

## SECTION

## FL

## FUEL SYSTEM

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**SERVICE DATA AND SPECIFICATIONS**

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## PRECAUTION

## PRECAUTIONS

## General Precautions

INFOID:0000000004900646

## 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-31, "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-287, "Inspection".
- 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 leaks at connections.
- Start 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 "MI" may come on.
- For servicing "Evaporative Emission System" parts. Refer to EC-59, "System Diagram".

## PREPARATION

< PREPARATION >

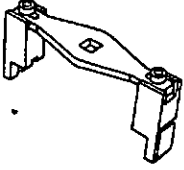
[HR16DE, MR20DE]

### PREPARATION

#### PREPARATION

#### Commercial Service Tools

INFOID:000000004900647

Tool name	Description
Lock ring wrench	Removing and Installing lock ring
 ZZA0122D	

## ON-VEHICLE MAINTENANCE

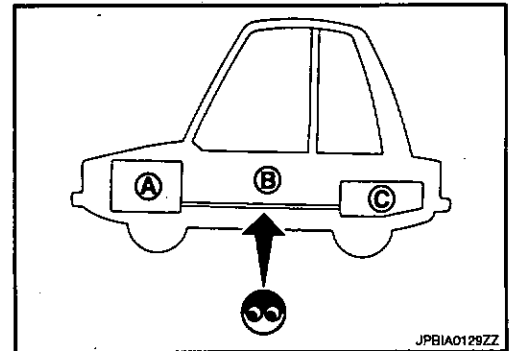
## FUEL SYSTEM

## Inspection

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.

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



## Quick Connector

## CAUTION:

- After connecting fuel tube quick connectors, check quick connectors are secure.
- Ensure that connector and resin tube never contact any adjacent parts.

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

< ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

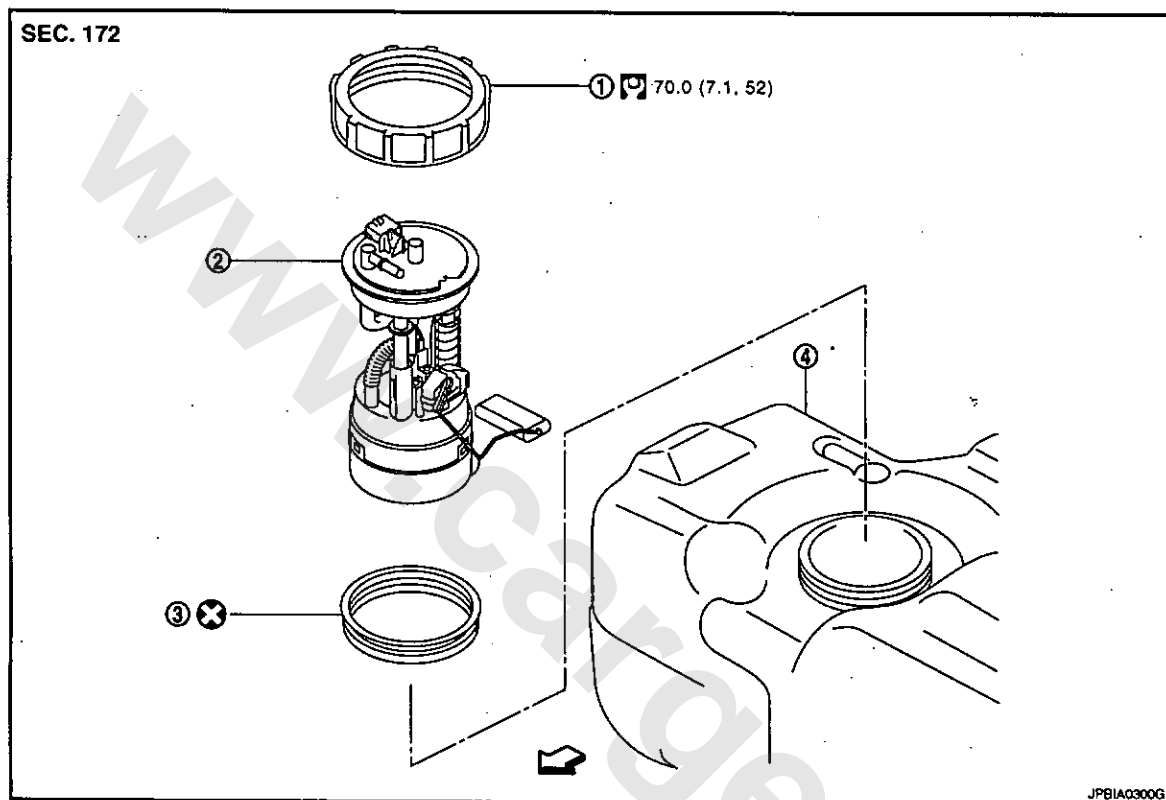
## ON-VEHICLE REPAIR

### FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY 2WD

2WD : Exploded View

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Removal and Installation



1. Lock ring

2. Fuel level sensor unit, fuel filter and fuel pump assembly

3. O-ring

4. Fuel tank

Vehicle front

Refer to GI-3, "Components" for symbols in the figure.

### 2WD : Removal and Installation

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#### REMOVAL

#### WARNING:

Be sure to read "General Precautions" before working on the fuel system. Refer to FL-3, "General Precautions".

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

< ON-VEHICLE REPAIR >

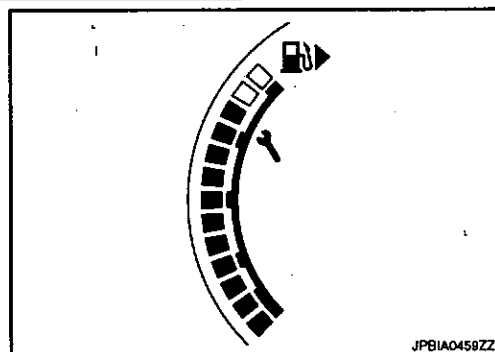
[HR16DE, MR20DE]

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

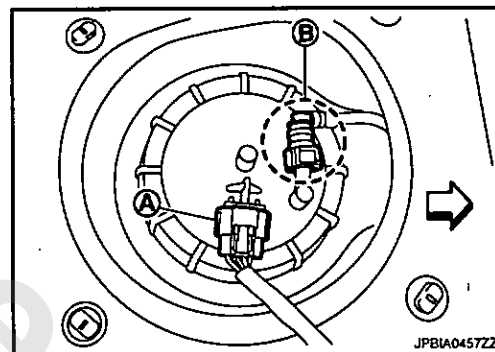
## NOTE:

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 units installation surface.

- As a guide, fuel level becomes the position as shown in the figure or below when approximately 15 ℓ (3- 1/4 Imp gal) of fuel are drained from fuel tank.
  - In case fuel pump does not operate, perform the following procedure.
- a. Insert hose of less than 20 mm (0.79 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. Refer to FL-13, "2WD : Exploded View".
  - c. Insert hose into fuel tank through fuel filler hose to draw fuel from fuel tank.
2. Release the fuel pressure from the fuel lines. Refer to EC-287, "Inspection".
  3. Open fuel filler lid.
  4. Open fuel filler cap and release the pressure inside the fuel tank.
  5. Remove rear seat cushion. Refer to SE-20, "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 connector (B).



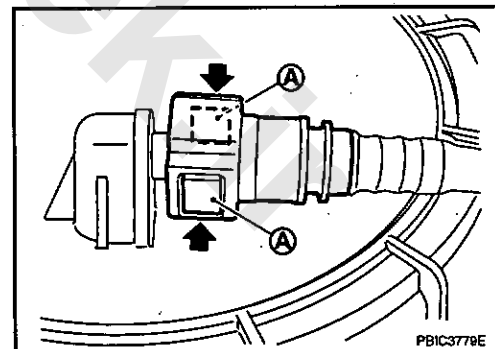
↔ : Vehicle front



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

## 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.

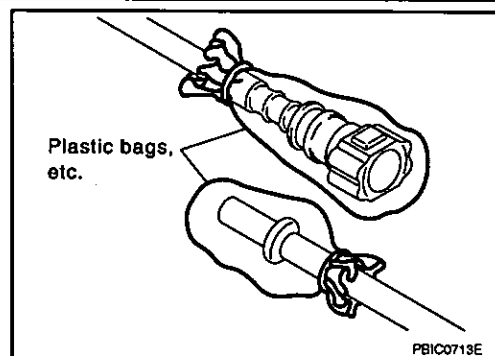


# FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY

< ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

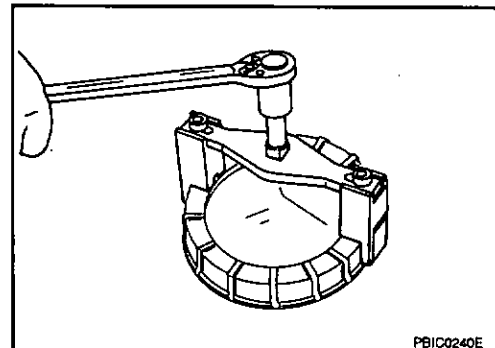
- To keep the connecting portion clean and to avoid damage and foreign materials, cover them completely with plastic bags or something similar.
- Never insert plug, preventing damage on O-ring in quick connector.



8. Using lock ring wrench (commercial service tool), remove lock ring.

**NOTE:**

For reference when installing, put a matching mark on lock ring, fuel pump assembly and fuel tank.



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

**CAUTION:**

- Never bend float arm during removal.
- Avoid polluting the inside by residue fuel. Draw out with avoiding inclination by supporting with a cloth.
- Avoid impacts such as falling when handling components.

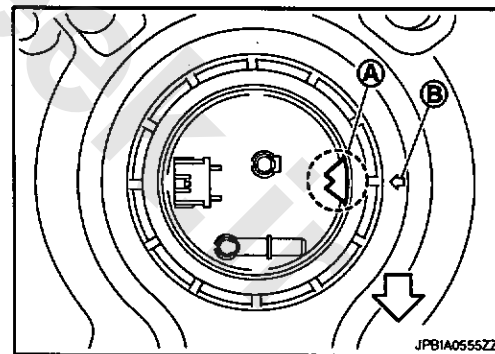
## INSTALLATION

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

Fuel Level Sensor Unit, Fuel Filter and Fuel Pump Assembly

1. Install O-ring to fuel tank without any twist.
2. Install fuel level sensor unit with aligning matching mark (A) on fuel level sensor unit and (B) on fuel tank as shown in the figure.

← : Vehicle front



### Quick Connector

Connect quick connector of fuel feed tube in the following procedures.

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



## < ON-VEHICLE REPAIR >

- Pull the tube and the connector to check they are securely connected.



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### Inspection Hole Cover

- Before installing inspection hole cover, check that the connecting part has no fuel leaks. Refer to FL-9, "2WD Inspection".

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

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

< ON-VEHICLE REPAIR > [HR16DE, MR20DE]

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

↶ : Vehicle front

Refer to GI-3, "Components" for symbols in the figure.

## 4WD : Removal and Installation

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### REMOVAL

#### WARNING:

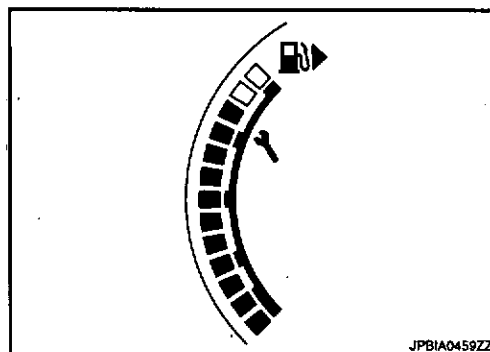
**Be sure to read "General Precautions" before working on the fuel system. Refer to FL-3, "General Precautions".**

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

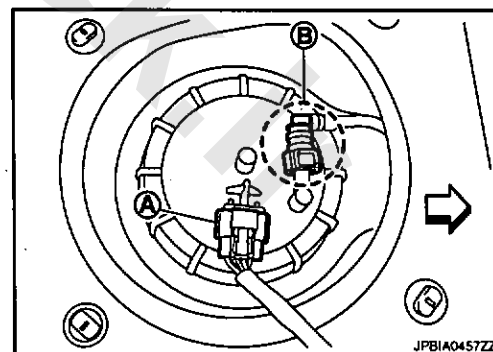
#### NOTE:

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 units installation surface.

- As a guide, fuel level becomes the position as shown in the figure or below when approximately 15 ℓ (3- 1/4 Imp gal) of fuel are drained from fuel tank.
  - In case fuel pump does not operate, perform the following procedure.
- a. Insert hose of less than 20 mm (0.79 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. Refer to FL-15, "4WD : Exploded View".
  - c. Insert hose into fuel tank through fuel filler hose to draw fuel from fuel tank.
2. Release the fuel pressure from the fuel lines. Refer to EC-287, "Inspection".
  3. Open fuel filler lid.
  4. Open fuel filler cap and release the pressure inside the fuel tank.
  5. Remove rear seat cushion. Refer to SE-20, "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 connector (B).



↶ : Vehicle front



- Remove quick connector in the following procedures.

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

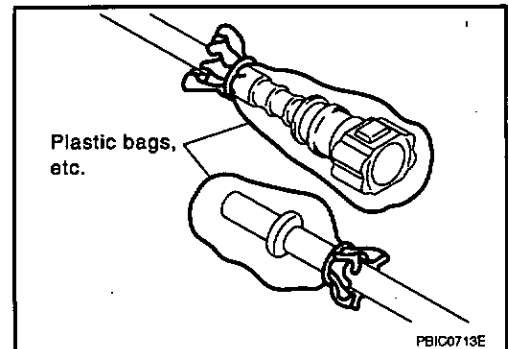
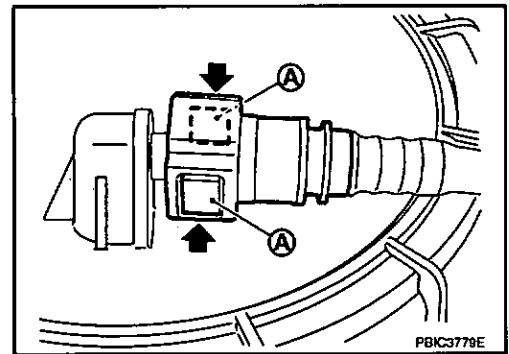
[HR16DE, MR20DE]

## < ON-VEHICLE REPAIR >

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

### CAUTION:

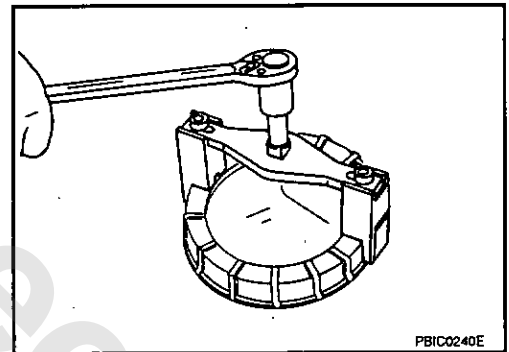
- Quick connector can be removed when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube away from heat. Be especially careful when welding near the resin tube.
- Prevent acid liquid such as battery electrolyte, 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.
- Never insert plug, preventing damage on O-ring in quick connector.



8. Using lock ring wrench (commercial service tool), remove lock ring.

### NOTE:

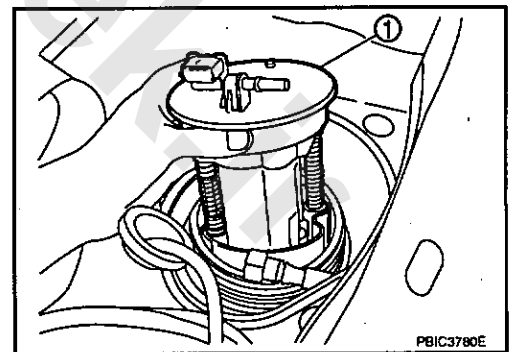
For reference when installing, put a matching mark on lock ring, fuel pump assembly and fuel tank.



9. Raise fuel level sensor unit, fuel filter and fuel pump assembly (1), and disconnect fuel tube and harness connector.

### CAUTION:

- Never bend float arm during removal.
- Avoid polluting the inside by residue fuel. Draw out with avoiding inclination by supporting with a cloth.
- Avoid impacts such as falling when handling components.



10. Raise sub fuel level sensor assembly.

### CAUTION:

- Never disassembly a fuel tube from sub fuel sensor assembly.
- Never bend float arm during removal.
- Avoid polluting the inside by residue fuel. Draw out with avoiding inclination by supporting with a cloth.
- Avoid impacts such as falling when handling components.

## INSTALLATION

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

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

< ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

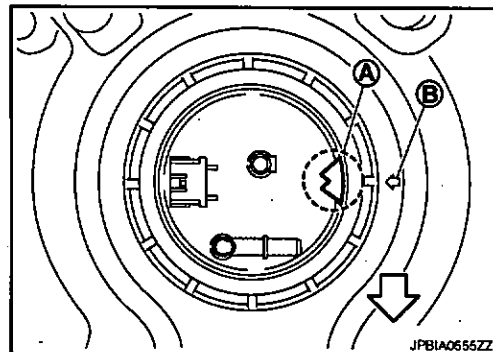
Fuel Level Sensor Unit, Fuel Filter and Fuel Pump Assembly and Sub Fuel Level Sensor Assembly

1. Install O-ring to fuel tank without any twist.
2. Install fuel level sensor unit with aligning mating marks (A) on fuel level sensor unit and (B) on fuel tank as shown in the figure.

⇨ : Vehicle front

## NOTE:

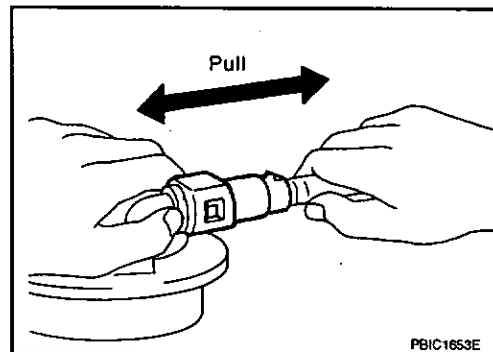
Figure shows fuel level sensor unit, fuel filter and fuel pump assembly side of fuel tank.



## Quick Connector

Connect quick connector of fuel feed tube in the following procedures.

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 procedures.
  - Visually confirm that the two tabs are connected to the connector.
  - Pull the tube and the connector to check they are securely connected.



4. Connect harness connector.

## Inspection Hole Cover

- Before installing inspection hole cover, check that the connecting part has no fuel leaks. Refer to FL-12, "4WD : Inspection".

1. Install inspection hole covers with the front mark (arrow) facing front of vehicle.
2. Lock clips by turning counterclockwise.

## 4WD : Inspection

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## INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leaks.

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

# FUEL TANK

< ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

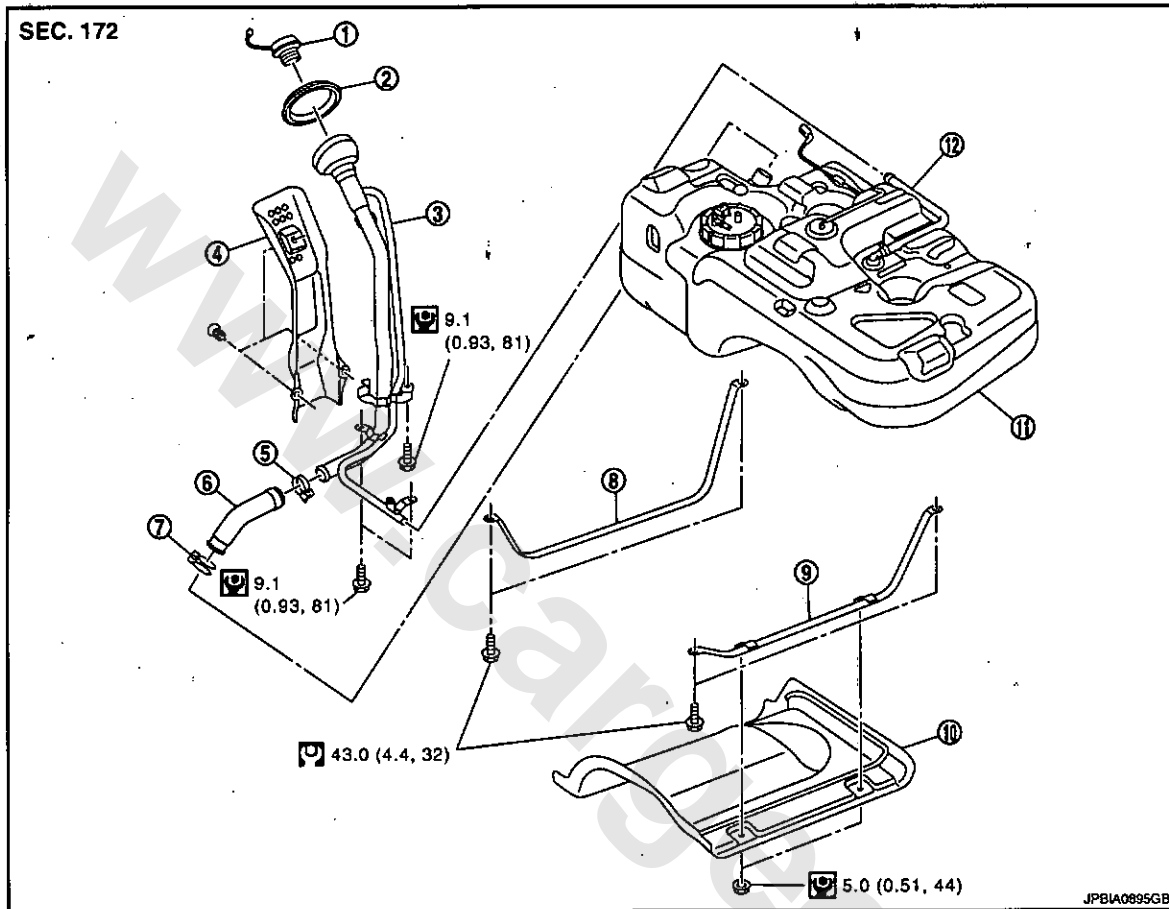
## FUEL TANK

2WD

2WD : Exploded View

2WD

INFOID:0000000004900656



- |                    |                        |                        |
|--------------------|------------------------|------------------------|
| 1. Fuel filler cap | 2. Grommet             | 3. Fuel filler tube    |
| 4. Cover           | 5. Clamp               | 6. Fuel filler hose    |
| 7. Clamp           | 8. Fuel tank band (RH) | 9. Fuel tank band (LH) |
| 10. Protector      | 11. Fuel tank          | 12. Vent hose          |

Refer to GI-3, "Components" for to symbols in the figure.

## 2WD : Removal and Installation

INFOID:0000000004900657

### REMOVAL

#### WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to FL-3, "General Precautions".

- Perform the steps 2 to 7 of "REMOVAL" in " FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY". Refer to FL-6, "2WD : Removal and Installation".
- Drain fuel from fuel tank if necessary. Refer to FL-6, "2WD : 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-5, "Exploded View" (HR16DE) or EX-10, "Exploded View" (MR20DE).

## FUEL TANK

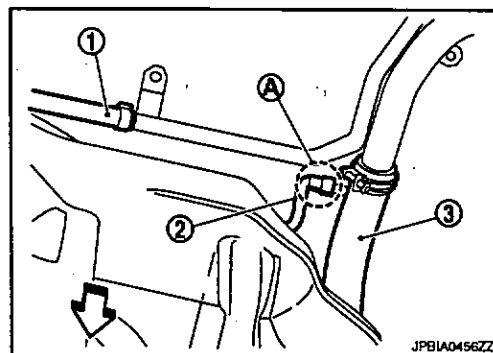
### < ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

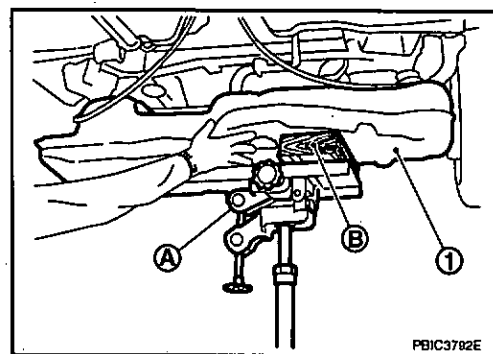
4. Remove protector from fuel tank.
5. Remove vent hose (1) at rear side of fuel tank.

↔: Vehicle front

6. Disconnect EVAP tube (2) at rear side of fuel tank.
  - Instruction for quick connector (A) of EVAP tube. Refer to FL-6, "2WD : Removal and Installation".
7. Remove fuel filler hose (3) at fuel filler tube side.



8. Support center of fuel tank (1) with transmission jack (A).  
**CAUTION:**  
Securely support the fuel tank with a piece of wood (B).



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.

#### Fuel Filler Hose

- Insert fuel filler hose to the length below.

: 35 mm (1.38 in)

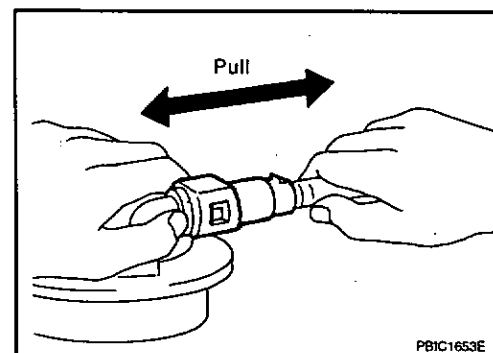
- Be sure hose clamp is not placed on swelled area of fuel filler tube.
- Tighten fuel filler hose clamp so that the remaining length of screw thread becomes to the following.

Fuel filler tube side : 7 - 11 mm (0.28 - 0.43 in)

Fuel tank side : 5 - 9 mm (0.20 - 0.35 in)

#### EVAP Hose

1. Check connections for damage or foreign material.
2. Align the matching side connection part with the center of shaft, and insert connector straight until it clicks.
3. After connecting, pull out quick connector and centralized under-floor piping by hand. Check connections are secure.



# FUEL TANK

[HR16DE, MR20DE]

< ON-VEHICLE REPAIR >

## 2WD : Inspection

INFOID:0000000004900658

### INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leaks.

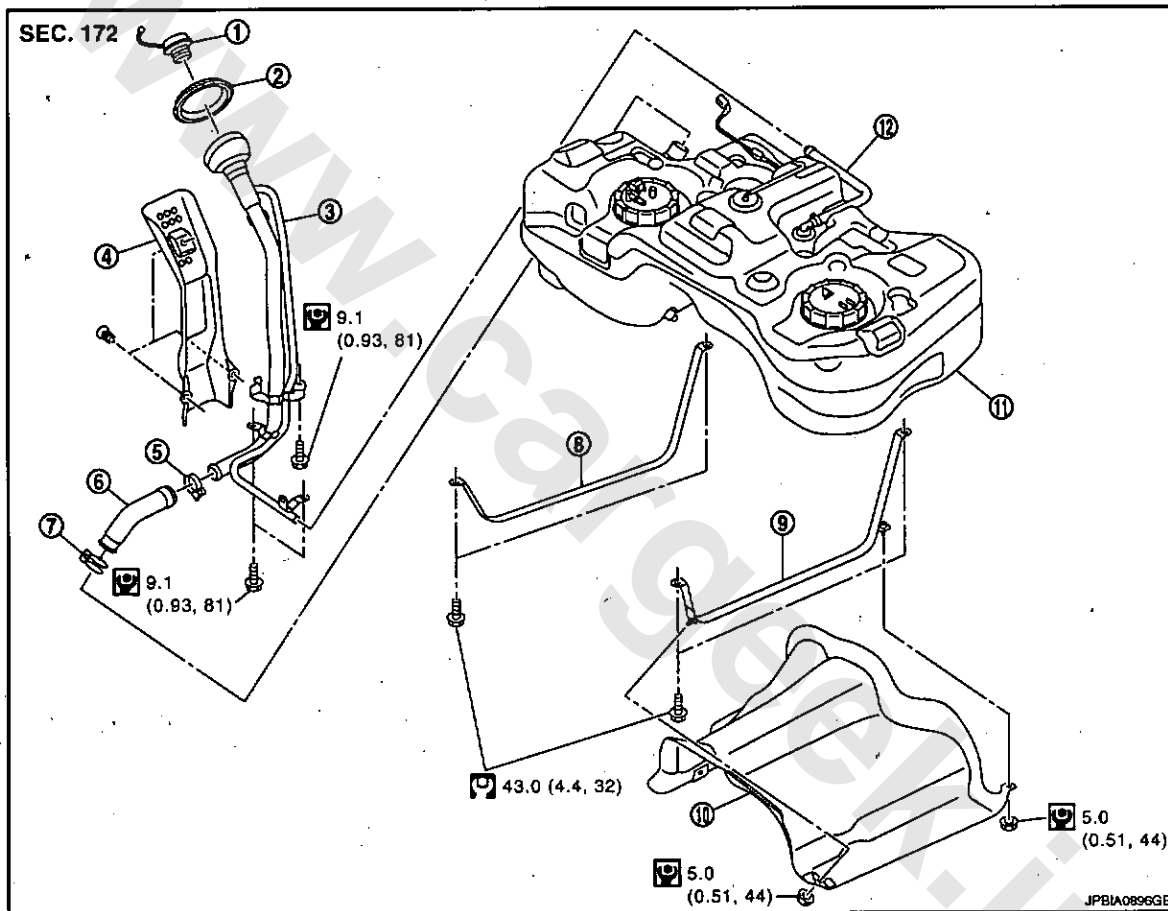
1. Turn ignition switch "ON" (with engine stopped), and check connections for leakage by applying fuel pressure to fuel piping.
2. Start engine and rev it up and check there are no fuel leaks at the fuel system tube and hose connections.

## 4WD

## 4WD : Exploded View

INFOID:0000000004900659

## 4WD



- |                    |                        |                        |
|--------------------|------------------------|------------------------|
| 1. Fuel filler cap | 2. Grommet             | 3. Fuel filler tube    |
| 4. Cover           | 5. Clamp               | 6. Fuel filler hose    |
| 7. Clamp           | 8. Fuel tank band (RH) | 9. Fuel tank band (LH) |
| 10. Protector      | 11. Fuel tank          | 12. Vent hose          |

Refer to GI-3, "Components" for to symbols in the figure.

## 4WD : Removal and Installation

INFOID:0000000004900660

### REMOVAL

#### WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to FL-3, "General Precautions".

1. Perform the steps 2 to 7 of "REMOVAL" in " FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY". Refer to FL-10, "4WD : Removal and Installation".

# FUEL TANK

## < ON-VEHICLE REPAIR >

[HR16DE, MR20DE]

2. Drain fuel from fuel tank if necessary. Refer to FL-10, "4WD : Removal and Installation".

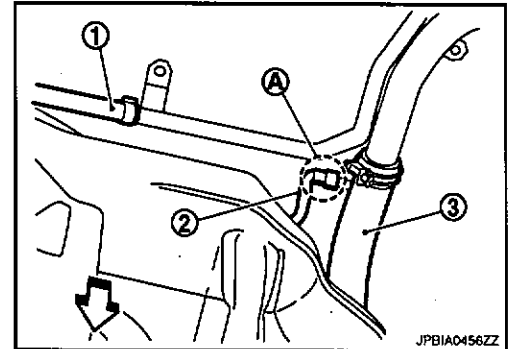
**CAUTION:**

- 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.

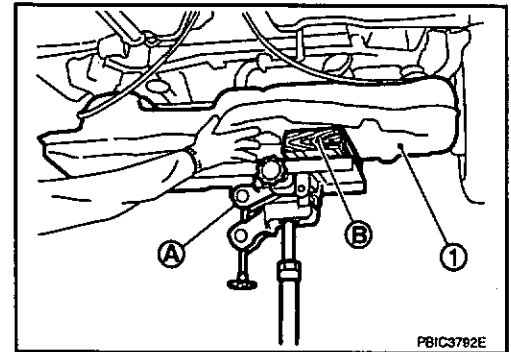
3. Remove propeller shaft. Refer to DLN-105, "Exploded View".  
4. Remove main muffler. Refer to EX-10, "Exploded View".  
5. Remove protector from fuel tank.  
6. Remove vent hose (1) at rear side of fuel tank.

⇐: Vehicle front

7. Disconnect EVAP tube (2) at rear side of fuel tank.  
• Instruction for quick connector (A) of EVAP tube. Refer to FL-10, "4WD : Removal and Installation".  
8. Remove fuel filler hose (3) at fuel filler tube side.



9. Support center of fuel tank (1) with transmission jack (A).  
**CAUTION:**  
Securely support the fuel tank with a piece of wood (B).



10. Remove fuel tank band (RH and LH).  
11. 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.

### Fuel Filler Hose

- Insert fuel filler hose to the length below.

: 35 mm (1.38 in)

- Be sure hose clamp is not placed on swelled area of fuel filler tube.
- Tighten fuel filler hose clamp so that the remaining length of screw thread becomes to the following.

Fuel filler tube side : 7 - 11 mm (0.28 - 0.43 in)

Fuel tank side : 5 - 9 mm (0.20 - 0.35 in)

### EVAP Hose

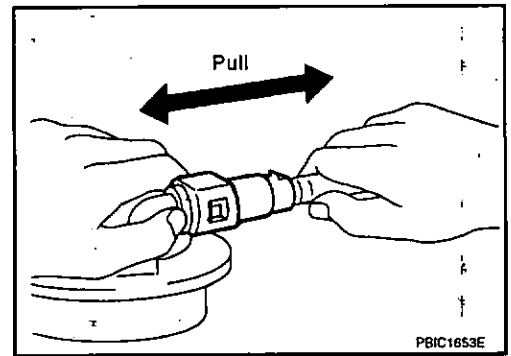


## FUEL TANK

[HR16DE, MR20DE]

### < ON-VEHICLE REPAIR >

1. Check connections for damage or foreign material.
2. Align the matching side connection part with the center of shaft, and insert connector straight until it clicks.
3. After connecting, pull out quick connector and centralized under-floor piping by hand. Check connections are secure.



### 4WD : Inspection

#### INSPECTION AFTER INSTALLATION

Use the following procedure to check for fuel leaks.

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 leaks at the fuel system tube and hose connections.

## SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[HR16DE, MR20DE]

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Fuel Tank

INFOID:0000000004900662

#### Standard and Limit

Fuel tank capacity	Approximate 65 ℓ (14-1/2 Imp gal)
Fuel recommendation	Refer to <u>GI-31</u>

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## PRECAUTION

## PRECAUTIONS

## General Precautions

INFOID:000000004900663

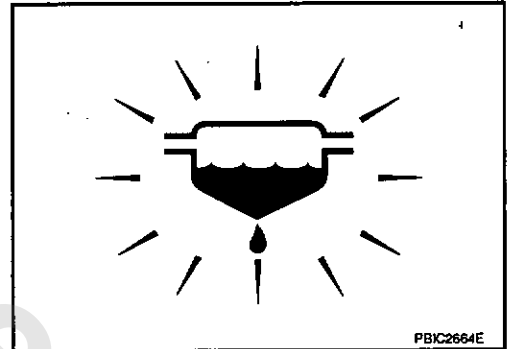
## WARNING:

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-31, "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 that there is no fuel leakage at connections in the following steps.
- 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 "MI" may come on.
- Drain water from fuel filter, when the fuel filter warning lamp turns ON (with fuel filter warning). Refer to FL-23, "Water Draining".



# PREPARATION

< PREPARATION >

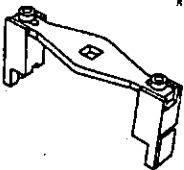
[M9R]

## PREPARATION

### PREPARATION

#### Commercial Service Tools

INFOID:000000004900654

Tool name	Description
<p data-bbox="135 414 311 446">Lock ring wrench</p>  <p data-bbox="837 638 909 659">ZZA0122D</p>	<p data-bbox="1029 414 1364 457">Removing and Installing lock ring</p>

## ON-VEHICLE MAINTENANCE

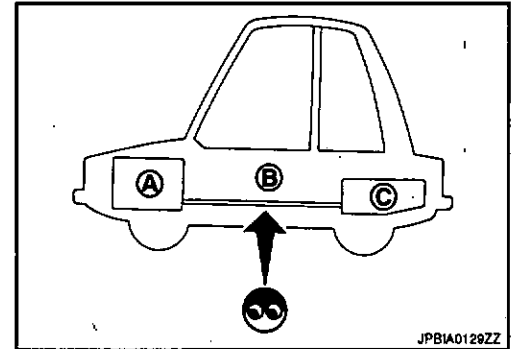
### FUEL SYSTEM

#### Inspection

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

If necessary, repair or replace damaged parts.

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



#### Quick Connector

##### CAUTION:

- After connecting fuel tube quick connectors, check that quick connectors are secure.
- Ensure that connector and resin tube never contact any adjacent parts.

# FUEL FILTER

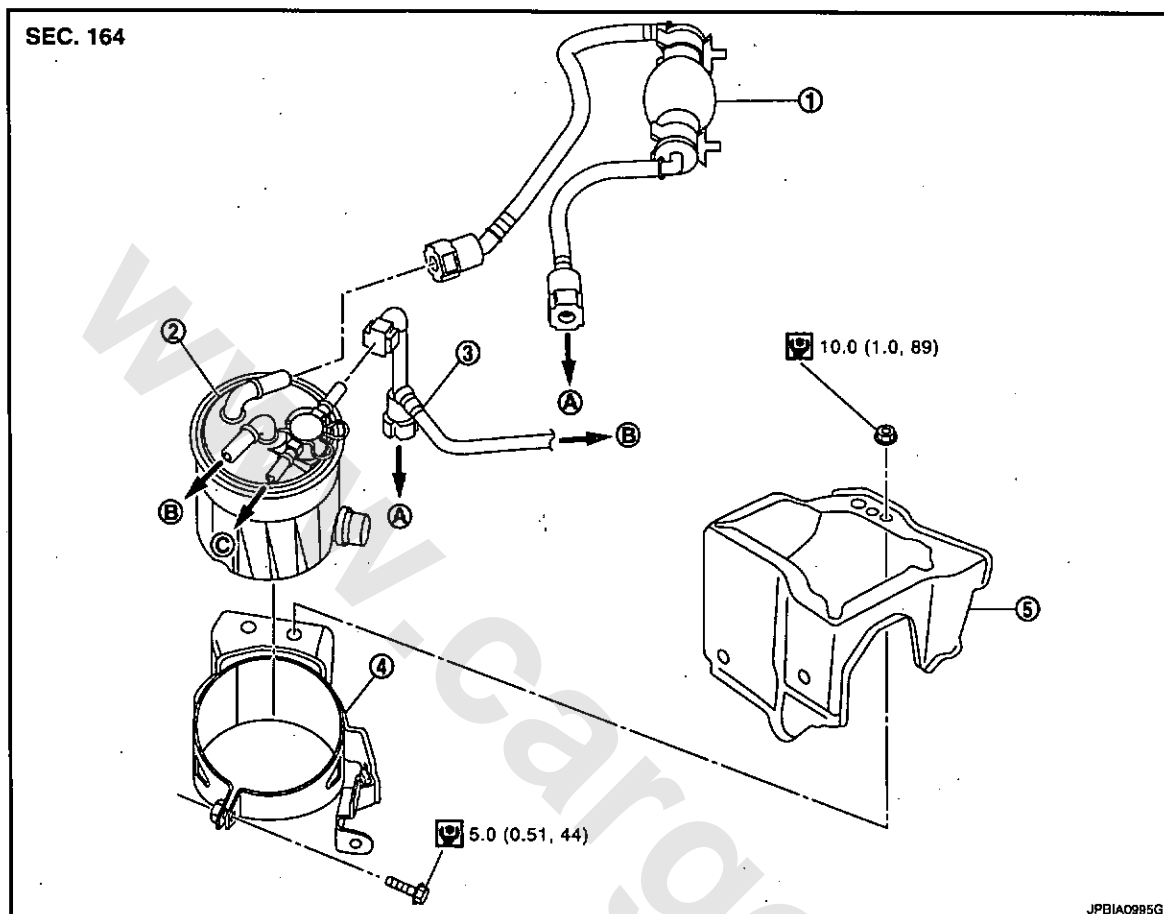
< ON-VEHICLE MAINTENANCE >

[M9R]

## FUEL FILTER

### Exploded View

INFOID:0000000004900667



## Removal and Installation

INFOID:0000000004900668

### REMOVAL

1. Disconnect quick connectors, and remove fuel hoses.  
**CAUTION:**  
**Never splash fuel during removal. If fuel is splashed, immediately wipe it off.**
2. Remove fuel protector.
3. Remove fuel filter.

### INSTALLATION

1. Note the following, and install in the reverse order of removal.
  - After installation, bleed air from fuel line. Refer to FL-23, "Air Bleeding".**CAUTION:**  
**Never bend or twist the fuel tube during installation and removal.**

# FUEL FILTER

< ON-VEHICLE MAINTENANCE >

[M9R]

## Water Draining

INFOID:0000000004900669

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

### CAUTION:

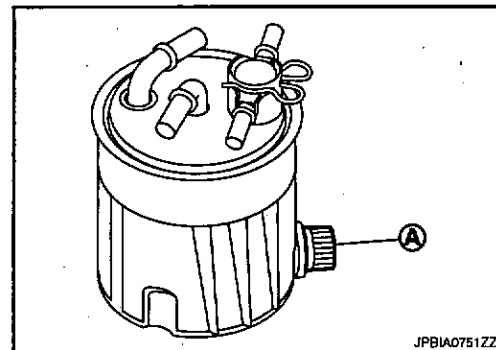
- Water in filter is drained with fuel. Prepare larger capacity pan than fuel filter volume.
- Drained water is mixed with fuel. Prevent fuel from adhering to rubber parts such as engine mounting insulator.

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.

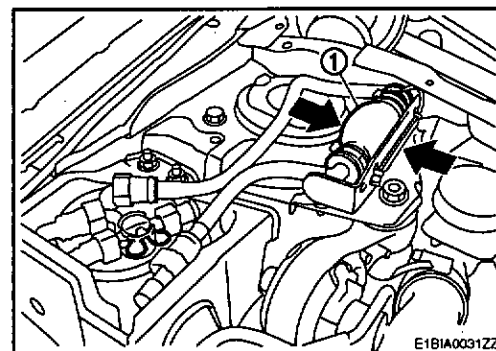
5. Bleed air in fuel piping. Refer to FL-23, "Air Bleeding".
6. Start engine and check there is no fuel leakage.



## Air Bleeding

INFOID:0000000004900670

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

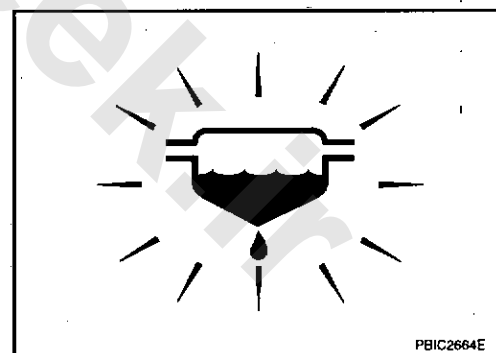


3. If the engine does not start, repeat steps 1 and 2.

## Fuel Filter Sensor (With Fuel Filter Warning)

INFOID:0000000004900671

- Drain water from fuel filter, when the fuel filter warning lamp turns ON. Refer to FL-23, "Water Draining".



## Inspection

INFOID:0000000004900672

### INSPECTION AFTER INSTALLATION

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

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

# FUEL LEVEL SENSOR UNIT

< ON-VEHICLE REPAIR >

[M9R]

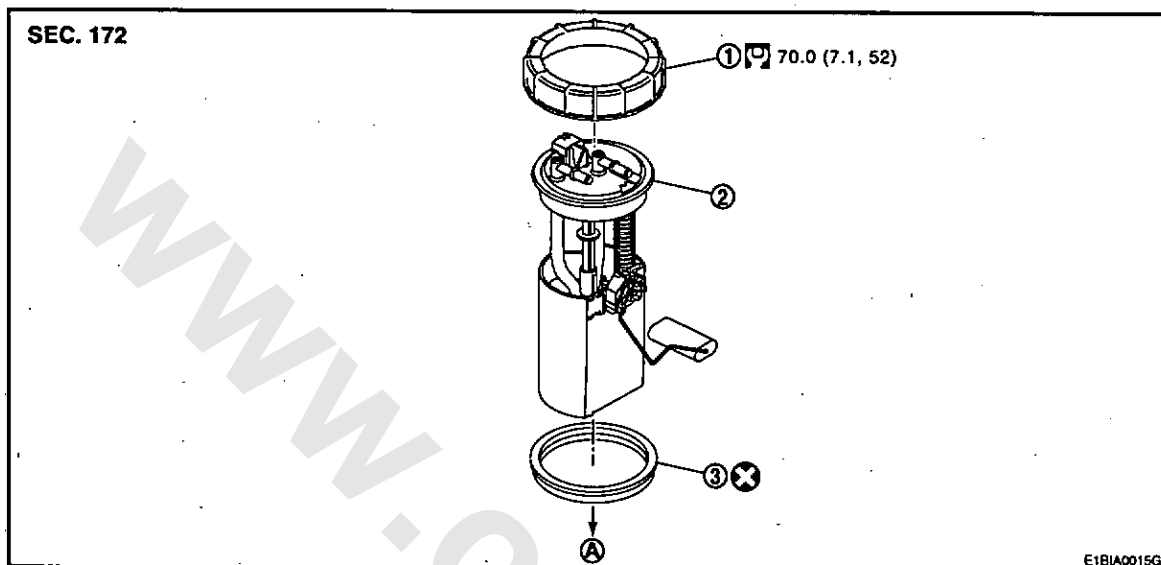
## ON-VEHICLE REPAIR

### FUEL LEVEL SENSOR UNIT

#### 2WD

#### 2WD : Exploded View

INFOID:0000000004900673



1. Lock ring

2. Fuel level sensor unit

3. O-ring

A. To fuel tank

Refer to GI-3, "Components" for symbols in the figure.

#### CAUTION:

Never remove or disassemble parts unless instructed as shown in the figure.

#### 2WD : Removal and Installation

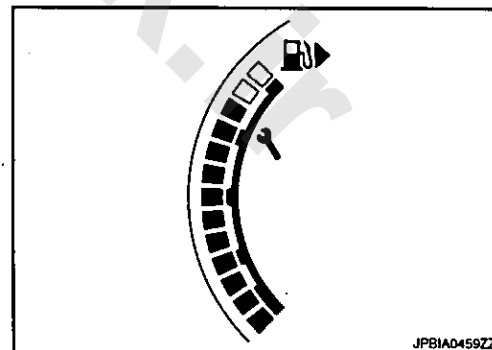
INFOID:0000000004900674

#### REMOVAL

##### WARNING:

Be sure to read "General Precautions" before working on the fuel system. Refer to FL-19, "General Precautions".

1. Check fuel level on level place. If gauge indicates more than the level shown in figure (full or almost full), drain fuel from fuel tank until gauge indicates level shown in figure or below.
  - Refer to the following for draining fuel.
- a. Insert hose of less than 20 mm (0.79 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. Refer to FL-31, "2WD : Removal and Installation".
- c. Insert hose into fuel tank through fuel filler hose to draw fuel from fuel tank.
  - As a guide, fuel level becomes the position shown in figure or below when approximately 15 ℓ (3-1/4 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.

2. Open fuel filler lid.
3. Open fuel filler cap and release the pressure inside the fuel tank.
4. Remove rear seat cushion. Refer to SE-20, "Exploded View".



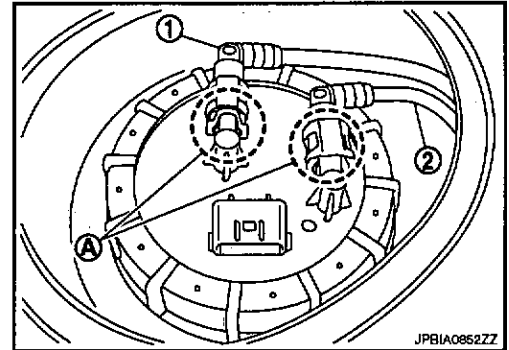
# FUEL LEVEL SENSOR UNIT

[M9R]

## < ON-VEHICLE REPAIR >

5. Remove inspection hole cover.
  - Using a screwdriver, remove it by turning clips clockwise by 90 degrees.
6. Disconnect harness connector and quick connectors (A).

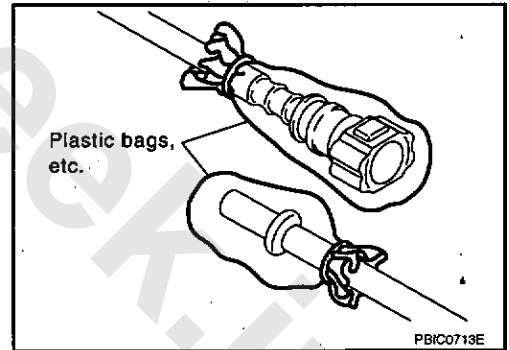
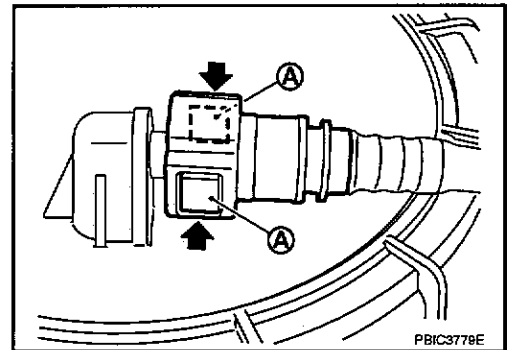
- 1 : Fuel tube (return side)
- 2 : Fuel tube (feed side)



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

### CAUTION:

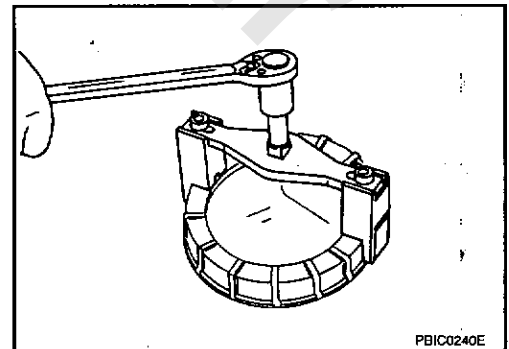
- Quick connector can be removed when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube away from heat. Be especially careful when welding near the resin tube.
- Prevent acid liquid such as battery electrolyte, 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 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 or something similar.
- Never insert plug, preventing damage on O-ring in quick connector.



7. Using lock ring wrench (commercial service tool), remove lock ring.

### NOTE:

For reference when installing, put a matching mark on lock ring, fuel level sensor unit and fuel tank.



8. Remove fuel level sensor unit.

### CAUTION:

- Never bend float arm during removal.

# FUEL LEVEL SENSOR UNIT

< ON-VEHICLE REPAIR >

[M9R]

- 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.

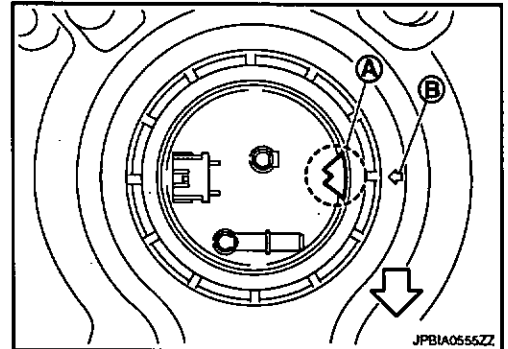
## INSTALLATION

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

### Fuel Level Sensor Unit

1. Install O-ring to fuel tank without any twist.
2. Install fuel level sensor unit with its matching mark (A) aligned with fuel tank matching mark (B) as shown in the figure.

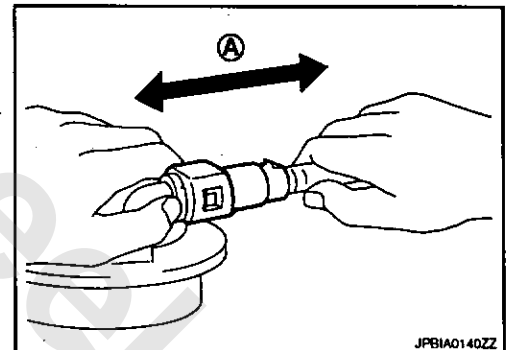
↔ : Vehicle front



### Quick Connector

Connect quick connector of fuel tube in the following procedure:

1. Check the connection for damage or any foreign materials.
2. Align the connector with the fuel tube, then insert the connector straight into the fuel tube until a "click" sound is heard.
3. After connecting, check that the connection is secured with following procedures.
  - Visually confirm that the two tabs are connected to the connector.
  - Pull (A) the fuel tube and the connector to check that they are securely connected.



### Inspection Hole Cover

- Before installing inspection hole cover, check that the connecting part has no fuel leakage. Refer to FL-26, "2WD : Inspection".
1. Install inspection hole covers with the front mark (arrow) facing front of vehicle.
  2. Lock clips by turning counterclockwise.

## 2WD : Inspection

INFOID:000000004900675

## INSPECTION AFTER INSTALLATION

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

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

## 4WD

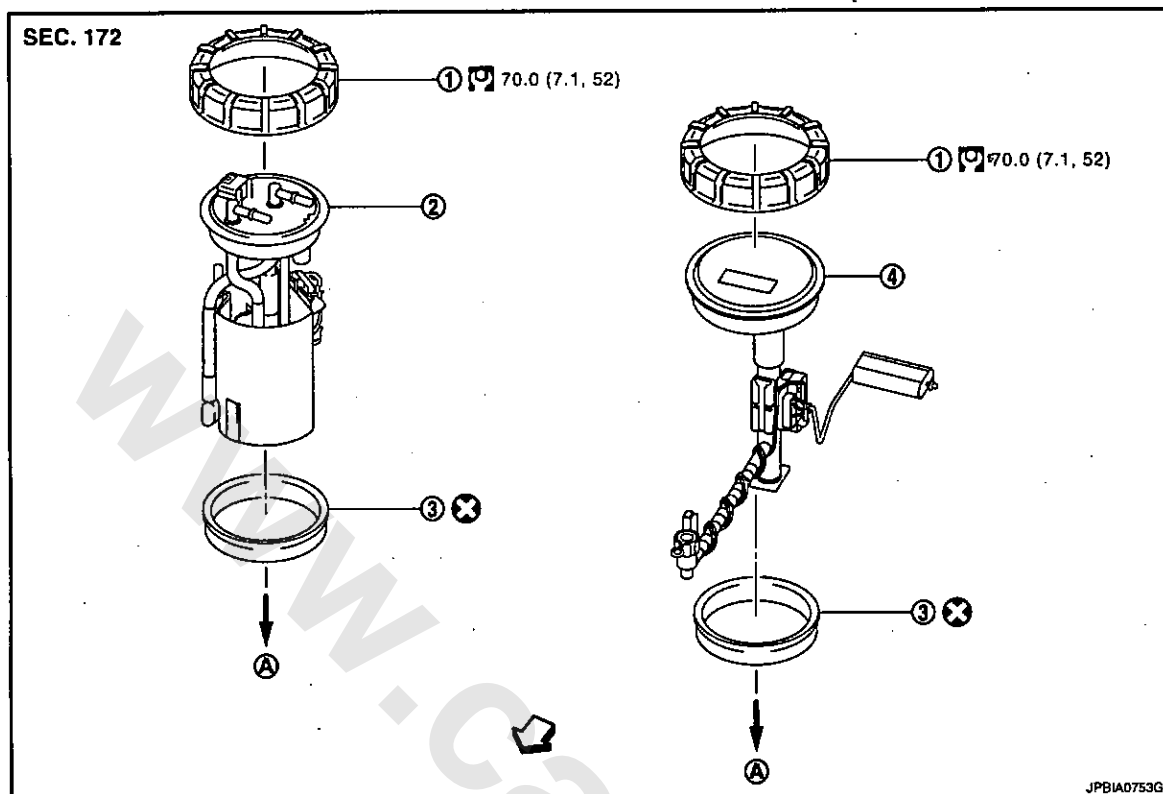
# FUEL LEVEL SENSOR UNIT

< ON-VEHICLE REPAIR >

[M9R]

4WD : Exploded View

INFOID:0000000004900676



1. Lock ring

4. Sub fuel level sensor unit

A. To fuel tank

↔ : Vehicle front

Refer to GI-3, "Components" for symbols in the figure.

## CAUTION:

Never remove or disassemble parts unless instructed as shown in the figure.

4WD : Removal and Installation

INFOID:0000000004900677

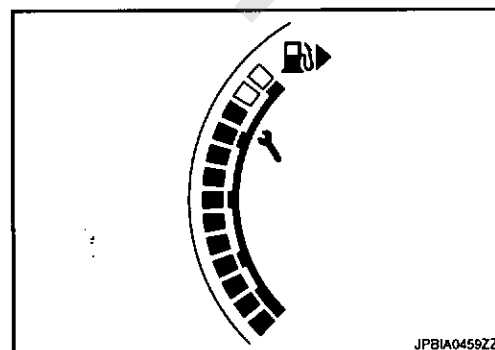
## REMOVAL

### WARNING:

Be sure to read "General Precautions" before working on the fuel system. Refer to FL-19, "General Precautions".

1. Check fuel level on level place. If gauge indicates more than the level shown in figure (full or almost full), drain fuel from fuel tank until gauge indicates level shown in figure or below.
  - Refer to the following for draining fuel.
- a. Insert hose of less than 20 mm (0.79 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. Refer to FL-33, "4WD : Exploded View".
- c. Insert hose into fuel tank through fuel filler hose to draw fuel from fuel tank.
  - As a guide, fuel level becomes the position shown in figure or below when approximately 15 ℓ (3-1/4 Imp qt) of fuel are drained from full tank.

### NOTE:



# FUEL LEVEL SENSOR UNIT

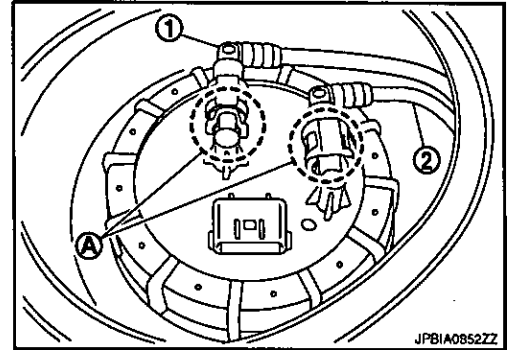
## < ON-VEHICLE REPAIR >

[M9R]

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

2. Open fuel filler lid.
3. Open fuel filler cap and release the pressure inside the fuel tank.
4. Remove rear seat cushion. Refer to SE-20, "Exploded View".
5. Remove inspection hole cover.
  - Using a screwdriver, remove it by turning clips clockwise by 90 degrees.
6. Disconnect harness connector and quick connectors (A).

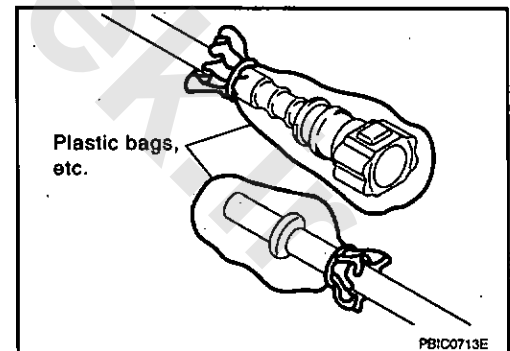
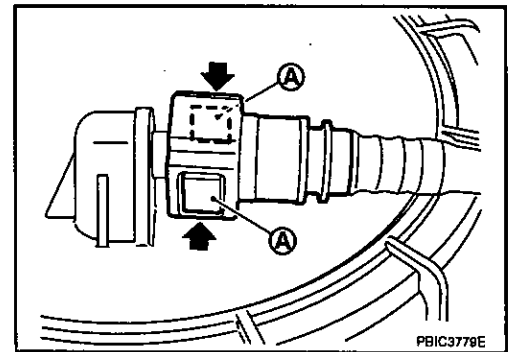
- 1 : Fuel tube (return side)
- 2 : Fuel tube (feed side)



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

### CAUTION:

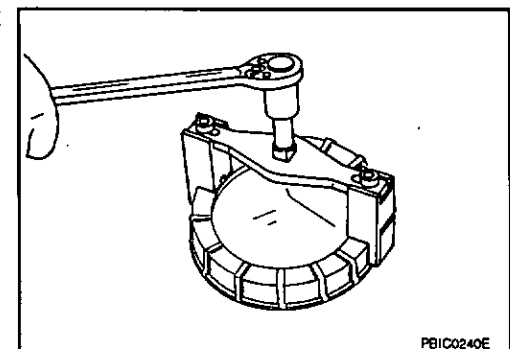
- Quick connector can be removed when the tabs are completely depressed. Never twist it more than necessary.
- Never use any tools to disconnect quick connector.
- Keep resin tube away from heat. Be especially careful when welding near the resin tube.
- Prevent acid liquid such as battery electrolyte, 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 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 or something similar.
- Never insert plug, preventing damage on O-ring in quick connector.



7. Using lock ring wrench (commercial service tool), remove lock ring.

### NOTE:

For reference when installing, put a matching mark on lock ring, fuel level sensor unit and fuel tank.



# FUEL LEVEL SENSOR UNIT

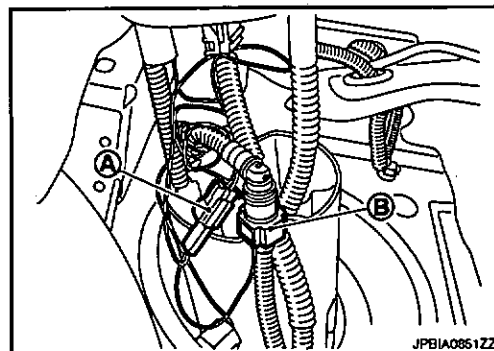
## < ON-VEHICLE REPAIR >

[M9R]

8. Raise fuel level sensor unit, and disconnect fuel tube (B) and harness connector (A).

### 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.



9. Remove sub fuel level sensor unit.

### CAUTION:

- Never disassemble a fuel tube from sub fuel sensor unit.
- 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.

## INSTALLATION

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

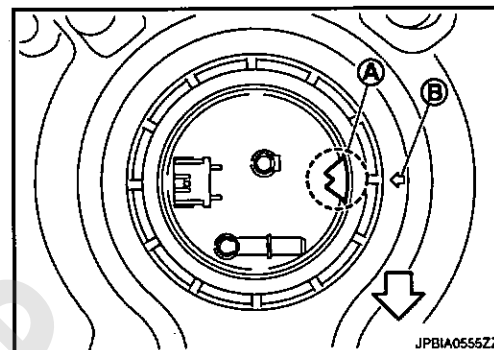
### Fuel Level Sensor Unit and Sub Fuel Level Sensor Unit

1. Install O-ring to fuel tank without any twist.
2. Install fuel level sensor unit with its matching mark (A) aligned with fuel tank matching mark (B) as shown in the figure.

↔ : Vehicle front

### NOTE:

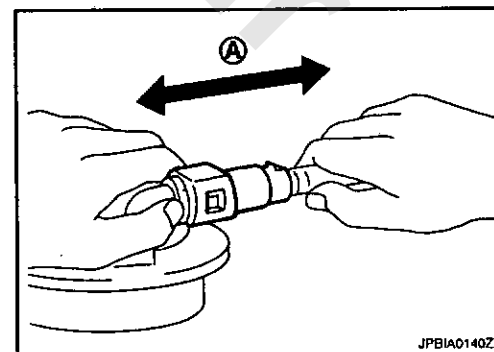
- Figure shows fuel level sensor unit side of fuel tank.
- For sub fuel level sensor assembly matching mark (A) is located on the fuel tank of the vehicle front side.



### Quick Connector

Connect quick connector of fuel tube in the following procedure:

1. Check the connection for damage or any foreign materials.
2. Align the connector with the fuel tube, then insert the connector straight into the fuel tube until a "click" sound is heard.
3. After connecting, check that the connection is secured with following procedures.
  - Visually confirm that the two tabs are connected to the connector.
  - Pull (A) the fuel tube and the connector to check that they are securely connected.



### Inspection Hole Cover

- Before installing inspection hole cover, check that the connecting part has no fuel leakage. Refer to FL-30, "4WD : Inspection".

## FUEL LEVEL SENSOR UNIT

< ON-VEHICLE REPAIR >

[M9R]

1. Install inspection hole covers with the front mark (arrow) facing front of vehicle.
2. Lock clips by turning counterclockwise.

4WD : Inspection

INFOID:000000004900678

### INSPECTION AFTER INSTALLATION

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

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

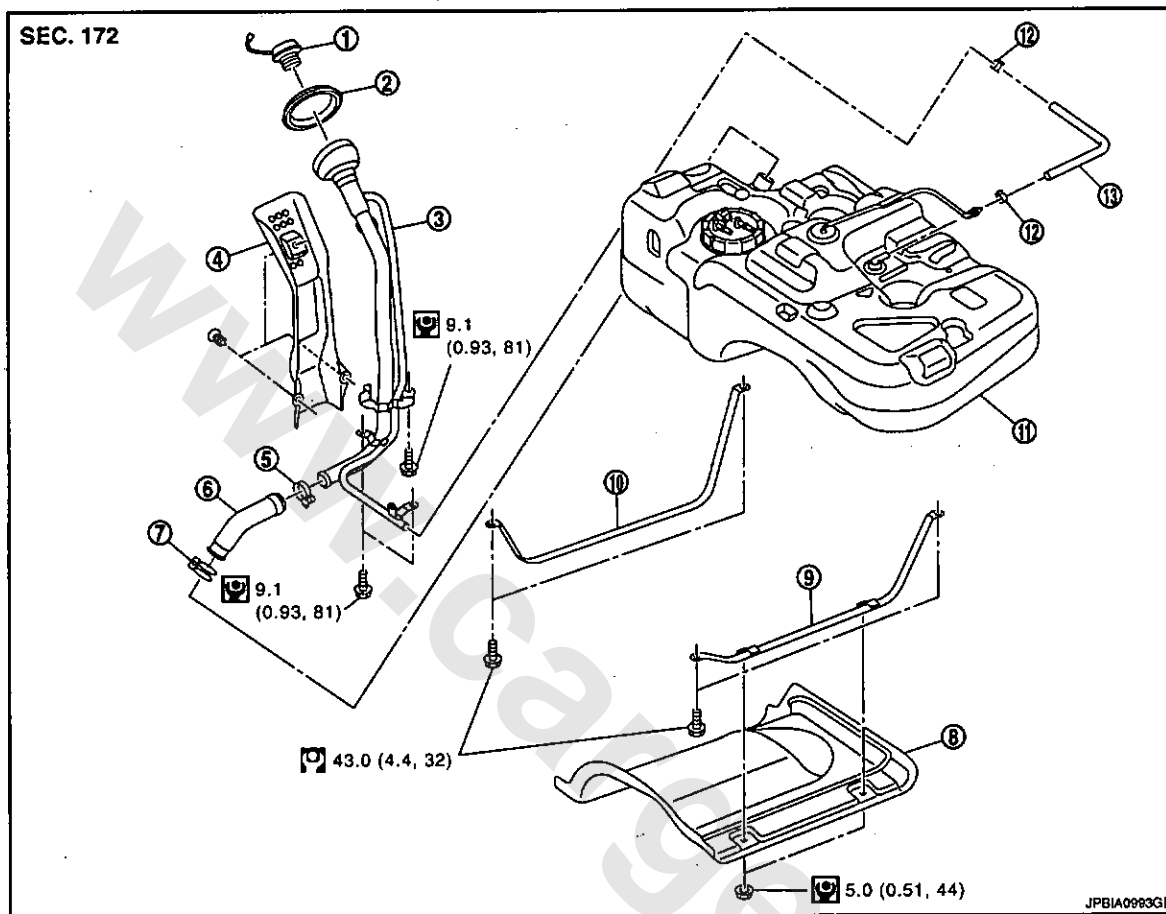
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## FUEL TANK

2WD

2WD : Exploded View

INFOID:000000004900678



- |                         |               |                        |
|-------------------------|---------------|------------------------|
| 1. Fuel filler cap      | 2. Grommet    | 3. Fuel filler tube    |
| 4. Cover                | 5. Clamp      | 6. Fuel filler hose    |
| 7. Clamp                | 8. Protector  | 9. Fuel tank band (LH) |
| 10. Fuel tank band (RH) | 11. Fuel tank | 12. Clamp              |
| 13. Vent hose           |               |                        |

Refer to GI-3, "Components" for symbols in the figure.

## 2WD : Removal and Installation

INFOID:000000004900680

### REMOVAL

#### WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to FL-19, "General Precautions".

- Perform the steps 2 to 6 of "REMOVAL" in " FUEL LEVEL SENSOR UNIT". Refer to FL-24, "2WD : Removal and Installation".
- Drain fuel from fuel tank if necessary. Refer to FL-24, "2WD : 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-15, "Exploded View".

# FUEL TANK

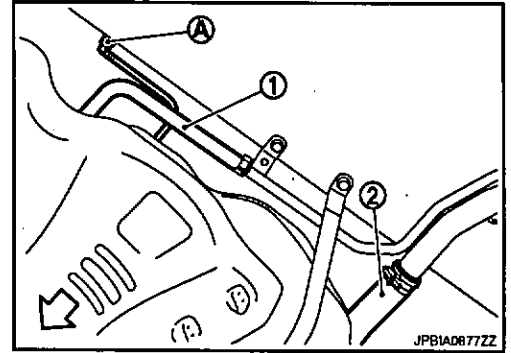
## < ON-VEHICLE REPAIR >

[M9R]

4. Remove protector from fuel tank.
5. Disconnect EVAP tube (A).

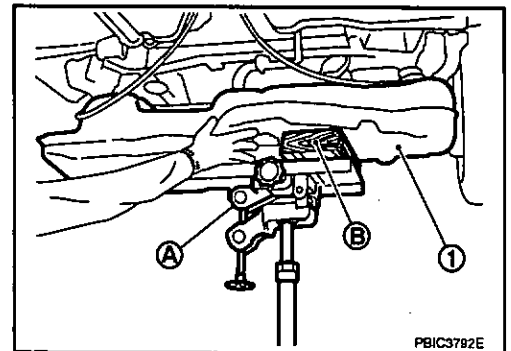
↶: Vehicle front

6. Disconnect vent hose (1).
7. Remove fuel filler hose (2) at fuel filler tube side.



8. Remove parking brake cable mounting bolts and separate parking brake cable from suspension arm. Refer to PB-5, "Exploded View".

9. Support center of fuel tank (1) with transmission jack (A).  
**CAUTION:**  
Securely support the fuel tank with a piece of wood (B).



10. Remove fuel tank band (RH and LH).
11. 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.

### Fuel Filler Hose

- Insert fuel filler hose to the length below.

: 35 mm (1.38 in)

- Be sure hose clamp is not placed on swelled area of fuel filler tube.
- Tighten fuel filler hose clamp so that the remaining length of screw thread becomes to the following.

Fuel filler tube side : 7 - 11 mm (0.28 - 0.43 in)

Fuel tank side : 5 - 9 mm (0.20 - 0.35 in)

## 2WD : Inspection

INFOID:0000000004900681

## INSPECTION AFTER INSTALLATION

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

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

## 4WD



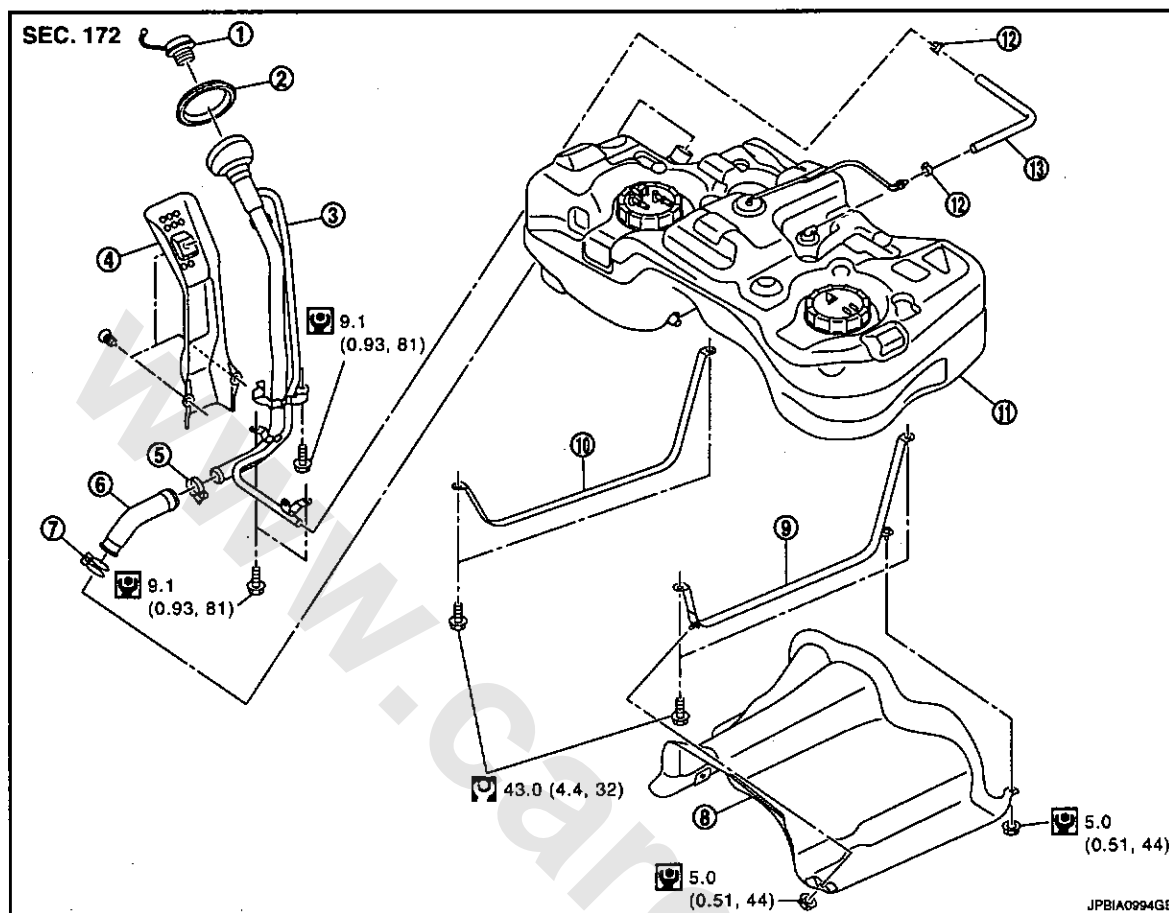
# FUEL TANK

< ON-VEHICLE REPAIR >

[M9R]

4WD : Exploded View

INFOID:000000004900682



- |                         |               |                        |
|-------------------------|---------------|------------------------|
| 1. Fuel filler cap      | 2. Grommet    | 3. Fuel filler tube    |
| 4. Cover                | 5. Clamp      | 6. Fuel filler hose    |
| 7. Clamp                | 8. Protector  | 9. Fuel tank band (LH) |
| 10. Fuel tank band (RH) | 11. Fuel tank | 12. Clamp              |
| 13. Vent hose           |               |                        |

Refer to GI-3, "Components" for symbols in the figure.

## 4WD : Removal and Installation

INFOID:000000004900683

### REMOVAL

#### WARNING:

Be sure to read "General Precautions" when working on the fuel system. Refer to FL-19, "General Precautions".

1. Perform the steps 2 to 6 of "REMOVAL" in "FUEL LEVEL SENSOR UNIT". Refer to FL-27, "4WD : Removal and Installation".

2. Drain fuel from fuel tank if necessary. Refer to FL-27, "4WD : 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-15, "Exploded View".

4. Remove propeller shaft. Refer to DLN-105, "Exploded View".

5. Remove protector from fuel tank.

# FUEL TANK

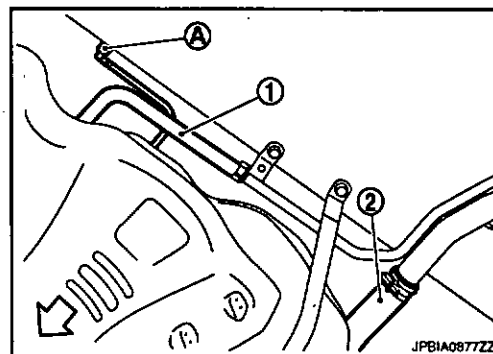
## < ON-VEHICLE REPAIR >

[M9R]

6. Disconnect EVAP tube (A).

↔ : Vehicle front

7. Disconnect vent hose (1).
8. Remove fuel filler hose (2) at fuel filler tube side.



9. Remove suspension bar. Refer to RSU-21, "Exploded View".
10. Remove parking brake cable mounting bolts and separate parking brake cable from suspension arm. Refer to PB-5, "Exploded View".
11. Disconnect 4WD solenoid harness connector and harness clip.
12. Loosen final drive mounting nut (A) at rear suspension member (1). Refer to RSU-21, "Exploded View".

### CAUTION:

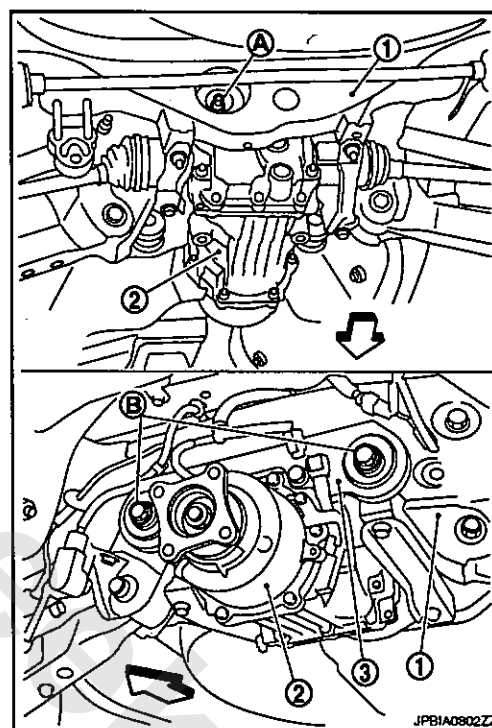
**Never remove final drive mounting nut.**

↔ : Vehicle front

13. Remove final drive mounting bolts (B) from final drive mounting bracket (3) to tilt final drive assembly (2). Refer to DLN-124, "Exploded View".

### NOTE:

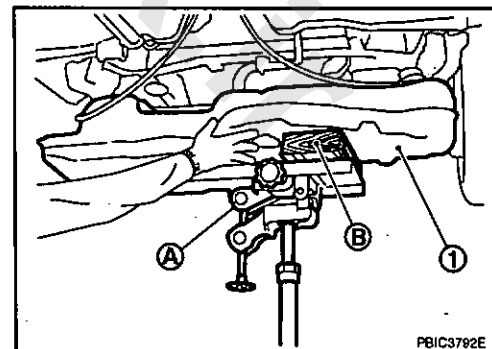
Final drive assembly does not have to be removed from the vehicle.



14. Support center of fuel tank (1) with transmission jack (A).

### CAUTION:

**Securely support the fuel tank with a piece of wood (B).**



15. Remove fuel tank band (RH and LH).
16. 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.**

## FUEL TANK

< ON-VEHICLE REPAIR >

[M9R]

### INSTALLATION

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

Fuel Filler Hose

- Insert fuel filler hose to the length below.

: 35 mm (1.38 in)

- Be sure hose clamp is not placed on swelled area of fuel filler tube.
- Tighten fuel filler hose clamp so that the remaining length of screw thread becomes to the following.

Fuel filler tube side : 7 - 11 mm (0.28 - 0.43 in)

Fuel tank side : 5 - 9 mm (0.20 - 0.35 in)

### 4WD : Inspection

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### INSPECTION AFTER INSTALLATION

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

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

## SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[M9R]

## SERVICE DATA AND SPECIFICATIONS (SDS)

### SERVICE DATA AND SPECIFICATIONS (SDS)

#### Fuel Tank

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#### Standard and Limit

Fuel tank capacity	Approx. 65 ℓ (14-1/4 Imp gal)
Fuel recommendation	Refer to <u>GI-31</u>

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