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# PREPARATION

< SERVICE INFORMATION >

[VQ]

## SERVICE INFORMATION

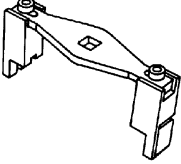
### PREPARATION

#### Commercial Service Tool

INFOID:000000005447392

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Tool name	Description
<p data-bbox="162 411 430 441">Fuel tank lock ring wrench</p>  <p data-bbox="828 630 893 646">ZZA0122D</p>	<p data-bbox="1015 411 1437 441">Removing and installing fuel tank lock ring</p>

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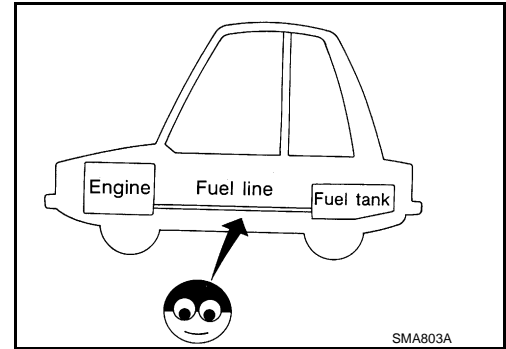
## FUEL SYSTEM

### Checking Fuel Line

INFOID:000000005447393

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

If necessary, repair or replace damaged parts.



### General Precaution

INFOID:000000005447394

#### 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 CO<sub>2</sub> 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-4, "Precaution for Fuel"](#).
- Before removing fuel line parts, perform 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-84, "Fuel Pressure Check"](#) (for Australia models) or [EC-568, "Fuel Pressure Check"](#) (except for Australia models).
  - Disconnect the battery cable from the negative terminal.
- Always replace O-rings and clamps with new ones.
- Never kink or twist hoses when they are being installed.
- Never tighten hose clamps excessively to avoid damaging hoses. Tighten high-pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) (a) from hose end.

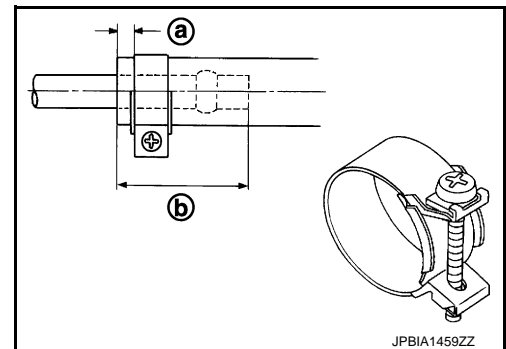
b : 28 mm (1.10 in)

Tightening torque specifications are the same for all rubber hose clamps.

#### Fuel hose clamps tightening torque:

 : 1.0 - 1.5 N·m (0.10 - 0.15 kg·m, 9 - 13 in·lb)

Ensure that screw does not contact adjacent parts.

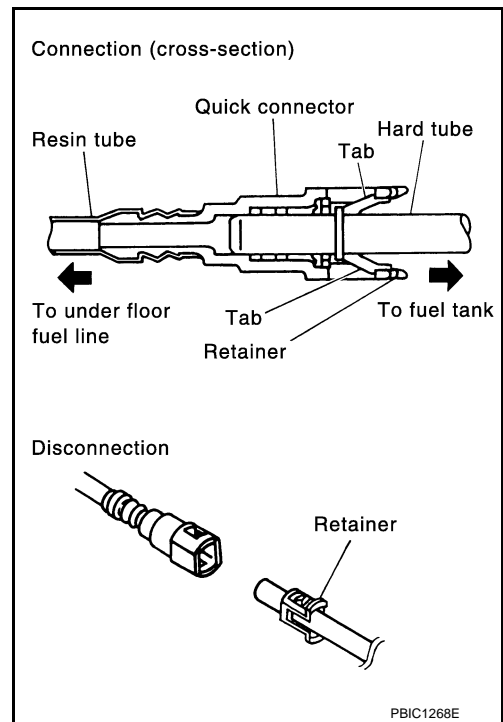


# FUEL SYSTEM

< SERVICE INFORMATION >

[VQ]

- After connecting the fuel tube quick connectors, check the quick connectors are secure.  
Ensure that the connector and resin tube never contact any adjacent parts.
- 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 leaks at connections.
- Start the engine and rev it up and check for fuel leaks 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 "Evaporative Emission System" parts, refer to [EC-45](#) (for Australia models) or [EC-546](#) (except for Australia models).



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# FUEL TANK

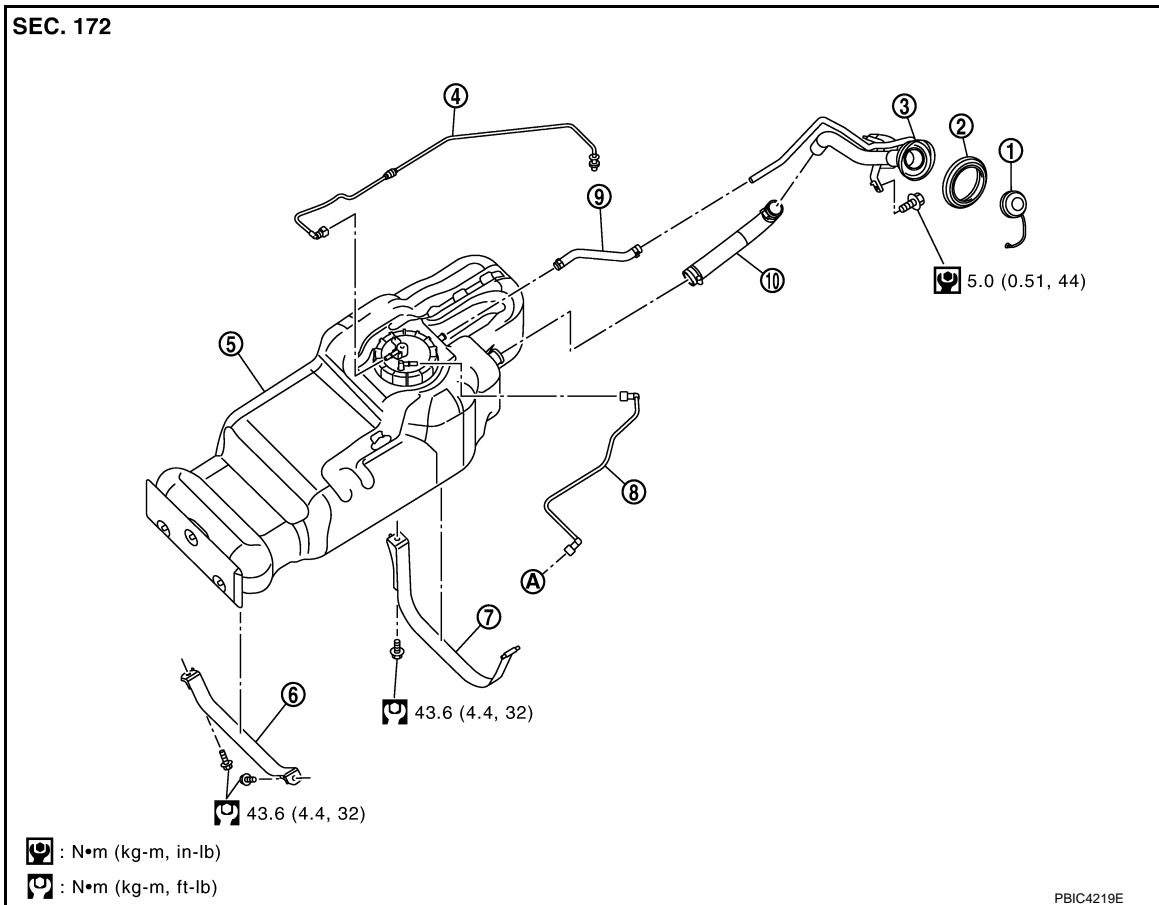
< SERVICE INFORMATION >

[VQ]

## FUEL TANK

### Component

INFOID:000000005447395



- |                          |                   |                           |
|--------------------------|-------------------|---------------------------|
| 1. Fuel filler cap       | 2. Grommet        | 3. Fuel filler tube       |
| 4. EVAP tube             | 5. Fuel tank      | 6. Fuel tank band (front) |
| 7. Fuel tank band (rear) | 8. Fuel feed tube | 9. Vent hose              |
| 10. Fuel filler hose     |                   |                           |
| A. To engine             |                   |                           |

## Removal and Installation

INFOID:000000005447396

### REMOVAL

#### **WARNING:**

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

- Drain fuel from fuel tank if necessary.
- Perform work on level place.

1. Open fuel filler lid.
2. Open the fuel filler cap and release the pressure inside fuel tank.

# FUEL TANK

## < SERVICE INFORMATION >

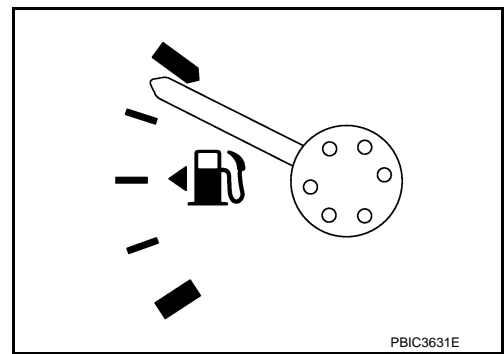
[VQ]

3. Check fuel level on level place. If fuel gauge indicates more than the level shown in figure (full or almost full), drain fuel from fuel tank until gauge indicates level as shown in the figure or below.

**NOTE:**

Because fuel will be spilled when removing fuel level sensor unit, fuel filter and fuel pump assembly for the top of the fuel is above the fuel level sensor unit, fuel filter and fuel pump assembly installation surface.

- As a guide, fuel level becomes the position as shown in the figure or below when approximately 20 ℓ (4-3/8 Imp gal) of fuel are drained from fuel tank.
- In a case that fuel pump does not operate, perform the following steps.



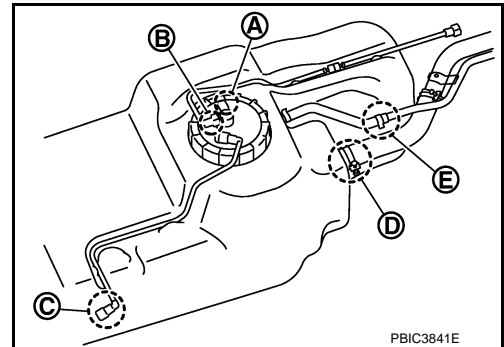
- Insert hose of less than 15 mm (0.59 in) in diameter into fuel filler tube through fuel filler opening to draw fuel from fuel filler tube.
- Disconnect fuel filler hose from fuel filler tube.
- Insert tube into fuel tank to draw fuel from fuel tank.
  - As a guide, fuel level becomes the position shown in figure or below when approximately 20 ℓ (17-5/8 Imp qt) of fuel are drained from full tank.

**NOTE:**

Adjusting fuel level is to prevent fuel from spilling, when fuel level sensor unit is removed.

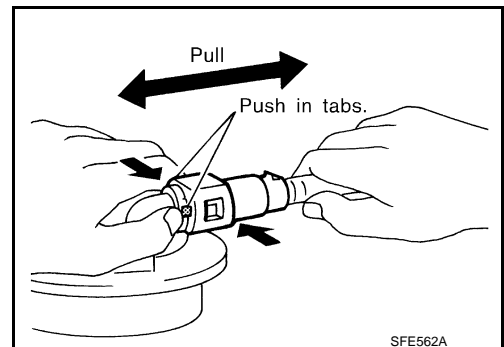
- Release the fuel pressure from fuel lines. Refer to [EC-84, "Fuel Pressure Check"](#) (for Australia models) or [EC-568, "Fuel Pressure Check"](#) (except for Australia models).
- Disconnect the battery cable from the negative terminal.
- Disconnect fuel feed tube (C).

- A : Harness connector
- B : EVAP tube
- D : Fuel filler hose
- E : Vent hose



- Disconnect quick connector of fuel feed tube as follows.
  - Hold the sides of the connector, push in tabs and pull out the tube.
  - If the connector and the tube are stuck together, push and pull several times until they start to move. Then disconnect them by pulling.

**CAUTION:**



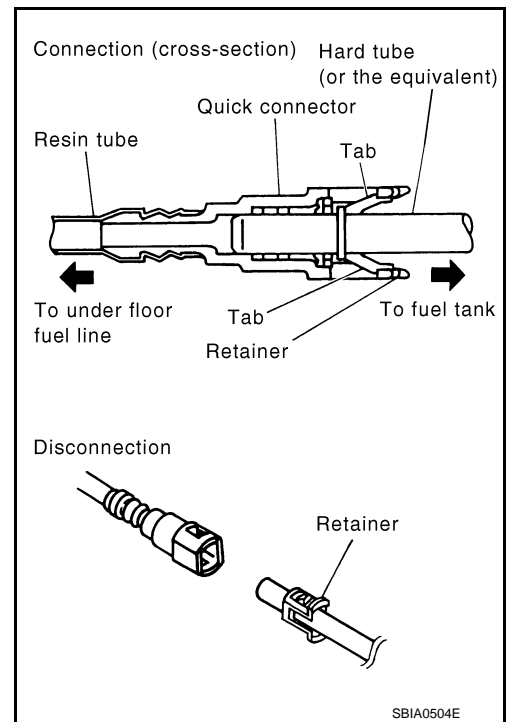
# FUEL TANK

< SERVICE INFORMATION >

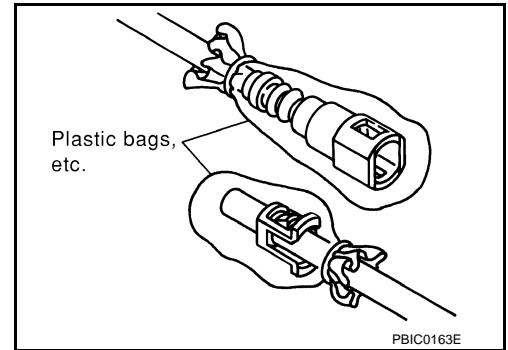
[VQ]

- Quick connector can be disconnected when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube 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 removal.
- Never remove the remaining retainer on hard tube (or equivalent) except when resin tube or retainer is replaced.
- When resin tube or fuel level sensor unit is replaced, also replace retainer with a new one. Replace same color retainer as before replacing.

Retainer color : Green

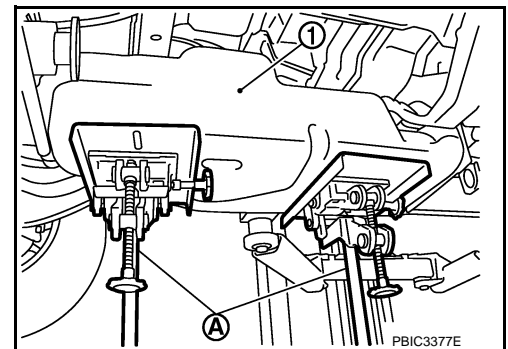


- To keep clean the connecting portion and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.



- Using a transmission jack (A), support the bottom of fuel tank (1).

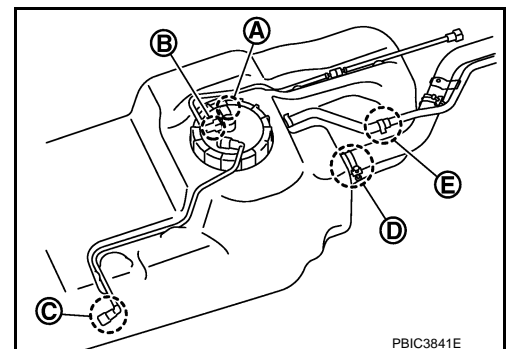
**CAUTION:**  
Support the position that fuel tank bands never engage.



- Remove fuel tank bands, and lower the transmission jack carefully until harness connector (A), EVAP tube (B), fuel filler hose (D) and vent hose (E) can be disconnected.

C : Fuel feed tube

- Disconnect harness connector, EVAP tube, fuel filler hose and vent hose.





# FUEL TANK

< SERVICE INFORMATION >

[VQ]

10. Supporting with hands, lower transmission jack carefully, and remove fuel tank.

**CAUTION:**

- Pay attention not to fall fuel tank.
- Check that all connection points have been disconnected.
- Confirm there is no interference with vehicle.

11. Remove fuel filler tubes, fuel filler hoses and vent hoses if necessary.

## INSTALLATION

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

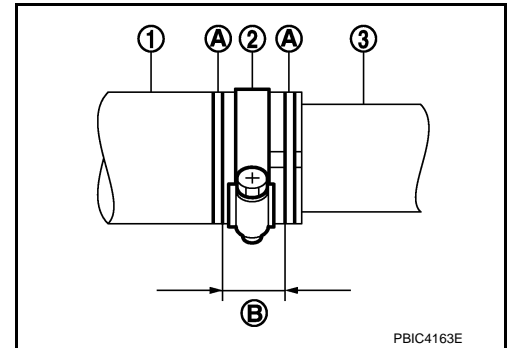
- Surely clamp fuel hoses and insert hose to the length below.

**Fuel filler hose : 35 mm (1.38 in)**

**The other hose : 25 mm (0.98 in)**

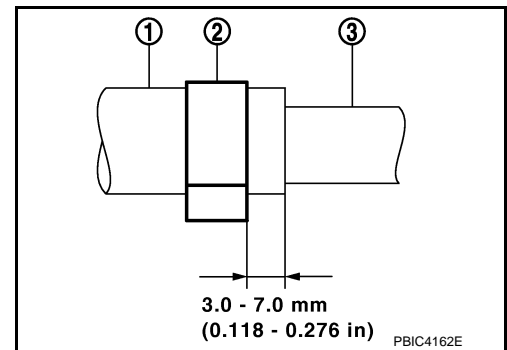
- Be sure hose clamp is not positioned on swelled area of fuel tube.
- Position fuel filler hose clamp (2) between paint marking (B).

- 1 : Fuel filler hose
- 3 : Fuel filler tube
- A : paint marking

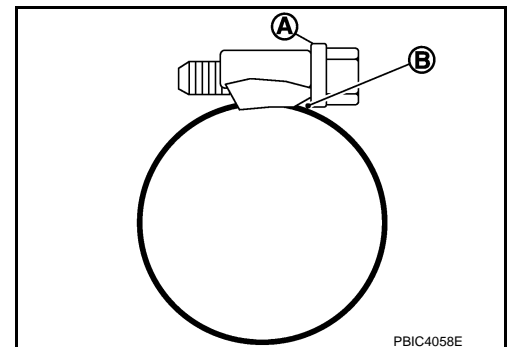


- Position vent hose clamp (2) as shown in the figure.

- 1 : Vent hose
- 3 : Vent tube (part of fuel filler tube)



- Tighten fuel hose clamp so that the flange (A) of bolt head is on the paint mark (B) on the band.



- Fit mounting band pin to the vehicle side securely.
- Before fixing the fuel tank, temporarily install the fuel filler tube.

**CAUTION:**

**Use genuine fuel filler tube mounting bolts or equivalent. Check to tighten them to the specified torque.**

- Connect quick connector as follows.

1. Check connection for damage and foreign materials.

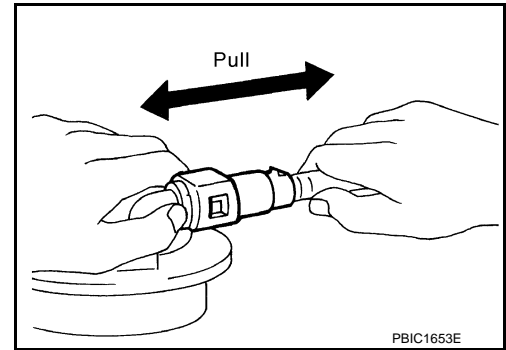
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## FUEL TANK

### < SERVICE INFORMATION >

[VQ]

2. Align the connector with the tube, then insert connector straight into tube until a click is heard.
3. After connecting, check that the connection is secure by following the steps below.
  - Visually confirm that the two tabs are connected to connector.
  - Pull the tube and connector to check they are securely connected.



### INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following steps.

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

# FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

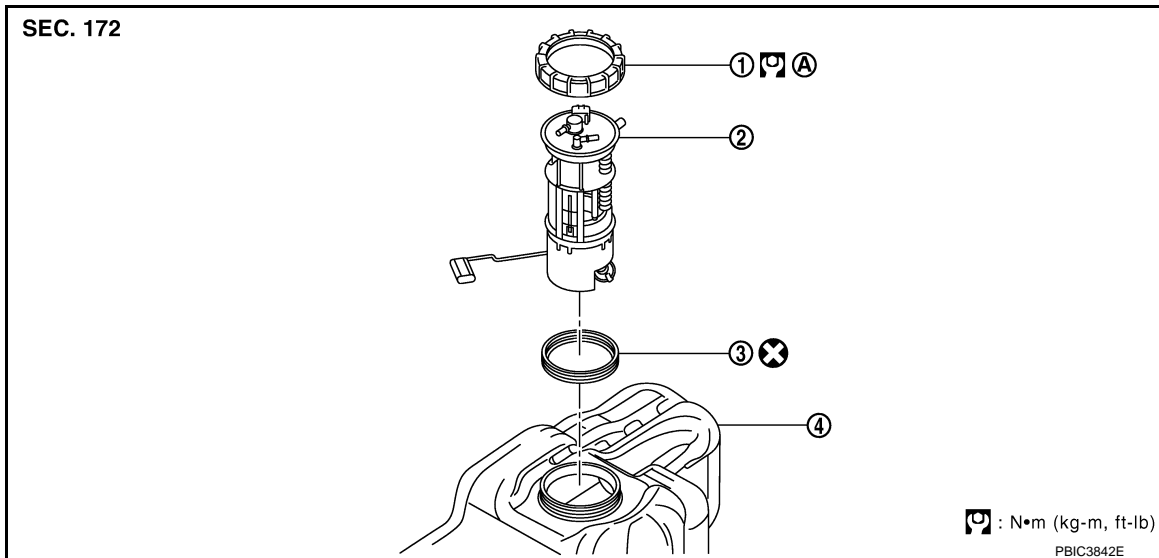
< SERVICE INFORMATION >

[VQ]

## FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

Component

INFOID:000000005447397



1. Lock ring
  2. Fuel level sensor unit, fuel filter and fuel pump assembly
  3. Seal packing
  4. Fuel tank
- A. Refer to [FL-6](#)

• Refer to [GI-9. "Component"](#) for symbol marks in the figure.

### Removal and Installation

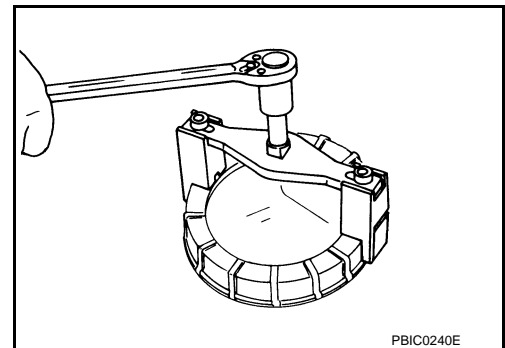
INFOID:000000005447398

#### REMOVAL

##### **WARNING:**

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

1. Remove fuel tank from the vehicle. Refer to [FL-6](#).
2. Using a fuel tank lock ring wrench (commercial service tool), remove the lock ring.



3. Remove fuel level sensor unit, fuel filter and fuel pump assembly.

##### **CAUTION:**

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

#### INSPECTION AFTER REMOVAL

Check fuel level sensor unit, fuel filter and fuel pump assembly is free from foreign materials. If any are found, remove them.

#### INSTALLATION

# FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

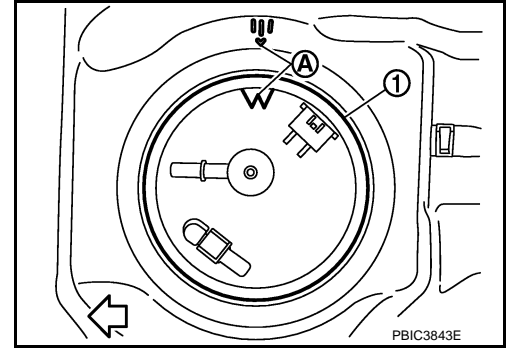
< SERVICE INFORMATION >

[VQ]

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

1. Install fuel level sensor unit, fuel filter and fuel pump assembly (1) with aligning mating marks (A) on fuel tank and fuel level sensor unit, fuel filter and fuel pump assembly as shown in the figure.

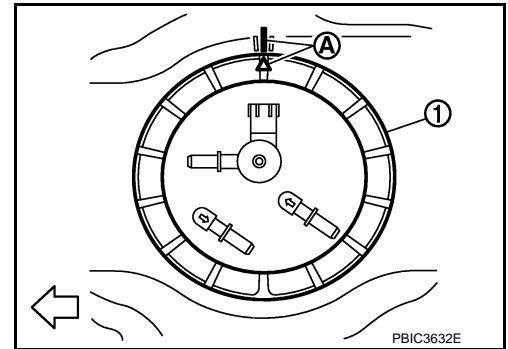
← : Vehicle front



2. Install lock ring (1).

← : Vehicle front

- a. Tighten lock ring by hand.
- b. Tighten lock ring with a fuel tank lock ring wrench (commercial service tool).
- c. Align mating marks (A) as shown in the figure.



## INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following steps.

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

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

[VQ]

## SERVICE DATA AND SPECIFICATIONS (SDS)

Standard and Limit

INFOID:000000005447399

Fuel tank capacity	Approx. 80 ℓ (17-5/8 Imp gal)
Fuel recommendation	Refer to <a href="#">GI-4, "Precaution for Fuel"</a>

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# PREPARATION

< SERVICE INFORMATION >

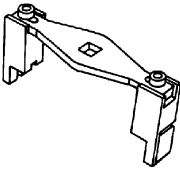
[YD]

## SERVICE INFORMATION

### PREPARATION

#### Special Service Tools

INFOID:000000006109239

Tool number Tool name	Description
KV991-04'700 Lock ring wrench  ZZA0122D	Removing and Installing lock ring

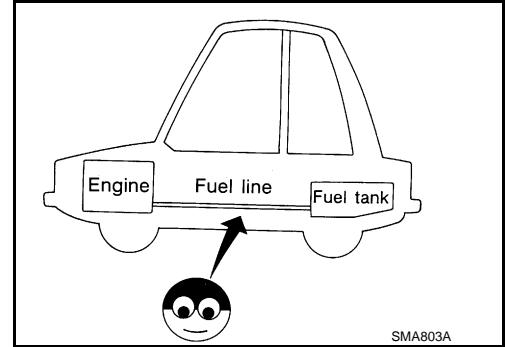
## FUEL SYSTEM

### Checking Fuel Line

INFOID:000000006109240

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

If necessary, repair or replace damaged parts.



### General Precaution

INFOID:000000006109241

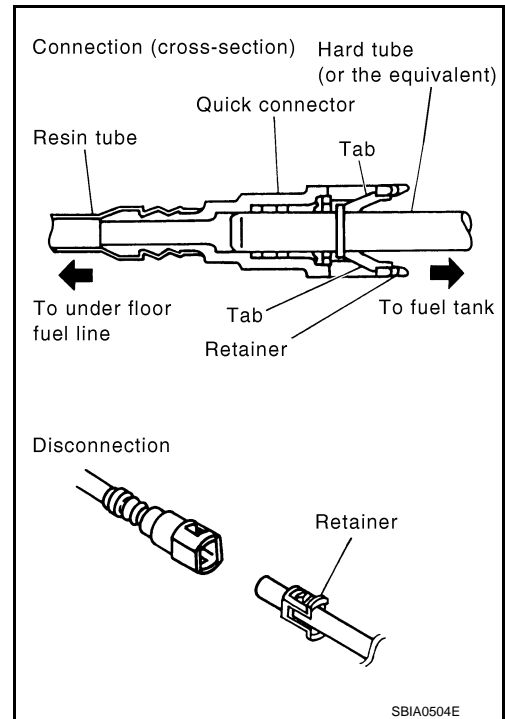
#### **WARNING:**

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

- Put a "CAUTION: FLAMMABLE" sign in 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 spark away from work area.

#### **CAUTION:**

- Use diesel fuel required by the regulations for cetane number. Refer to [GI-4, "Precaution for Fuel"](#).
- Before removing fuel line parts, perform 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 connecting fuel tube quick connectors, check quick connectors are secure.
- Ensure that connector and resin tube never contact any adjacent parts.
- After installing tubes, check there is no fuel leakage at connections in the following steps.
- Start the engine and rev it up and check for fuel leaks at connections.



# FUEL FILTER

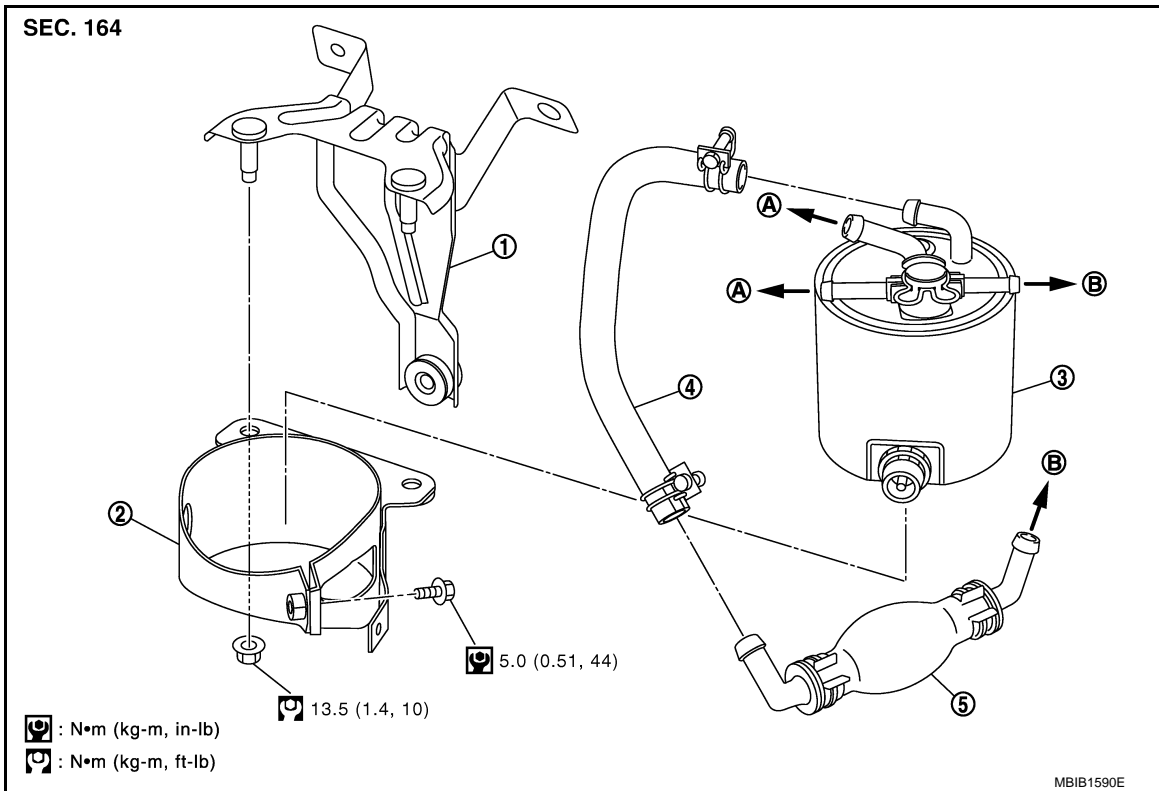
< SERVICE INFORMATION >

[YD]

## FUEL FILTER

### Component

INFOID:000000006109242



- |                 |                                      |                         |
|-----------------|--------------------------------------|-------------------------|
| 1. Bracket      | 2. Bracket                           | 3. Fuel filter assembly |
| 4. Fuel hose    | 5. Priming pump                      |                         |
| A. To fuel tube | B. To centralized under-floor piping |                         |

- Refer to [GI-9. "Component"](#) for symbol marks in the figure.

### Removal and Installation

INFOID:000000006109243

#### REMOVAL

- Disconnect fuel hoses.  
**CAUTION:**  
**Plug the pipe to prevent fuel from draining.**
- Remove fuel filter assembly from bracket.  
**CAUTION:**  
**Never splash fuel during removal. If fuel is splashed, immediately wipe it off.**

#### INSTALLATION

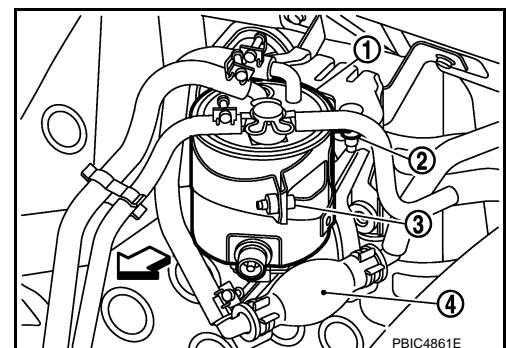
Note the following, and install in the reverse order of removal.

- Install fuel filter (1), and tighten mounting nuts (2) to the specified torque.

- 3 : Mounting bolt
- 4 : Priming pump
- ⇐ : Vehicle front

#### Fuel filter mounting nuts

: 13.5 N·m (1.4 kg-m, 10 ft-lb)





# FUEL FILTER

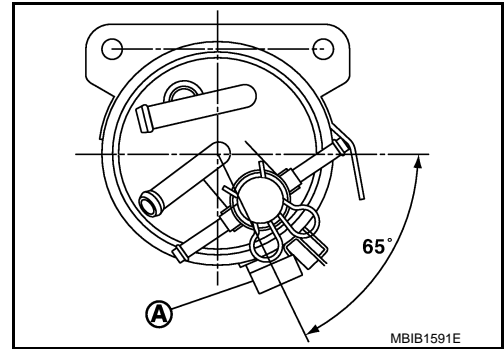
< SERVICE INFORMATION >

[YD]

- When assembling fuel filter assembly and bracket, adjust the angle of fuel filter assembly as shown in the figure.

A : Drain plug

- After installation, bleed air from fuel line. Refer to [FL-17, "Air Bleeding"](#).



## INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following steps.

- Start the engine and rev it up and check there is no fuel leakage at connections.

## Air Bleeding

INFOID:000000006109244

After fuel filter is replaced and after fuel system components are removed/installed, bleed air from fuel line as follows:

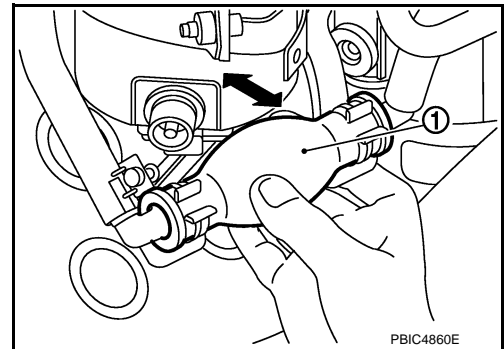
- Prime the circuit using the priming pump (1).
- Perform engine cranking with repeating several times until engine starting.

### NOTE:

- If engine does not start, stop cranking and repeat step "1" above.
- If engine does not operate smoothly after it has started, race it two or three times.

### CAUTION:

**Crank engine until it starts. Never crank engine for more than 30 seconds.**



## Draining Water from Fuel Filter

INFOID:000000006109245

- Connect drain hose (suitable hose) to the end of drain plug (A).
- Prepare a tray at the drain plug open end.
- Loosen drain plug, and operate priming pump to drain water from fuel filter.

### CAUTION:

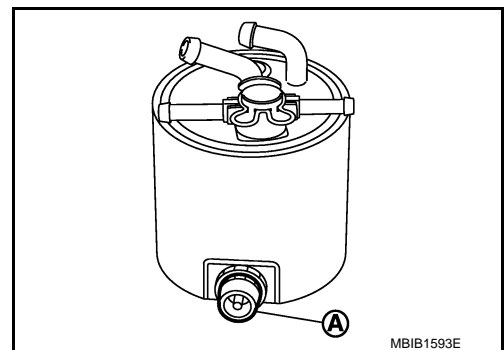
- Water in filter is drained with fuel. Prepare larger capacity pan than fuel filter volume.**
- Drained water is mixed with fuel. Prevent fuel from adhering to rubber parts such as engine mounting insulator.**

- 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.**

- Bleed air in fuel piping. Refer to [FL-17, "Air Bleeding"](#).
- Start engine and check there is no fuel leakage.



# FUEL TANK

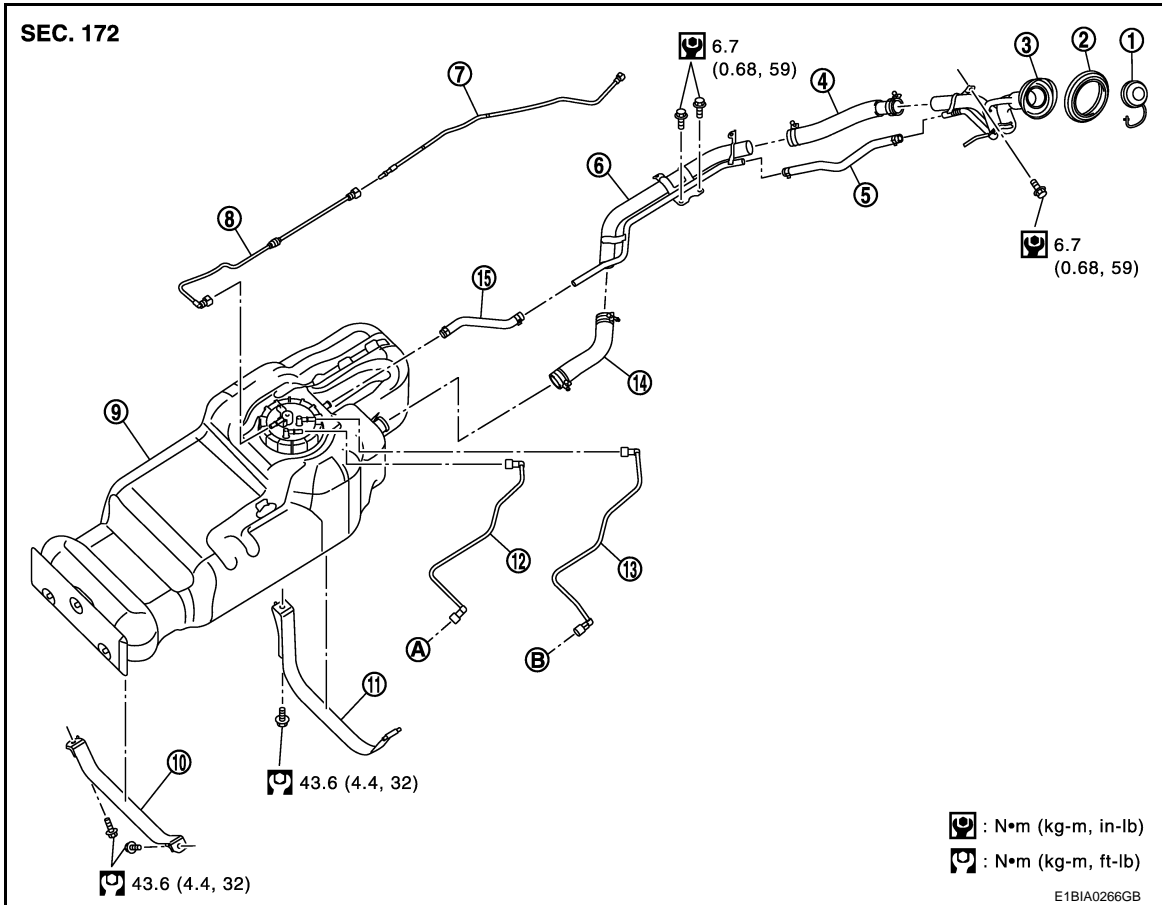
< SERVICE INFORMATION >

[YD]

## FUEL TANK

### Component

INFOID:000000006109246



- |                            |                           |                     |
|----------------------------|---------------------------|---------------------|
| 1. Fuel filler cap         | 2. Grommet                | 3. Fuel filler tube |
| 4. Fuel filler hose        | 5. Vent hose              | 6. Fuel filler tube |
| 7. EVAP tube               | 8. EVAP tube              | 9. Fuel tank        |
| 10. Fuel tank band (front) | 11. Fuel tank band (rear) | 12. Fuel feed tube  |
| 13. Fuel return tube       | 14. Fuel filler hose      | 15. Vent hose       |
| A. To fuel filter          | B. To engine              |                     |

## Removal and Installation

INFOID:000000006109247

### REMOVAL

#### **WARNING:**

Be sure to read "General Precautions" when working on fuel system. Refer to [FL-15, "General Precaution"](#).

1. Open fuel filler lid.
2. Open the fuel filler cap and release the pressure inside fuel tank.

# FUEL TANK

## < SERVICE INFORMATION >

[YD]

3. Check fuel level on level place. If fuel gauge indicates more than the level shown in figure (full or almost full), drain fuel from fuel tank until gauge indicates level as shown in the figure or below.

**NOTE:**

Because fuel will be spilled when removing fuel level sensor unit for the top of the fuel is above fuel level sensor unit installation surface.

- As a guide, fuel level becomes the position as shown in the figure or below when approximately 20 ℓ (4-3/8 Imp gal) of fuel are drained from fuel tank.
- Refer to the following for draining fuel.

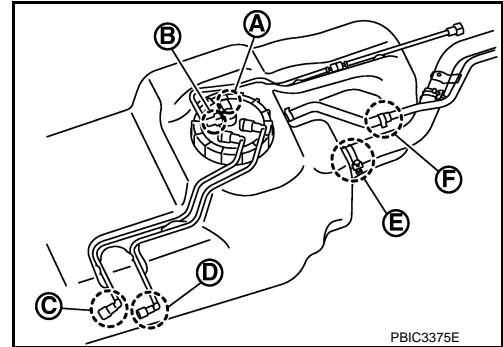
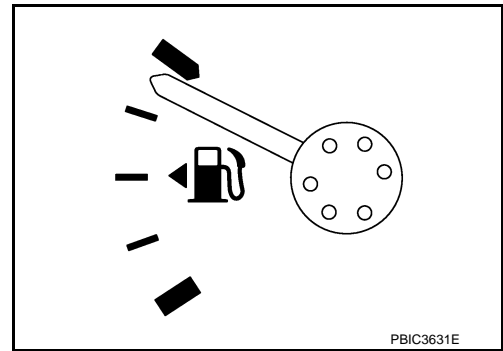
- a. Insert fuel tube of less than 15 mm (0.59 in) in diameter into fuel filler tube through fuel filler opening to draw fuel from fuel filler tube.
- b. Disconnect fuel filler hose from fuel filler tube.
- c. Insert fuel tube into fuel tank through fuel filler hose to draw fuel from fuel tank.

**NOTE:**

Adjusting fuel level is to prevent fuel from spilling, when fuel level sensor unit is removed.

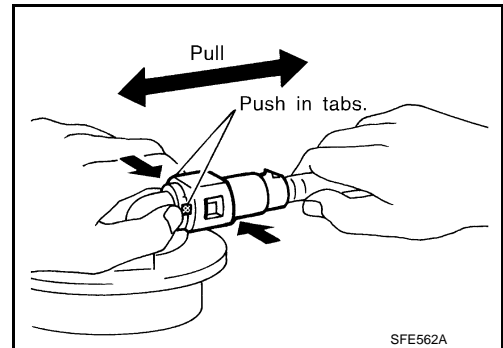
4. Disconnect the battery cable from the negative terminal.
5. Disconnect fuel feed tube (C) and fuel return tube (D).

- A : Harness connector  
B : EVAP tube  
E : Fuel filler hose  
F : Vent hose



- Disconnect quick connector of fuel feed tube and fuel return tube as follows.
  - Hold the sides of the connector, push in tabs and pull out the tube.
  - If the connector and the tube are stuck together, push and pull several times until they start to move. Then disconnect them by pulling.

**CAUTION:**



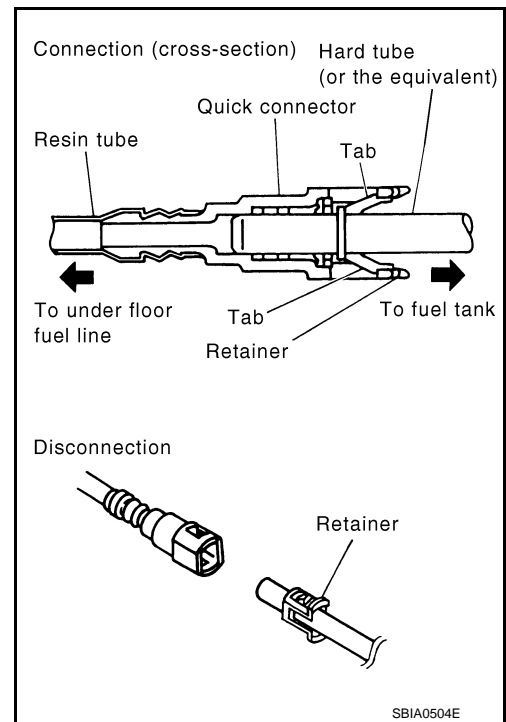
# FUEL TANK

< SERVICE INFORMATION >

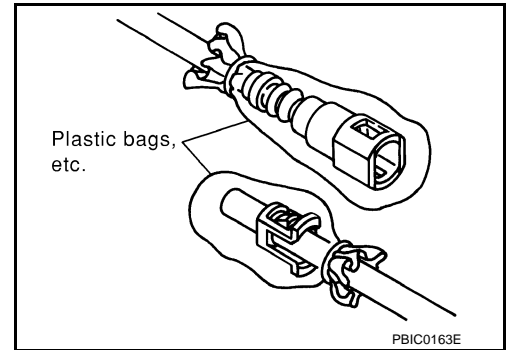
[YD]

- Quick connector can be disconnected when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube 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 removal.
- Never remove the remaining retainer on hard tube (or equivalent) except when resin tube or retainer is replaced.
- When resin tube or fuel level sensor unit is replaced, also replace retainer with a new one. Replace same color retainer as before replacing.

Retainer color : Green (Fuel feed tube)  
: Gray (Fuel return tube)

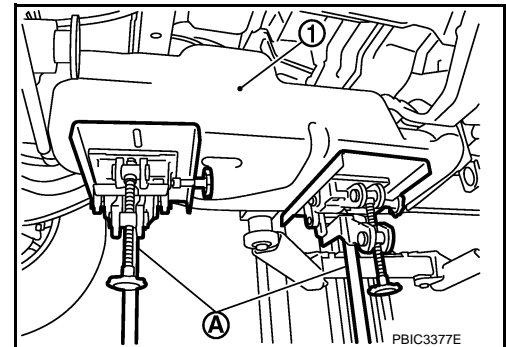


- To keep clean the connecting portion and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.



- Using a transmission jack (A), support the bottom of fuel tank (1).

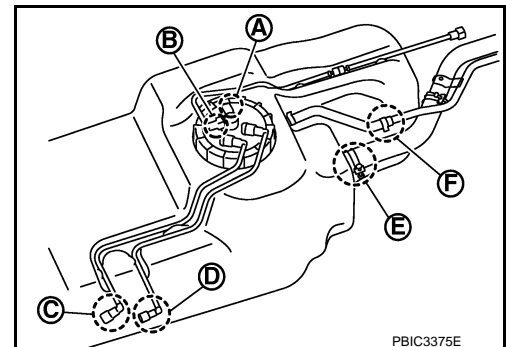
**CAUTION:**  
Support the position that fuel tank bands never engage.



- Remove fuel tank bands, and lower the transmission jack carefully until harness connector (A), EVAP tube (B), fuel filler hose (E) and vent hose (F) can be disconnected.

C : Fuel feed tube  
D : Fuel return tube

- Disconnect harness connector, EVAP tube, fuel filler hose and vent hose.



# FUEL TANK

< SERVICE INFORMATION >

[YD]

9. Supporting with hands, lower transmission jack carefully, and remove fuel tank.

**CAUTION:**

- Pay attention not to fall fuel tank.
- Check that all connection points have been disconnected.
- Confirm there is no interference with vehicle.

10. Remove fuel filler tubes, fuel filler hoses and vent hoses if necessary.

## INSTALLATION

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

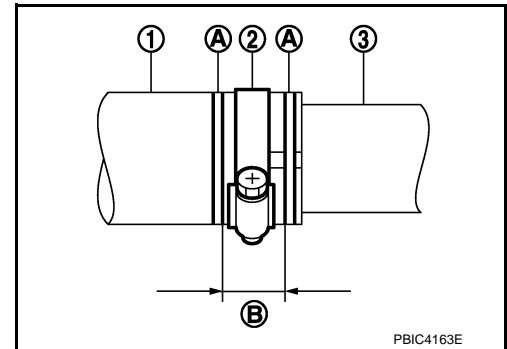
- Surely clamp fuel hoses and insert hose to the length below.

**Fuel filler hose : 35 mm (1.38 in)**

**The other hose : 25 mm (0.98 in)**

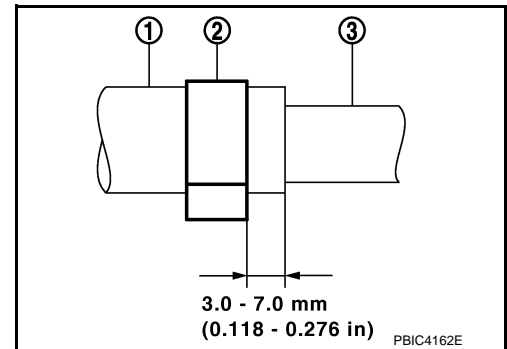
- Be sure hose clamp is not positioned on swelled area of fuel tube.
- Position fuel filler hose clamp (2) between paint marking (B).

- 1 : Fuel filler hose
- 3 : Fuel filler tube
- A : paint marking

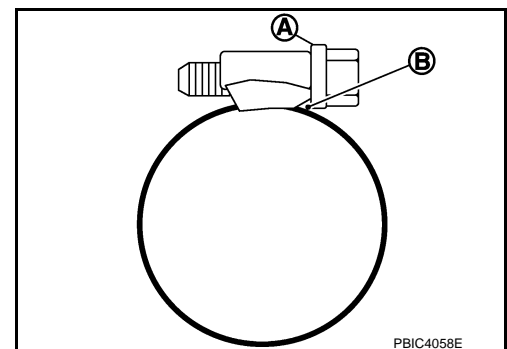


- Position vent hose clamp (2) as shown in the figure.

- 1 : Vent hose
- 3 : Vent tube (part of fuel filler tube)



- Tighten fuel hose clamp so that the flange (A) of bolt head is on the paint mark (B) on the band.



- Fit mounting band pin to the vehicle side securely.
- Before fixing the fuel tank, temporarily install the fuel filler tube.

**CAUTION:**

**Use genuine fuel filler tube mounting bolts or equivalent. Check to tighten them to the specified torque.**

- Connect quick connector as follows.

1. Check connection for damage and foreign materials.
2. Align the connector with the tube, then insert connector straight into tube until a click is heard.

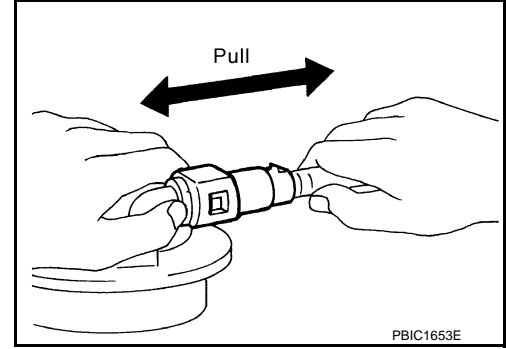
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## FUEL TANK

< SERVICE INFORMATION >

[YD]

3. After connecting, check that the connection is secure by following the steps below.
  - Visually confirm that the two tabs are connected to connector.
  - Pull the tube and connector to check they are securely connected.



### INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following step.

- Start engine and rev it up and check there is no fuel leakage at connections.

# FUEL LEVEL SENSOR UNIT

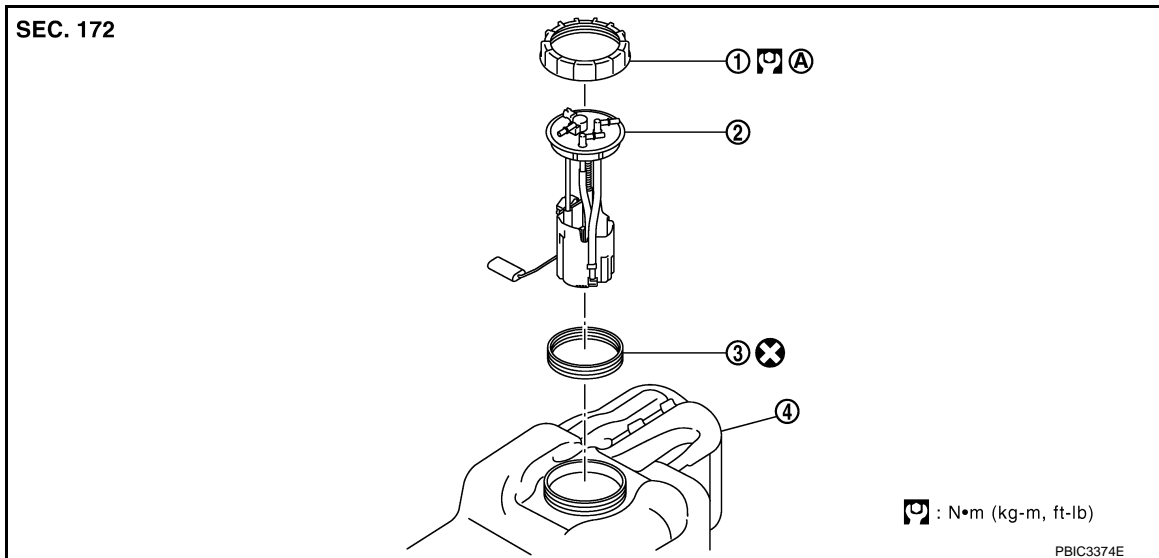
< SERVICE INFORMATION >

[YD]

## FUEL LEVEL SENSOR UNIT

### Component

INFOID:000000006109248



1. Lock ring
  2. Fuel level sensor unit
  3. Seal packing
  4. Fuel tank
- A. Refer to text.

- Refer to [GI-9, "Component"](#) for symbol marks in the figure.

### Removal and Installation

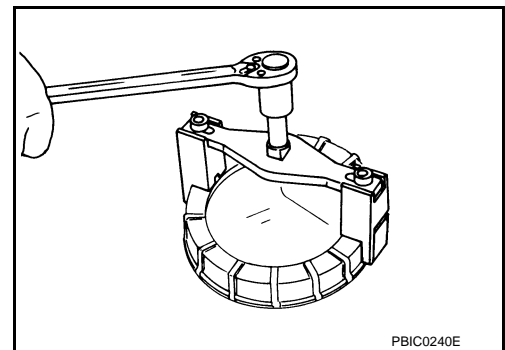
INFOID:000000006109249

#### REMOVAL

##### **WARNING:**

Be sure to read "General Precautions" when working on fuel system. Refer to [FL-15, "General Precaution"](#).

1. Remove fuel tank from the vehicle. Refer to [FL-18](#).
2. Using a fuel tank lock ring wrench to remove the lock ring. Refer to [FL-14, "Special Service Tools"](#)



3. Remove fuel level sensor unit.

##### **CAUTION:**

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

#### INSPECTION AFTER REMOVAL

Check fuel level sensor unit is free from foreign materials. If any are found, remove them.

#### INSTALLATION

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

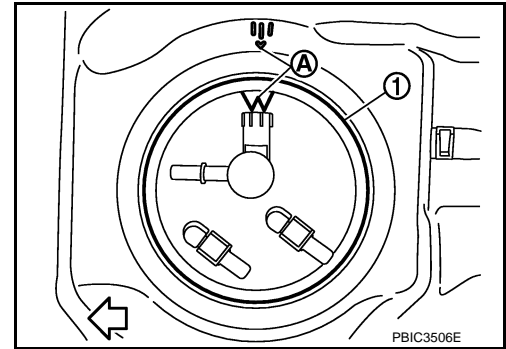
# FUEL LEVEL SENSOR UNIT

[YD]

## < SERVICE INFORMATION >

1. Install fuel level sensor unit (1) with aligning mating marks (A) on fuel tank and fuel level sensor unit as shown in the figure.

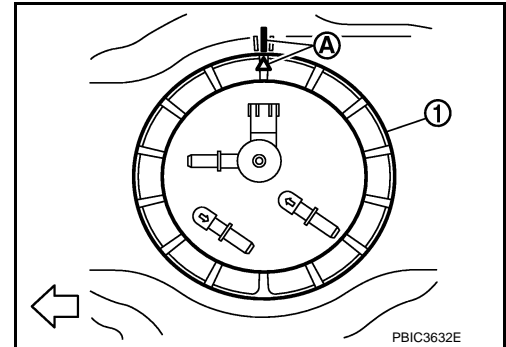
↶ : Vehicle front



2. Install lock ring (1).

↶ : Vehicle front

- a. Tighten lock ring by hand.
- b. Tighten lock ring with a fuel tank lock ring wrench. Refer to [FL-14, "Special Service Tools"](#)
- c. Aligning mating marks (A) on fuel tank and lock ring as shown in the figure.



## INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following steps.

- Start engine and rev it up and check there is no fuel leakage at connections.



# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

[YD]

## SERVICE DATA AND SPECIFICATIONS (SDS)

Standard and Limit

INFOID:000000006109250

Fuel tank capacity	Approx. 80 ℓ (17-5/8 Imp gal)
Fuel recommendation	Refer to <a href="#">MA-25</a>

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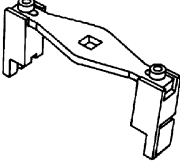
< SERVICE INFORMATION >

# SERVICE INFORMATION

## PREPARATION

### Special Service Tools

INFOID:000000006467236

Tool number Tool name	Description
<p data-bbox="164 443 337 499">KV991-04'700 Lock ring wrench</p>  <p data-bbox="857 659 922 674">ZZA0122D</p>	<p data-bbox="1045 443 1377 470">Removing and Installing lock ring</p>

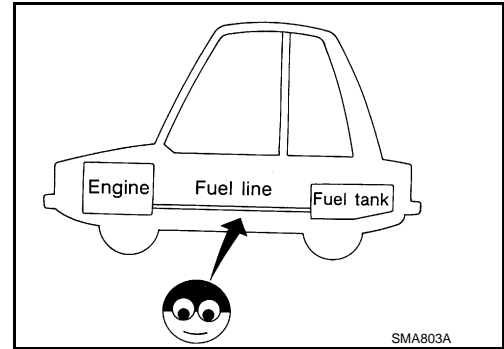
## FUEL SYSTEM

### Checking Fuel Line

INFOID:000000006467237

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

If necessary, repair or replace damaged parts.



### General Precaution

INFOID:000000006467238

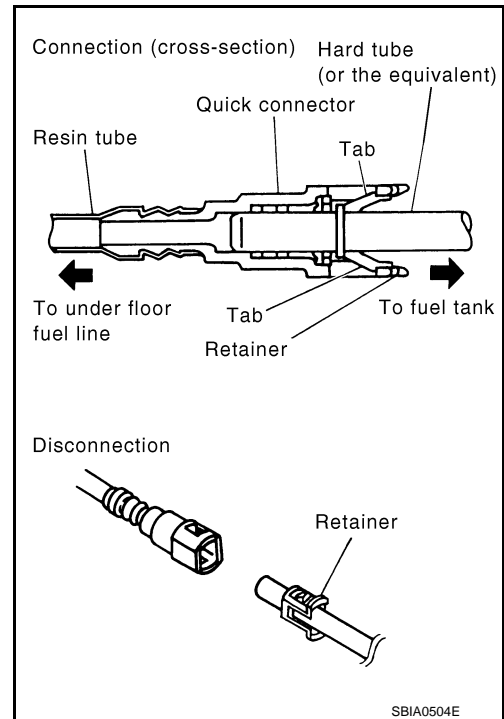
#### **WARNING:**

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

- Put a "CAUTION: FLAMMABLE" sign in 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 spark away from work area.

#### **CAUTION:**

- Use diesel fuel required by the regulations for cetane number. Refer to [GI-4, "Precaution for Fuel"](#).
- Before removing fuel line parts, perform 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 connecting fuel tube quick connectors, check quick connectors are secure.
- Ensure that connector and resin tube never contact any adjacent parts.
- After installing tubes, check there is no fuel leakage at connections in the following steps.
- Start the engine and rev it up and check for fuel leaks at connections.

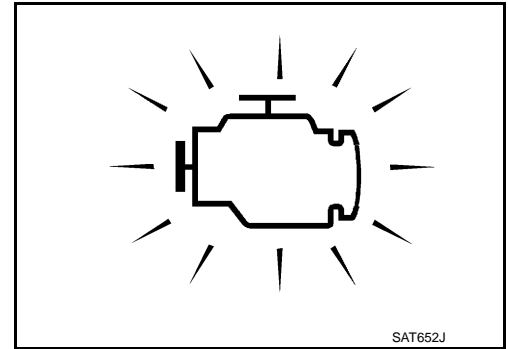


## FUEL SYSTEM

< SERVICE INFORMATION >

[V9X]

- Drain water from fuel filter when fuel filter warning lamp [MI (Red)] turn ON. (with fuel filter warning)



# FUEL FILTER

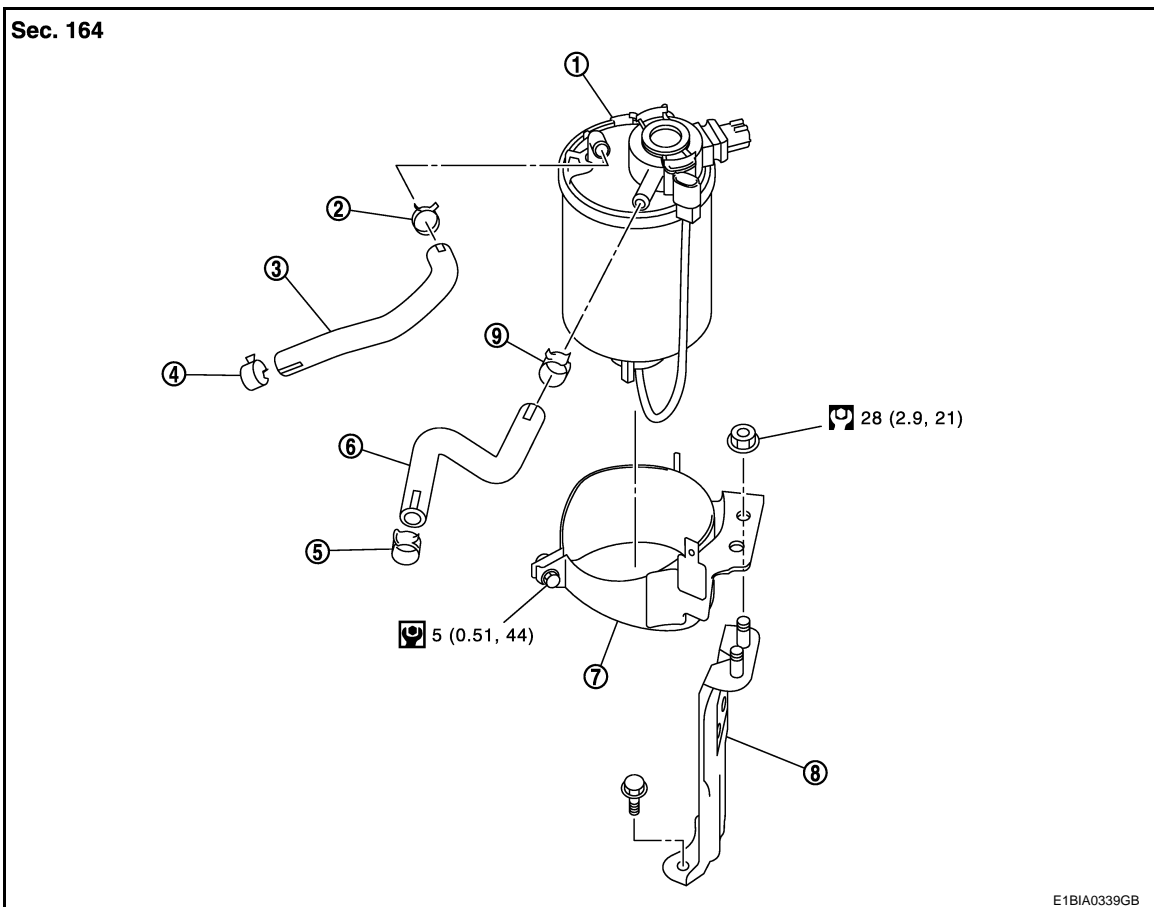
< SERVICE INFORMATION >

[V9X]

## FUEL FILTER

Component

INFOID:000000006467239



- |                |            |              |
|----------------|------------|--------------|
| 1. Fuel filter | 2. Clamp   | 3. Fuel hose |
| 4. Clamp       | 5. Clamp   | 6. Fuel hose |
| 7. Bracket     | 8. Bracket | 9. Clamp     |

### Disassembly

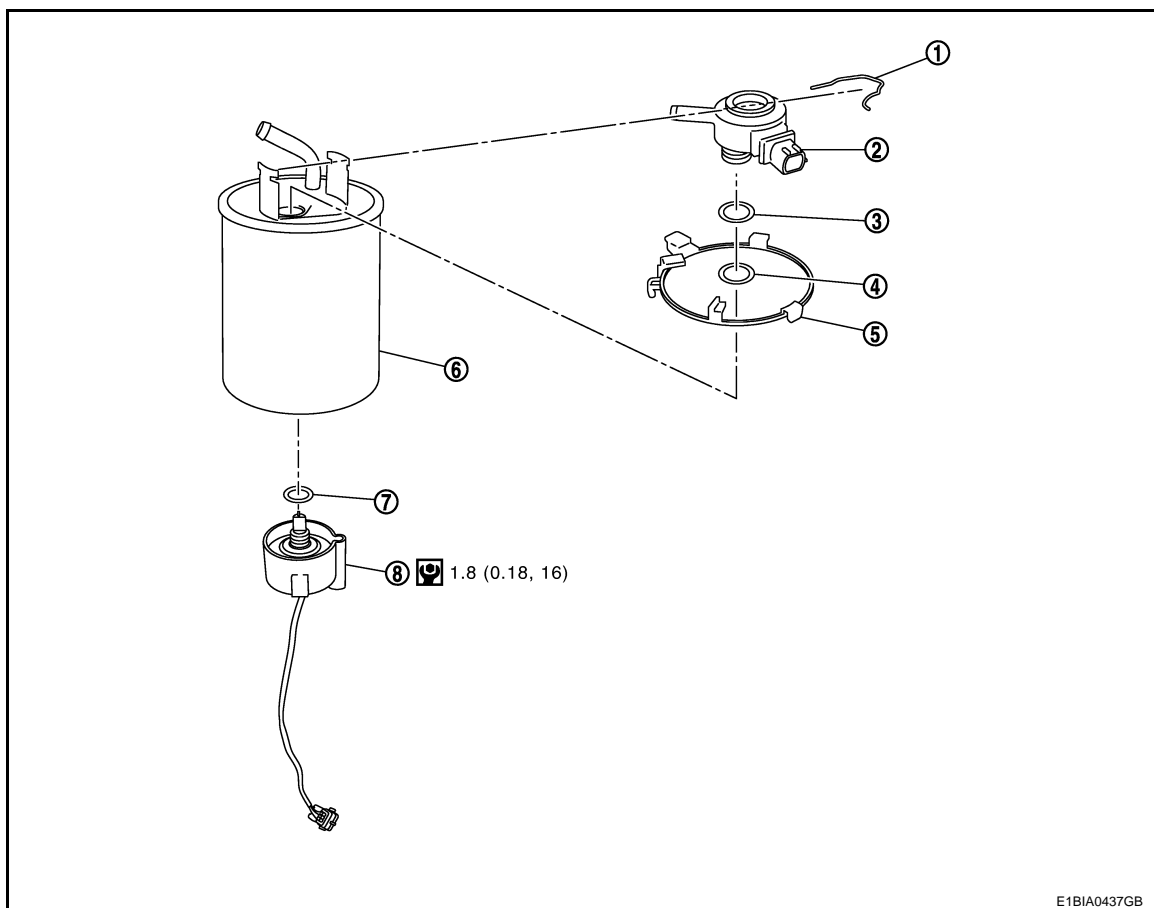
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# FUEL FILTER

< SERVICE INFORMATION >

[V9X]



- |           |                               |                          |
|-----------|-------------------------------|--------------------------|
| 1. Clamp  | 2. Fuel heater                | 3. O-Ring                |
| 4. O-Ring | 5. Plastic ring (if equipped) | 6. Fuel filter cartridge |
| 7. Gasket | 8. Water sensor               |                          |

- Refer to [GI-9. "Component"](#) for symbol marks in the figure.

## Removal and Installation

INFOID:000000006467240

### REMOVAL

1. Disconnect fuel hoses.  
**CAUTION:**  
**Plug the pipe to prevent fuel from draining.**
2. Remove fuel filter assembly from bracket.  
**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.

- Install fuel filter and tighten mounting nuts to the specified torque.

#### Fuel filter mounting nuts

: 28 N·m (2.9 kg·m, 21 ft·lb)

- After installation, bleed air from fuel line. Refer to [FL-31. "Air Bleeding"](#).

### INSPECTION AFTER INSTALLATION

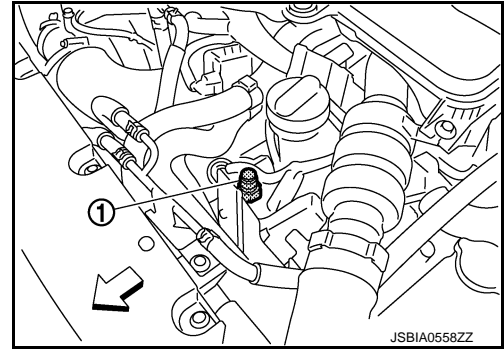
Check there is no fuel leakage at connections in the following steps.

- Start the engine and rev it up and check there is no fuel leakage at connections.

## Air Bleeding

1. Remove connector cap (1), to install priming pump.

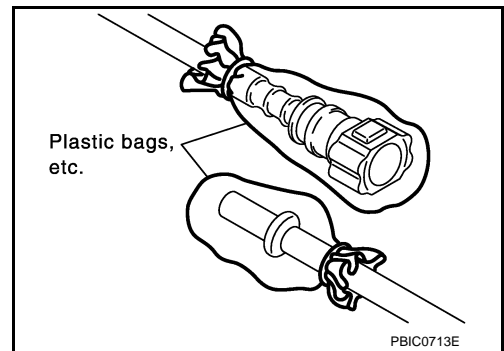
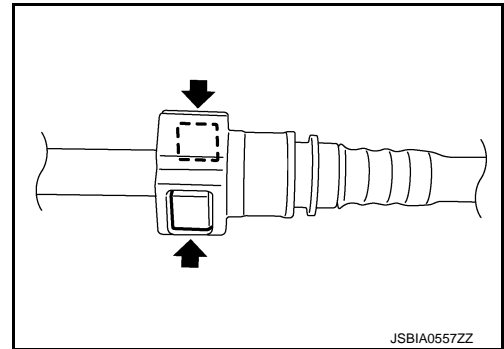
← : Vehicle front



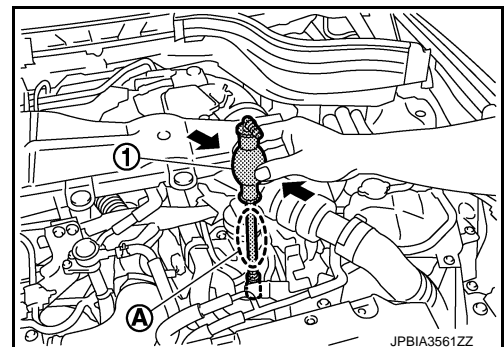
- Disconnect quick connector as follows:
  - Pinch quick connector square-part with the fingers, and pull out the quick connector by hand.
  - If quick connector sticks to tube of connector cap, push and pull quick connectors several times until they start to move. Then disconnect them by pulling.

**CAUTION:**

- Quick connector can be removed when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube 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.
- To keep the connecting portion clean and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.
- When resin tube or hard tube (or an equivalent) is replaced, also replace retainer with a new one.
- To keep the connecting portion clean and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.
- Never insert plug, preventing damage on o-ring in quick connector.



2. Pump fuel until the fuel level can be seen from the tube (A) of the priming pump (1).

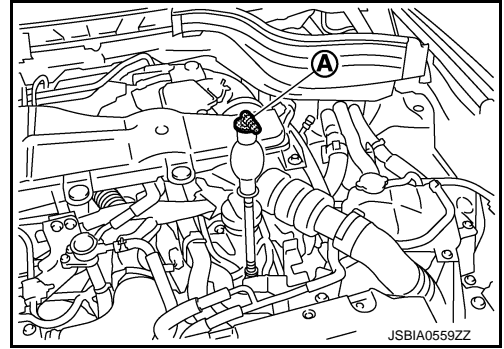


# FUEL FILTER

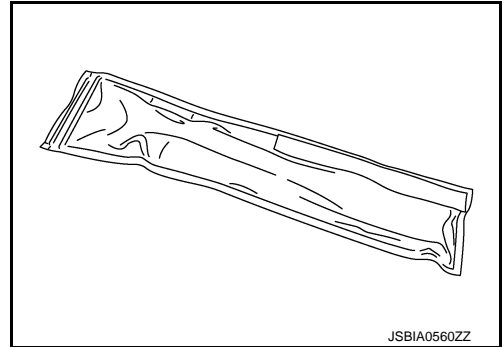
[V9X]

## < SERVICE INFORMATION >

- When pumping fuel, cover the connector (A) with waste to prevent the fuel from spilling in the engine room.



3. Remove priming pump.
  - When removing the priming pump, cover the quick connector with waste to prevent the fuel from spilling in the engine room.
  - Drain residual fuel remaining in the removed priming pump. Put the priming pump in the dedicated bag and securely zip to prevent the fuel from leaking.
4. Install connector cap.
5. Perform engine cranking by repeating several times until engine starting.
6. If the engine does not start, repeat steps 1 and 2.

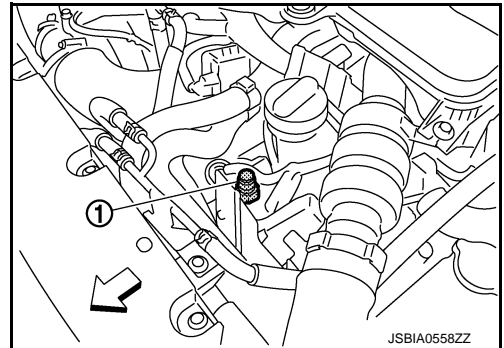


## Draining Water from Fuel Filter

INFOID:000000006467242

1. Remove connector cap (1), to install priming pump.

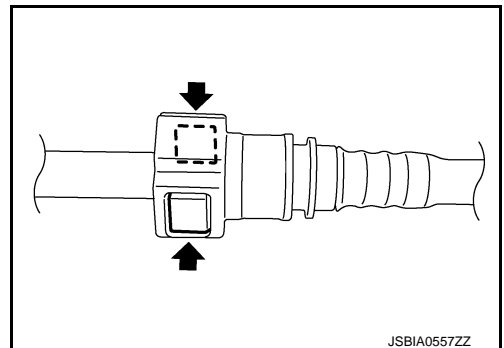
↶ : Vehicle front



- Disconnect quick connector as follows:
  - Pinch quick connector square-part with the fingers, and pull out the quick connector by hand.
  - If quick connector sticks to tube of connector cap, push and pull quick connectors several times until they start to move. Then disconnect them by pulling.

### **CAUTION:**

- **Quick connector can be removed when the tabs are completely depressed. Never twist it more than necessary.**
- **Never use any tools to disconnect quick connector.**
- **Never insert plug, preventing damage on o-ring in quick connector.**





# FUEL FILTER

[V9X]

## < SERVICE INFORMATION >

2. Connect drain hose (suitable hose) to the end of drain plug (A).
3. Prepare a tray at the drain plug open end.
4. Loosen drain plug and drain water from fuel filter.

**CAUTION:**

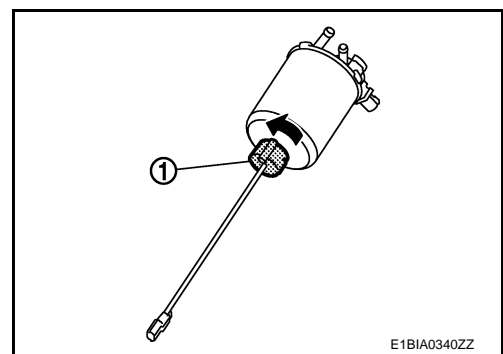
- Water in filter is drained with fuel. Prepare larger capacity pan than fuel filter volume.
- Drained water is mixed with fuel. Prevent fuel from adhering to rubber parts such as engine mounting insulator.

5. 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.

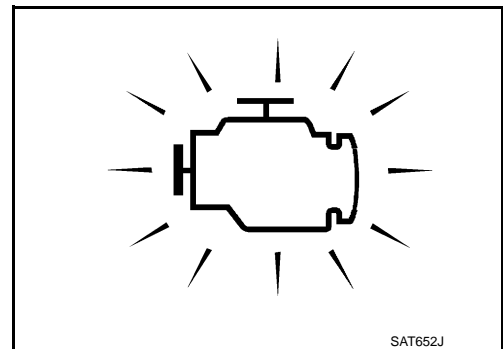
6. Start engine and check there is no fuel leakage.
7. If engine does not start, bleed air in fuel piping. Refer to [FL-31, "Air Bleeding"](#).



## Fuel Filter Sensor (With Fuel Filter Warning)

INFOID:000000006467243

- Drain water from fuel filter, when the fuel filter warning lamp [M (Red)] turns ON.



**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 fuel filter warning lamp.
- If the warning lamp turns ON, check the harness between combination meter and fuel filter sensor. Refer to [FL-33, "Fuel Filter Sensor \(With Fuel Filter Warning\)"](#).
- If the warning lamp turns OFF, replace the fuel filter sensor and fuel filter assembly.

# FUEL TANK

< SERVICE INFORMATION >

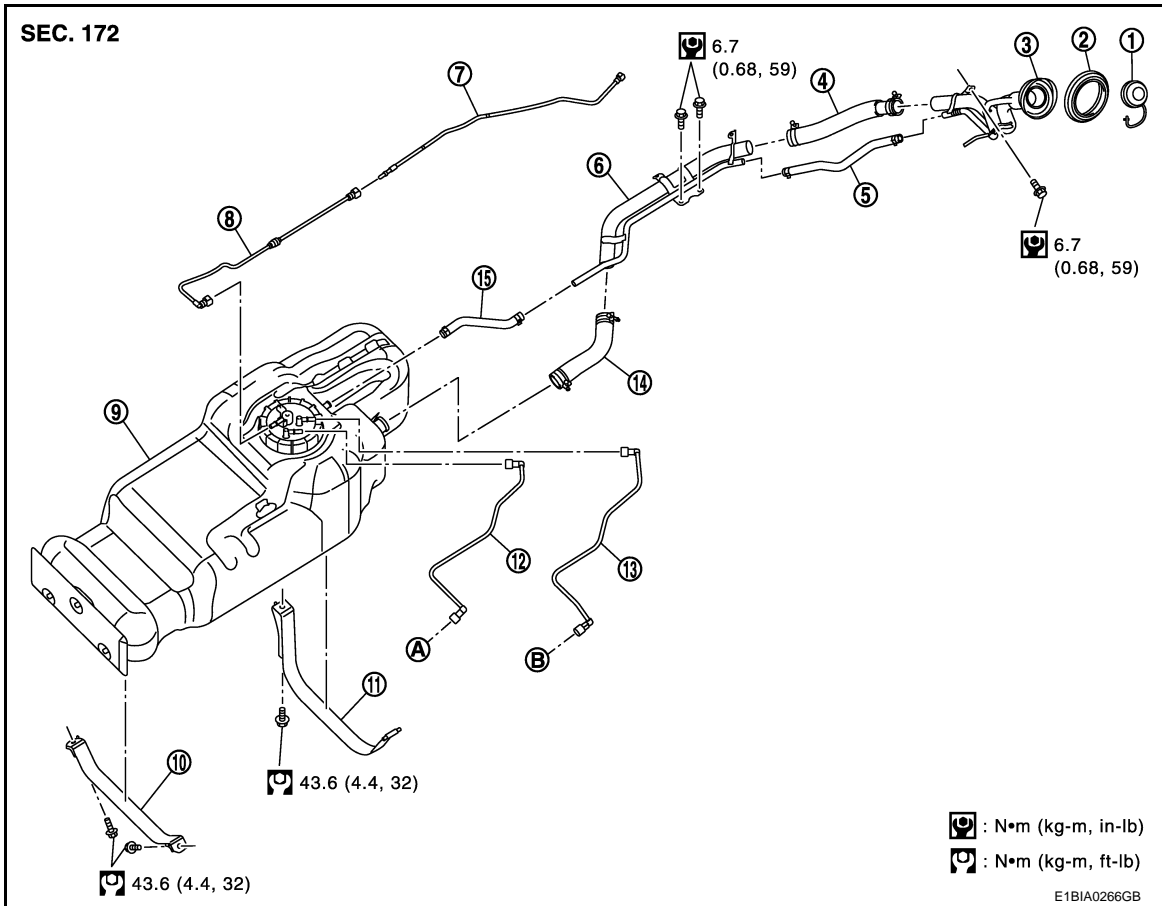
[V9X]

## FUEL TANK

### Component

INFOID:000000006467244

### Fuel tank



- |                            |                           |                     |
|----------------------------|---------------------------|---------------------|
| 1. Fuel filler cap         | 2. Grommet                | 3. Fuel filler tube |
| 4. Fuel filler hose        | 5. Vent hose              | 6. Fuel filler tube |
| 7. EVAP tube               | 8. EVAP tube              | 9. Fuel tank        |
| 10. Fuel tank band (front) | 11. Fuel tank band (rear) | 12. Fuel feed tube  |
| 13. Fuel return tube       | 14. Fuel filler hose      | 15. Vent hose       |
| A. To fuel filter          | B. To engine              |                     |

## Removal and Installation

INFOID:000000006467245

### REMOVAL

#### **WARNING:**

Be sure to read "General Precautions" when working on fuel system. Refer to [FL-27, "General Precaution"](#).

1. Open fuel filler lid.
2. Open the fuel filler cap and release the pressure inside fuel tank.

# FUEL TANK

[V9X]

## < SERVICE INFORMATION >

3. Check fuel level on level place. If fuel gauge indicates more than the level shown in figure (full or almost full), drain fuel from fuel tank until gauge indicates level as shown in the figure or below.

**NOTE:**

Because fuel will be spilled when removing fuel level sensor unit for the top of the fuel is above fuel level sensor unit installation surface.

- As a guide, fuel level becomes the position as shown in the figure or below when approximately 20 ℓ (4-3/8 Imp gal) of fuel are drained from fuel tank.
- Refer to the following for draining fuel.

- a. Insert fuel tube of less than 15 mm (0.59 in) in diameter into fuel filler tube through fuel filler opening to draw fuel from fuel filler tube.
- b. Disconnect fuel filler hose from fuel filler tube.
- c. Insert fuel tube into fuel tank through fuel filler hose to draw fuel from fuel tank.

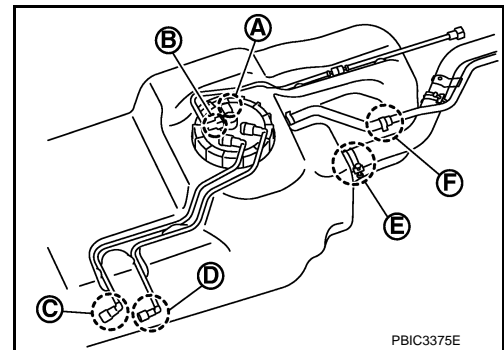
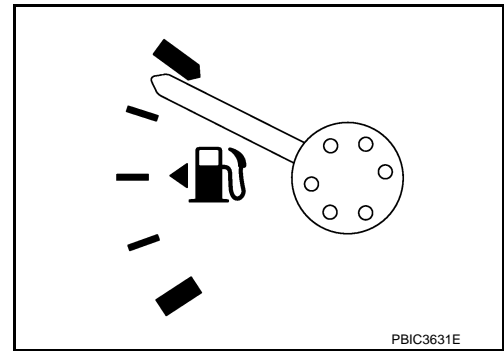
**NOTE:**

Adjusting fuel level is to prevent fuel from spilling, when fuel level sensor unit is removed.

4. Disconnect the battery cable from the negative terminal.

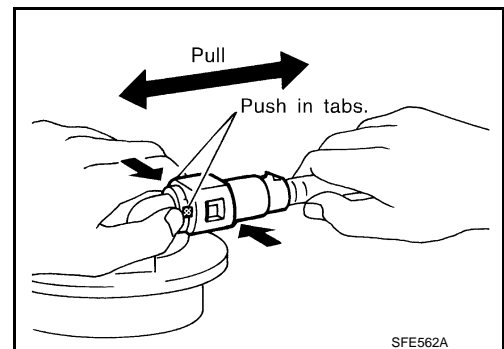
5. Disconnect fuel feed tube (C) and fuel return tube (D).

- A : Harness connector
- B : EVAP tube
- E : Fuel filler hose
- F : Vent hose



- Disconnect quick connector of fuel feed tube and fuel return tube as follows.
- Hold the sides of the connector, push in tabs and pull out the tube.
- If the connector and the tube are stuck together, push and pull several times until they start to move. Then disconnect them by pulling.

**CAUTION:**



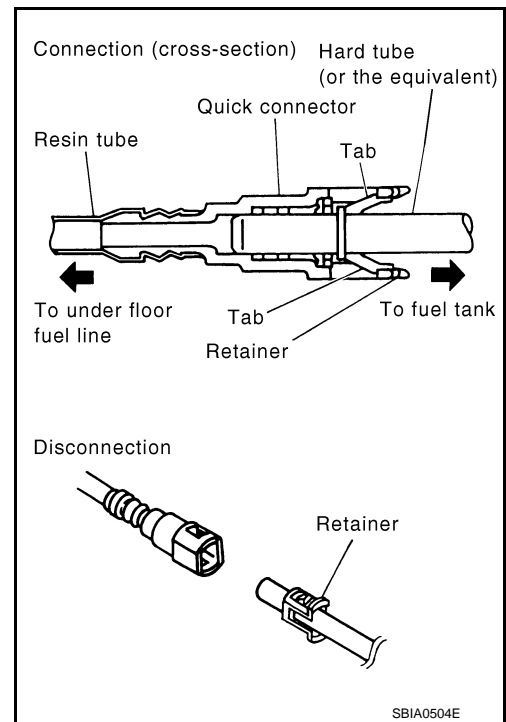
# FUEL TANK

[V9X]

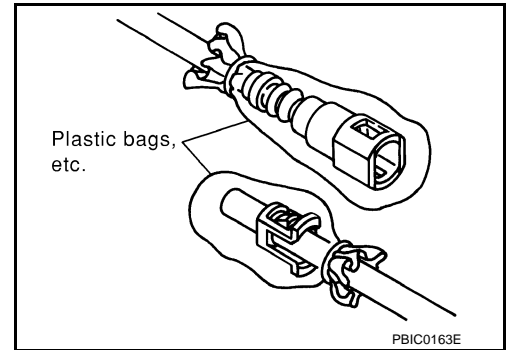
## < SERVICE INFORMATION >

- Quick connector can be disconnected when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube 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 removal.
- Never remove the remaining retainer on hard tube (or equivalent) except when resin tube or retainer is replaced.
- When resin tube or fuel level sensor unit is replaced, also replace retainer with a new one. Replace same color retainer as before replacing.

Retainer color : Green (Fuel feed tube)  
 : Gray (Fuel return tube)

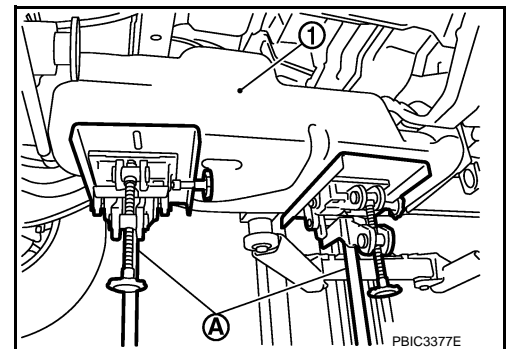


- To keep clean the connecting portion and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.



- Using a transmission jack (A), support the bottom of fuel tank (1).

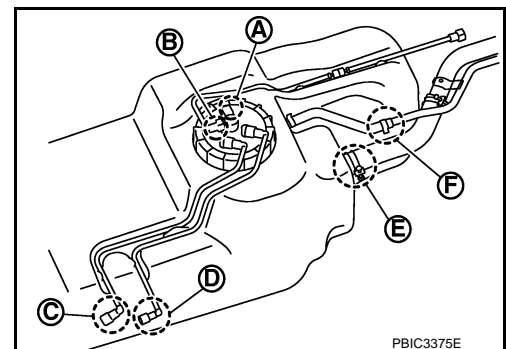
**CAUTION:**  
 Support the position that fuel tank bands never engage.



- Remove fuel tank bands, and lower the transmission jack carefully until harness connector (A), EVAP tube (B), fuel filler hose (E) and vent hose (F) can be disconnected.

C : Fuel feed tube  
 D : Fuel return tube

- Disconnect harness connector, EVAP tube, fuel filler hose and vent hose.



# FUEL TANK

< SERVICE INFORMATION >

[V9X]

9. Supporting with hands, lower transmission jack carefully, and remove fuel tank.

**CAUTION:**

- Pay attention not to fall fuel tank.
- Check that all connection points have been disconnected.
- Confirm there is no interference with vehicle.

10. Remove fuel filler tubes, fuel filler hoses and vent hoses if necessary.

## INSTALLATION

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

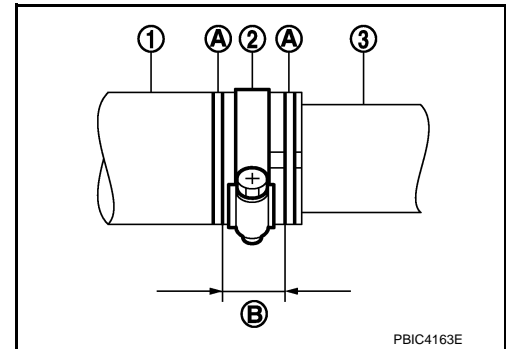
- Surely clamp fuel hoses and insert hose to the length below.

**Fuel filler hose : 35 mm (1.38 in)**

**The other hose : 25 mm (0.98 in)**

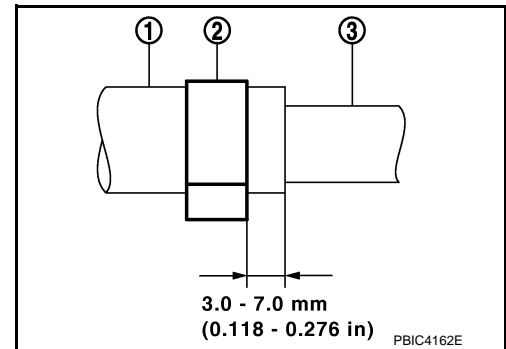
- Be sure hose clamp is not positioned on swelled area of fuel tube.
- Position fuel filler hose clamp (2) between paint marking (B).

- 1 : Fuel filler hose
- 3 : Fuel filler tube
- A : paint marking

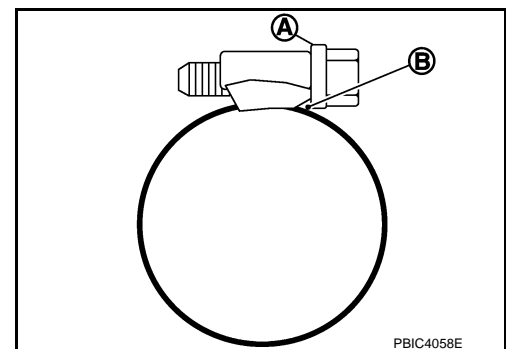


- Position vent hose clamp (2) as shown in the figure.

- 1 : Vent hose
- 3 : Vent tube (part of fuel filler tube)



- Tighten fuel hose clamp so that the flange (A) of bolt head is on the paint mark (B) on the band.



- Fit mounting band pin to the vehicle side securely.
- Before fixing the fuel tank, temporarily install the fuel filler tube.

**CAUTION:**

**Use genuine fuel filler tube mounting bolts or equivalent. Check to tighten them to the specified torque.**

- Connect quick connector as follows.

1. Check connection for damage and foreign materials.
2. Align the connector with the tube, then insert connector straight into tube until a click is heard.

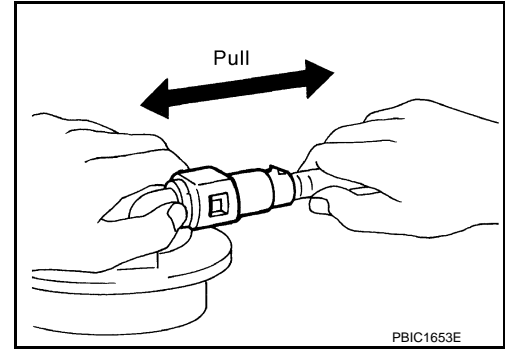
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## FUEL TANK

### < SERVICE INFORMATION >

[V9X]

3. After connecting, check that the connection is secure by following the steps below.
  - Visually confirm that the two tabs are connected to connector.
  - Pull the tube and connector to check they are securely connected.



- After installation, bleed air from fuel line. Refer to [FL-31. "Air Bleeding"](#).

### INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following step.

- Start engine and rev it up and check there is no fuel leakage at connections.

# FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< SERVICE INFORMATION >

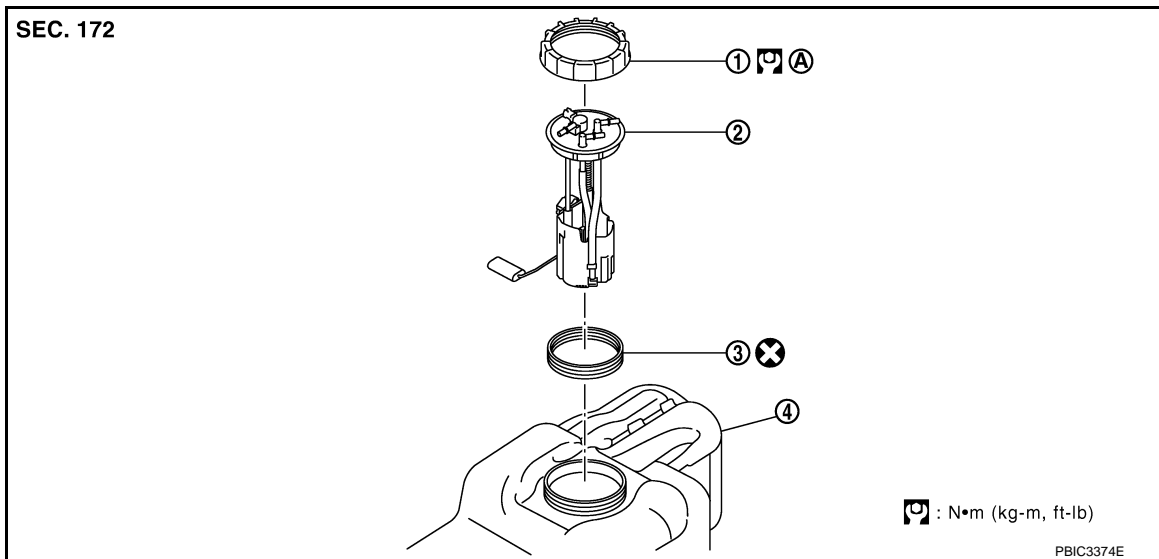
[V9X]

## FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

Component

INFOID:000000006467246

FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY



1. Lock ring
  2. Fuel level sensor unit
  3. Seal packing
  4. Fuel tank
- A. Refer to text.

- Refer to [GI-9, "Component"](#) for symbol marks in the figure.

### Removal and Installation

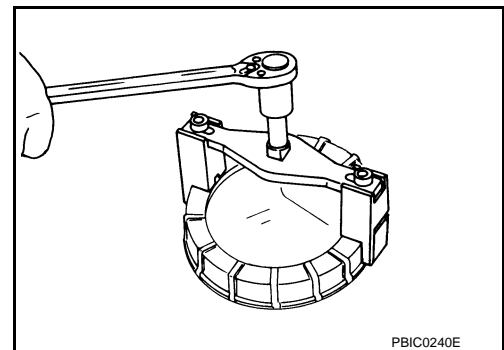
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#### REMOVAL

##### **WARNING:**

Be sure to read "General Precautions" when working on fuel system. Refer to [FL-27, "General Precaution"](#).

1. Remove fuel tank from the vehicle. Refer to [FL-34](#).
2. Using a fuel tank lock ring wrench to remove the lock ring. Refer to [FL-26, "Special Service Tools"](#)



3. Remove "fuel level sensor unit" or "fuel level sensor unit, fuel filter and fuel pump assembly".

##### **CAUTION:**

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

#### INSPECTION AFTER REMOVAL

Check "fuel level sensor unit" or "fuel level sensor unit, fuel filter and fuel pump assembly" is free from foreign materials. If any are found, remove them.

#### INSTALLATION

# FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

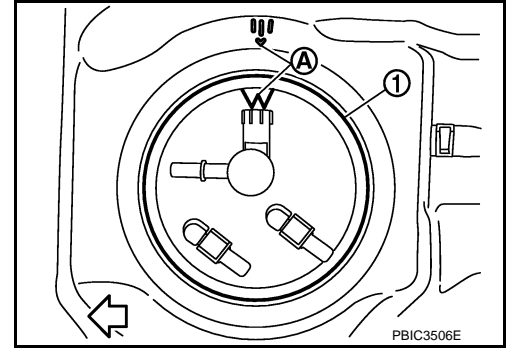
< SERVICE INFORMATION >

[V9X]

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

1. Install "fuel level sensor unit" or "fuel level sensor unit, fuel filter and fuel pump assembly" (1) with aligning mating marks (A) on fuel tank and "fuel level sensor unit" or "fuel level sensor unit, fuel filter and fuel pump assembly" as shown in the figure.

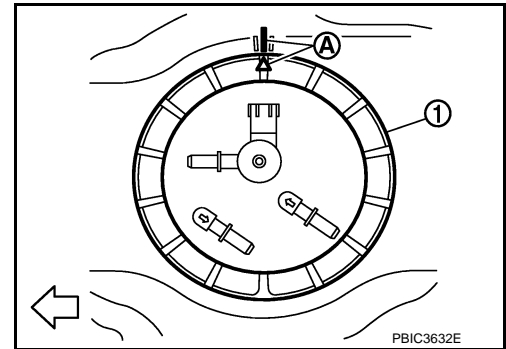
⇐ : Vehicle front



2. Install lock ring (1).

⇐ : Vehicle front

- a. Tighten lock ring by hand.
- b. Tighten lock ring with a fuel tank lock ring wrench. Refer to [FL-26. "Special Service Tools"](#)
- c. Aligning mating marks (A) on fuel tank and lock ring as shown in the figure.



## INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following steps.

- Start engine and rev it up and check there is no fuel leakage at connections.



# FUEL RETURN CONTROL VALVE

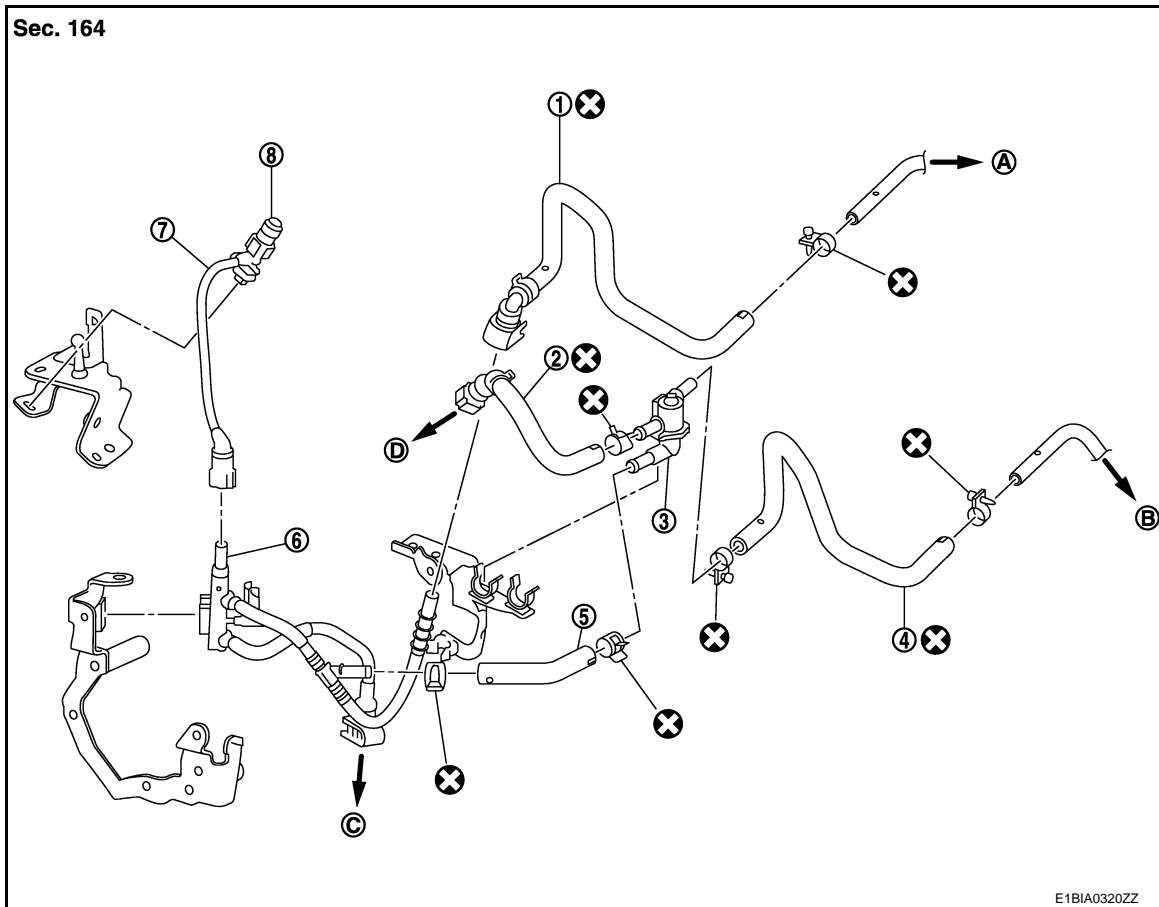
< SERVICE INFORMATION >

[V9X]

## FUEL RETURN CONTROL VALVE

Component

INFOID:000000006467250



- |                        |                     |                              |
|------------------------|---------------------|------------------------------|
| 1. Fuel feed hose      | 2. Fuel return hose | 3. Fuel return control valve |
| 4. Fuel return hose    | 5. Fuel feed hose   | 6. Fuel hose assembly        |
| 7. Air bleeding hose   | 8. Connector cap    |                              |
| A. To fuel filter      | B. To fuel tank     | C. To fuel pump              |
| D. To fuel return hose |                     |                              |

Refer to [GI-9, "Component"](#) for symbols in the figure.

## Removal and Installation

INFOID:000000006467251

### CAUTION:

Be sure to read "General Precautions" before working on the fuel system. Refer to [FL-27, "General Precaution"](#)

### REMOVAL

#### CAUTION:

- Make preparations for fuel outflow.
- Never splash fuel during removal. If fuel is splashed, immediately wipe it off.

1. Remove engine cover.
2. Remove air duct.
3. Disconnect fuel hoses connected to the fuel return control valve.

#### CAUTION:

- Never reuse fuel hoses connected to the fuel return control valve, after disconnected. Use a new one.
- Always replace clamp with a new one.

## FUEL RETURN CONTROL VALVE

< SERVICE INFORMATION >

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[V9X]

### INSTALLATION

Installation is in the reverse order of removal.

### INSPECTION AFTER INSTALLATION

Check there is no fuel leakage at connections in the following step.

- Start engine and rev it up and check there is no fuel leakage at connections.

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

[V9X]

## SERVICE DATA AND SPECIFICATIONS (SDS)

### Standard and Limit

INFOID:000000006467252

Fuel tank capacity	Approx. 80 ℓ (17-5/8 Imp gal)
Fuel recommendation	Refer to <a href="#">GI-4</a>

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