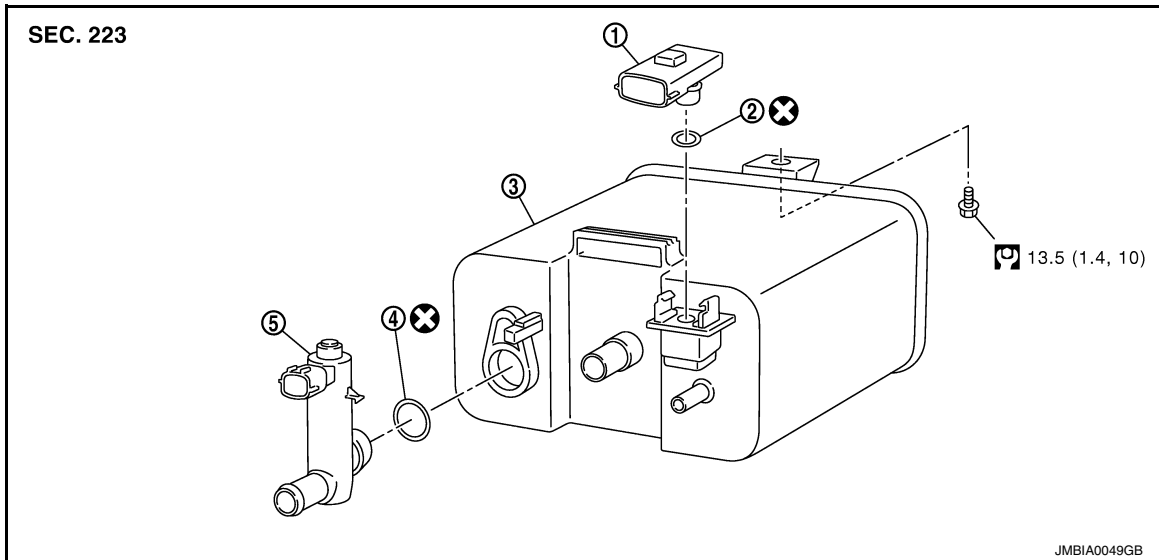
EVAP CANISTER EXCEPT FOR MEXICO

EXCEPT FOR MEXICO : Exploded View


INFOID:000000012351383


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1. EVAP control system pressure sensor 2. O-ring 3. EVAP canister
4. O-ring 5. EVAP canister vent control valve

 : N·m (kg-m, ft-lb)

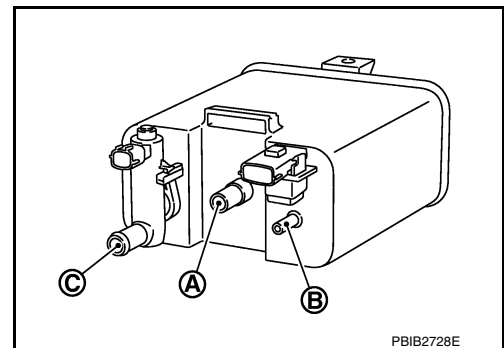
 : Always replace after every disassembly.

EXCEPT FOR MEXICO : Inspection

INFOID:000000012351384

Check EVAP canister as per the following:

1. Block port (B).
2. Blow air into port (A) and check that it flows freely out of port (C).
3. Release blocked port (B).
4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
5. Block port (A) and (B).
6. Apply pressure to port (C) and check that there is no leakage.



EXCEPT FOR MEXICO : Disassembly and Assembly

INFOID:000000012351385

DISASSEMBLY

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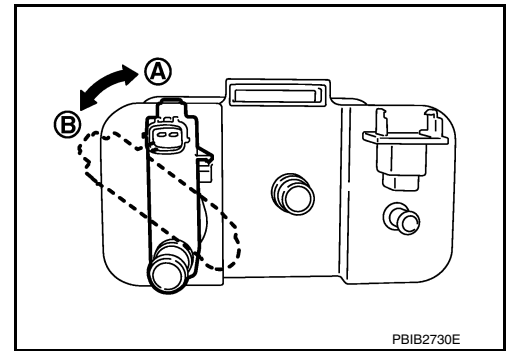
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EVAP CANISTER

< REMOVAL AND INSTALLATION >

1. Disengage the pawl and turn EVAP canister vent control valve counterclockwise.
 - Lock (A)
 - Unlock (B)
2. Remove the EVAP canister vent control valve.
3. Remove the EVAP control system pressure sensor.



ASSEMBLY

Assemble in the reverse order of disassembly.

CAUTION:

Always replace O-ring with a new one.

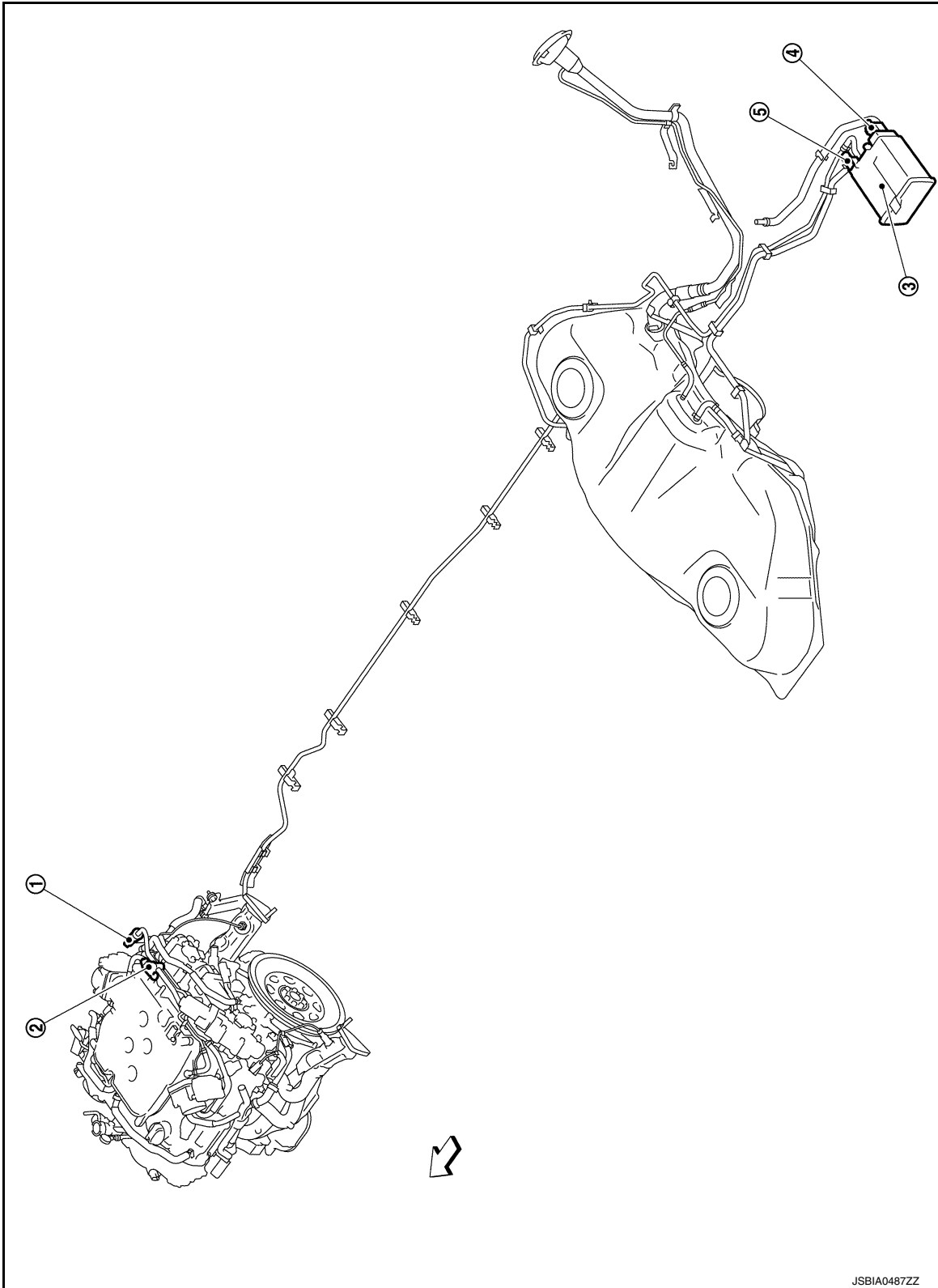
EXCEPT FOR MEXICO : Hydraulic Layout

INFOID:000000012351386

VQ37VHR

EVAP CANISTER

< REMOVAL AND INSTALLATION >



- | | | |
|-------------------------------------|---|---------------------------------|
| 1. EVAP service port | 2. EVAP canister purge volume control valve | 3. EVAP canister solenoid valve |
| 4. EVAP canister vent control valve | 5. EVAP control system pressure sensor | |

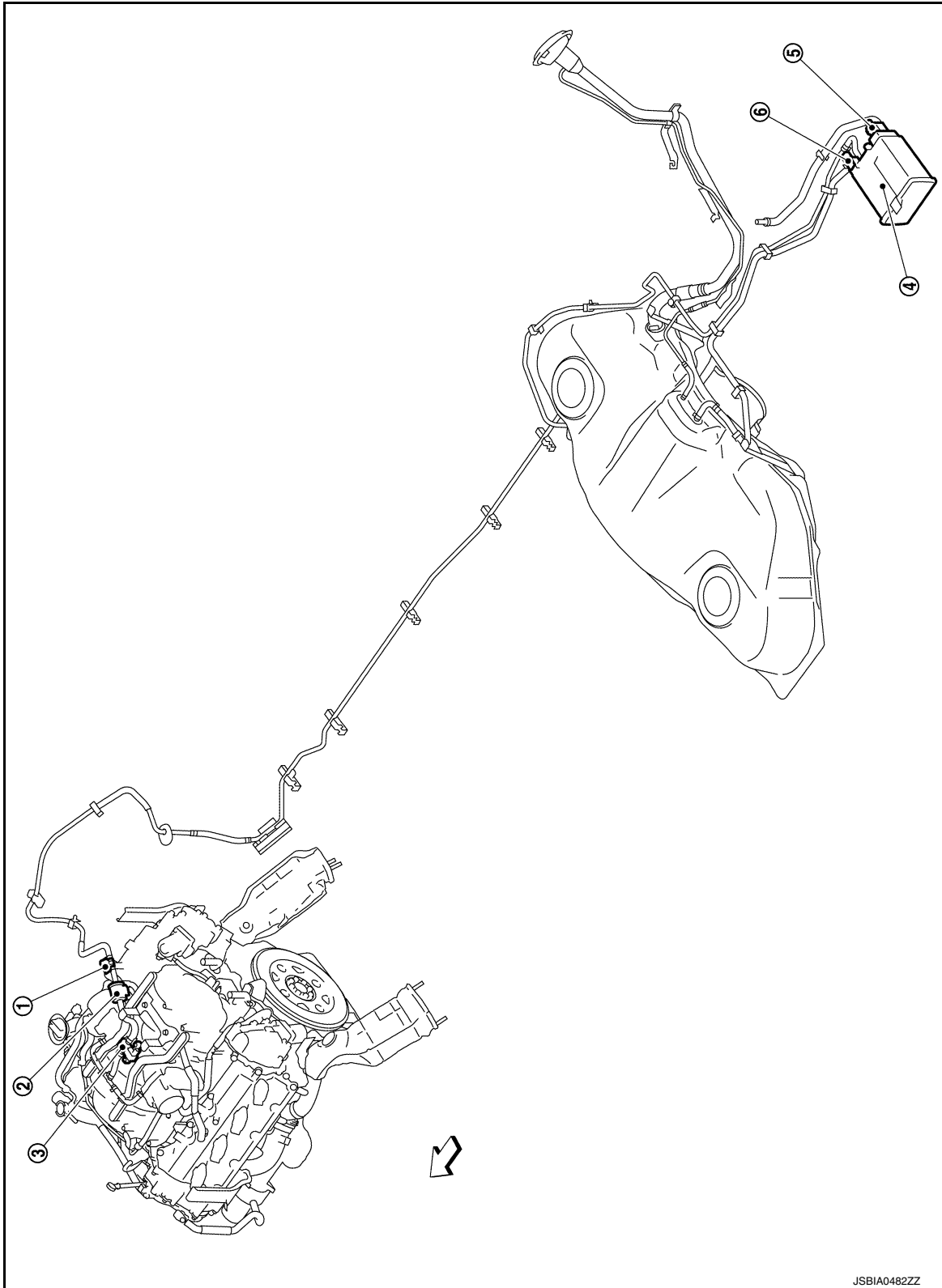
↔ : Vehicle front

VK56VD

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EVAP CANISTER

< REMOVAL AND INSTALLATION >



1. EVAP service port

2. EVAP purge resonator

3. EVAP canister purge volume control solenoid valve

4. EVAP canister

5. EVAP canister vent control valve

EVAP control system pressure sensor

↶ : Vehicle front

NOTE:

EVAP CANISTER

< REMOVAL AND INSTALLATION >

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

FOR MEXICO

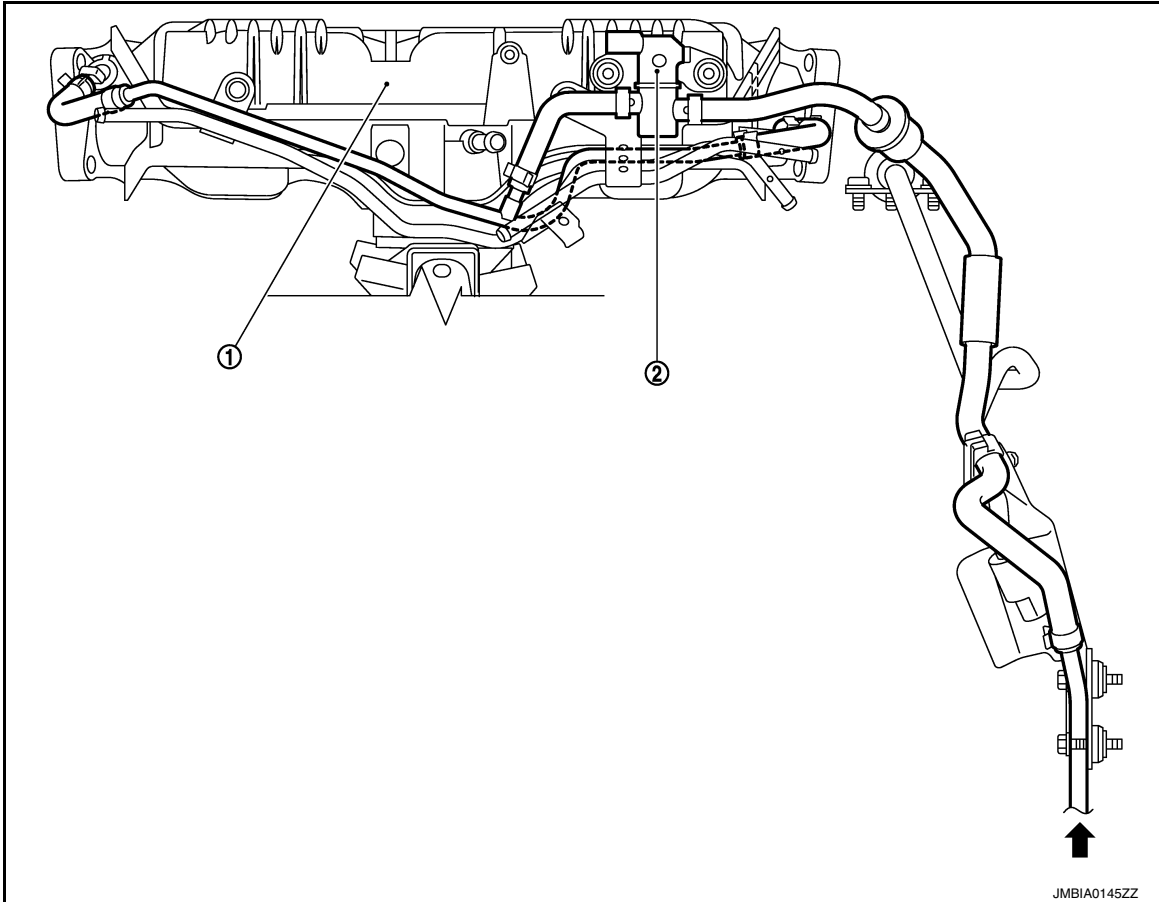
FOR MEXICO : Hydraulic Layout

INFOID:0000000012351387

VQ37VHR

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1. Intake manifold collector

2. EVAP canister purge volume control solenoid valve

←: From next figure

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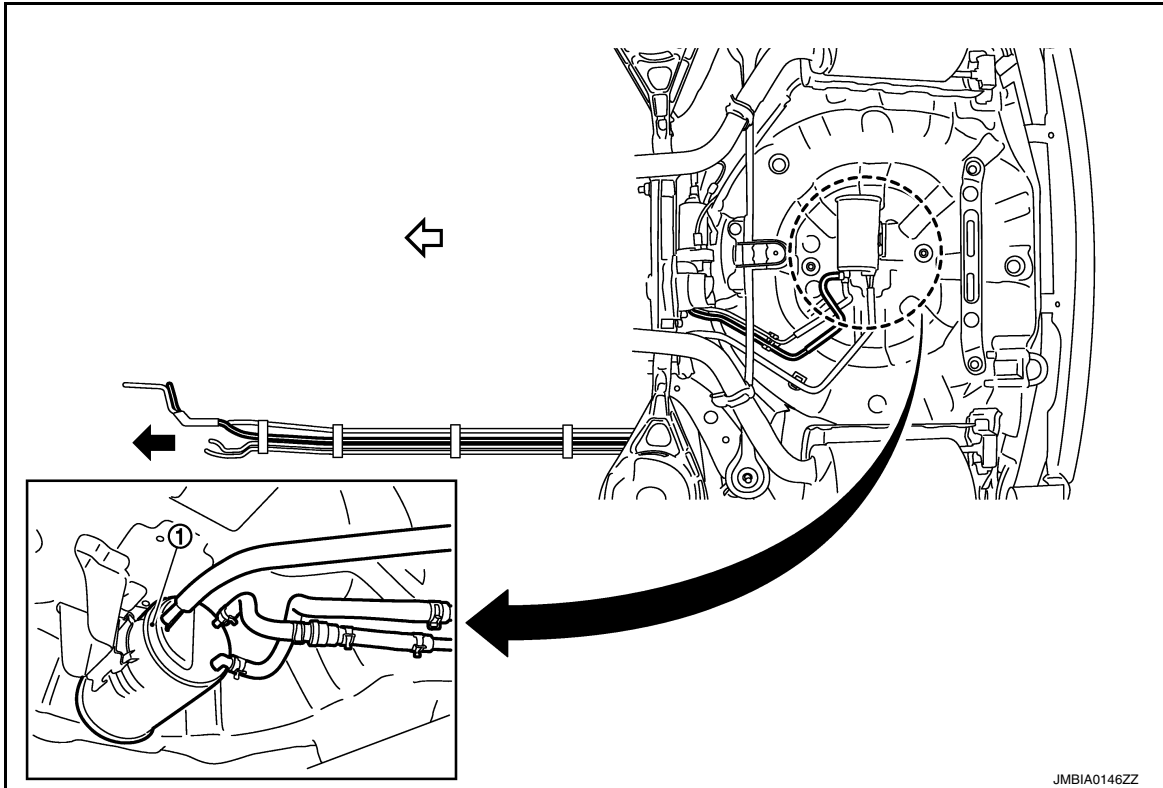
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EVAP CANISTER

< REMOVAL AND INSTALLATION >



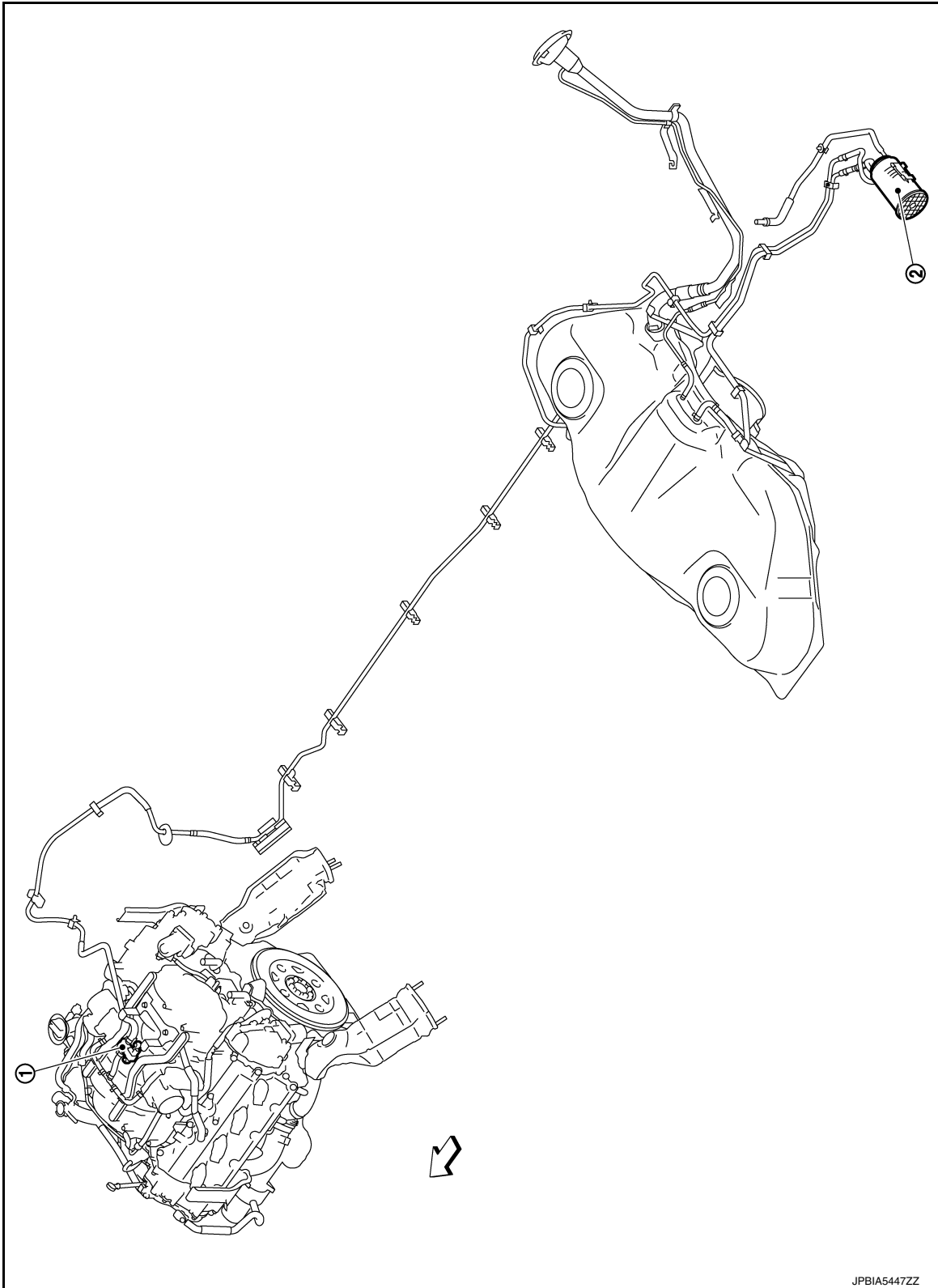
- 1. EVAP canister
- ⇐: Vehicle front
- ←: To previous figure

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

VK56VD

EVAP CANISTER

< REMOVAL AND INSTALLATION >



1. EVAP canister purge volume control 2. EVAP canister solenoid valve

↶ : Vehicle front

NOTE:

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

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Fuel Tank

INFOID:0000000012351388

Standard and Limit

Fuel tank capacity	For Mexico	Approx. 80.0 ℓ (21 US gal, 17-5/8 Imp gal)
	Except For Mexico	Approx. 76.0 ℓ (20 US gal, 16-6/8 Imp gal)
Fuel recommendation		Refer to GI-28. "Fuel" .