

# FUEL SYSTEM (2AZ-FE)

1109K-01

## PRECAUTION

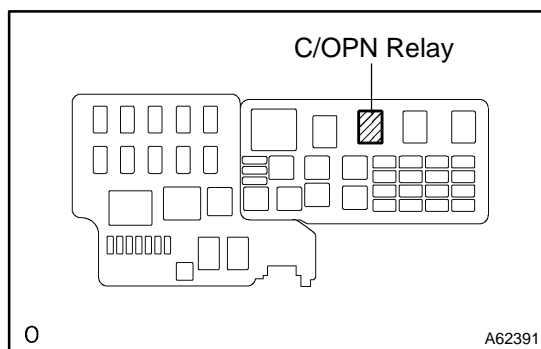
### 1. PRECAUTION

- Before working on fuel system, disconnect negative (–) terminal cable from battery.
- Do not smoke or work near an open flame when working on fuel system.
- Keep gasoline away from rubber or leather parts.

### 2. WORK FOR PREVENT GASOLINE FROM SPILLING OUT

#### CAUTION:

- Perform disconnecting operation of the fuel system parts after working for prevent gasoline form spilling out.
- As there is remained pressure in the fuel line after working for prevent gasoline from spilling out, prevent it from splashing inside the vehicle compartment by covering them with a shop rag.



- Remove the circuit opening relay in the engine room relay block.
- Start the engine. After the engine has stopped on its own, turn the ignition switch OFF.

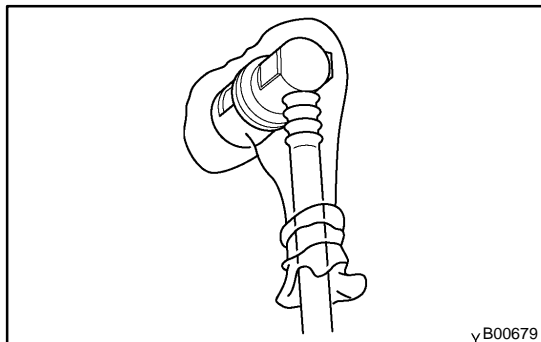
#### HINT:

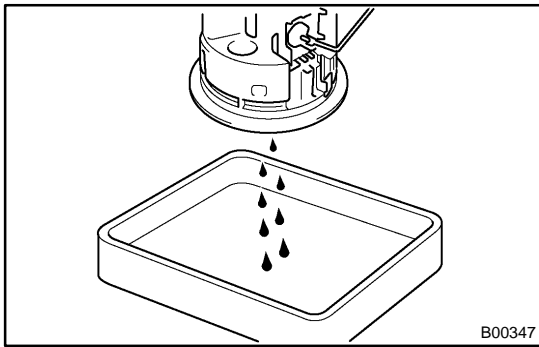
There is a case that DTC P0171 (system too lean) is output.

- Check that the engine does not start.
- Remove the fuel tank cap, and let the air out of the fuel tank.
- Disconnect negative (–) terminal cable from battery.
- Reinstall the circuit opening relay.

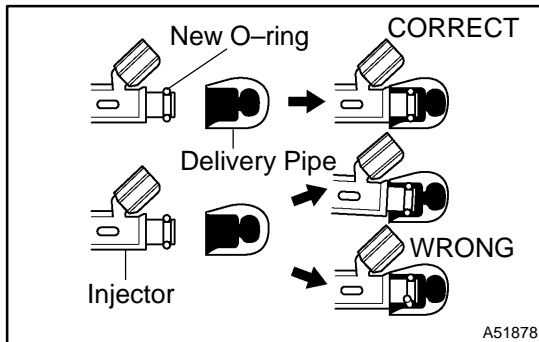
### 3. FUEL SYSTEM

- When disconnecting the high fuel pressure line, a large amount of gasoline will spill out, so observe these procedures.
  - Work for prevent gasoline from spilling out.
  - Disconnect the fuel pump tube.  
(See page 11-15)
  - Drain the fuel remained inside the fuel pump tube.
- Prevent the disconnected fuel pump tube from damaging and mixing foreign objects by covering them with a vinyl bag.

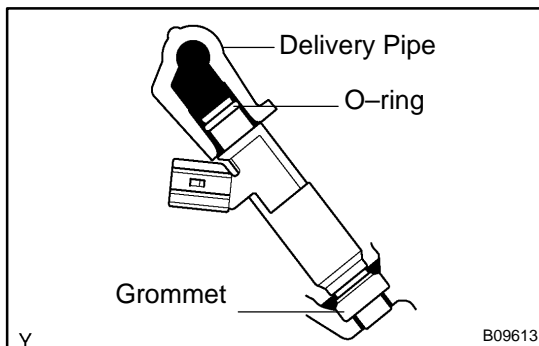




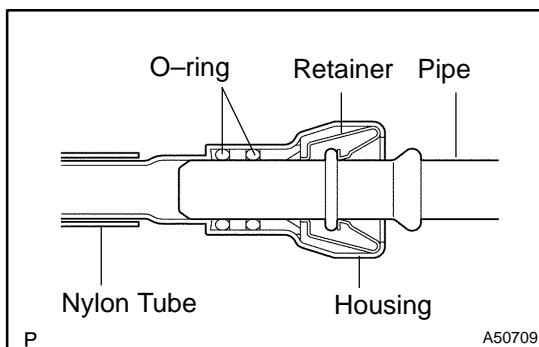
- (5) Put a container under the connection.



- (b) Observe these precautions when removing and installing the injector.
- (1) Never reuse the O-ring.
  - (2) When placing a new O-ring on the injector, take care not to damage it in any way.
  - (3) Coat a new O-ring with spindle oil or gasoline before installing. Never use engine, gear or brake oil.



- (c) Install the injector to the delivery pipe and cylinder head, as shown in the illustration. Before installing the injector, be sure to apply spindle oil or gasoline on the place where the delivery pipe touches O-ring of the injector.

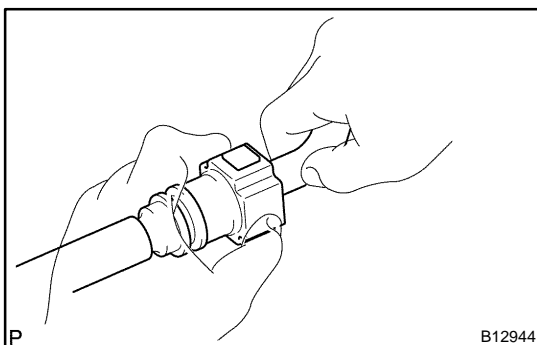
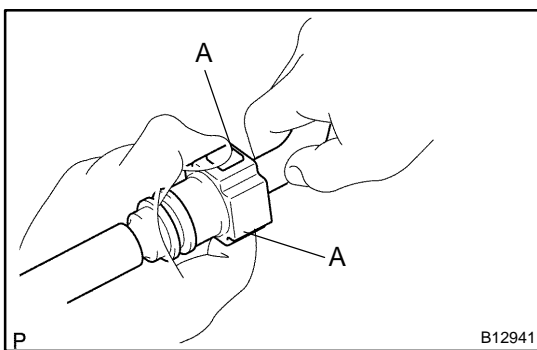
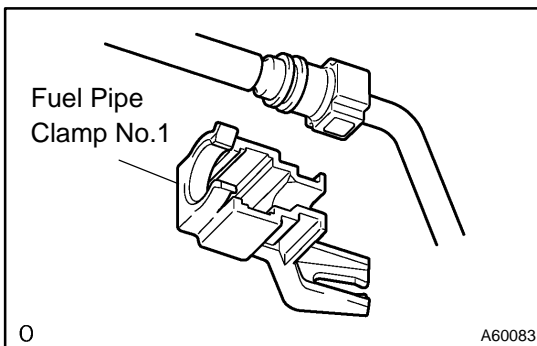
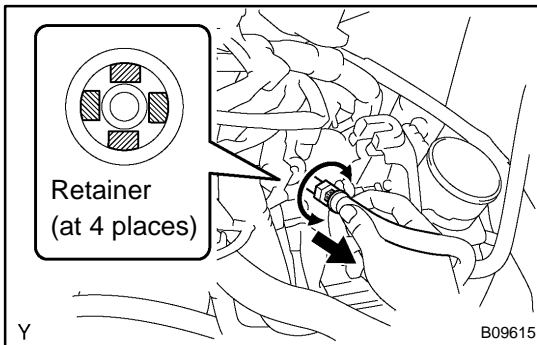
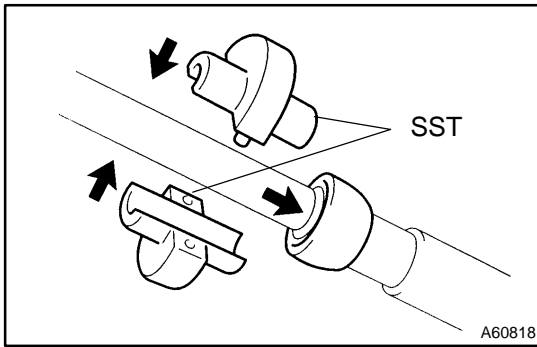


- (d) Observe these precautions when disconnecting the fuel delivery pipe.

**HINT:**

The structure of the metallic connector is shown as left.

- (1) Remove the fuel pipe clamp No.2.



- (2) Find the metallic connector of the fuel tube assembly, pull it out towards the rear and hold it as it is.
- (3) Assemble SST to the connection as shown.  
SST 09268-21010

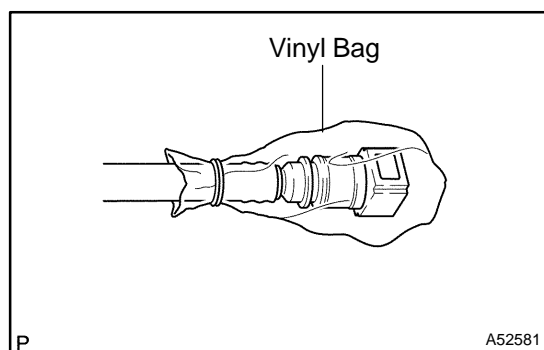
- (4) Turn SST, align the retainers inside the connector with SST chamfered parts and insert SST into the connector.
- (5) Slide SST and the connector together towards the fuel tube assembly.

- (e) Observe these following precautions when disconnecting the fuel tube connector (quick type).

- (1) Remove the fuel pipe clamp No.1.
- (2) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.

- (3) Disconnect the connector from the hose while pinching part A with fingers as shown in the illustration.

- (4) When the connector and the pipe are stuck, pinch the fuel pipe between the hands, push and pull the connector to free to disconnect and pull it out. Do not use any tool at this time.
- (5) Inspect if there is any dirt or the likes on the seal surface of the disconnected pipe and clean it away.

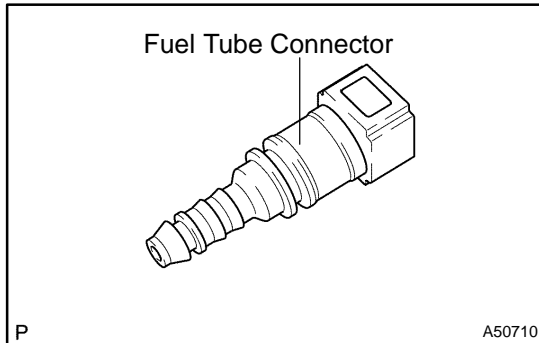


- (6) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

#### 4. CHECK FUEL LEAK

- (a) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.  
(See page [11-5](#))

## ON-VEHICLE INSPECTION



### 1. CHECK FUEL PRESSURE

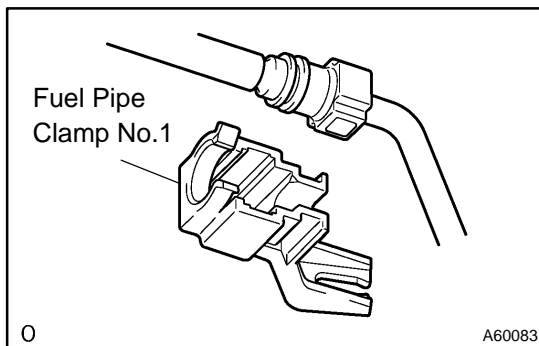
(a) Prepare for inspection.

- (1) Purchase the new fuel tube and take out the fuel tube connector from its pipe.

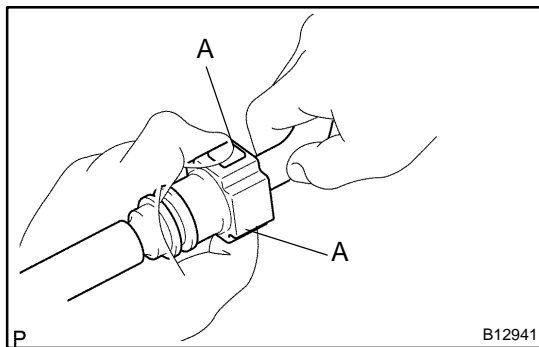
HINT:

Part No. 23901-28130

(b) Work for prevent gasoline from spilling out.  
(See page 11-1)



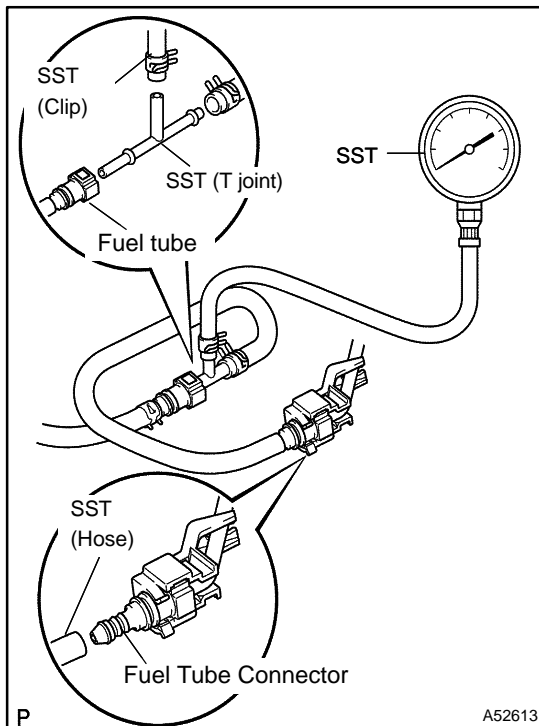
(c) Remove the fuel pipe clamp No.1 from the fuel tube connector.



(d) Disconnect the fuel tube connector from the fuel pipe while pinching part A with fingers as shown in the illustration.

### CAUTION:

- Perform disconnecting operations of the fuel tube connector (quick type) after observing the precautions.
- As there is retained pressure in the fuel pipe line, prevent it from splashing inside the engine compartment.



- (e) Install SST (pressure gauge) as shown in the illustration by using SST and fuel tube connector.  
SST 09268-41047 (90467-13001, 95336-08070), 09268-45012 (09268-41250)
- (f) Wipe off any splattered gasoline.
- (g) Reconnect the negative (–) terminal cable to the battery.
- (h) Connect the hand-held tester to the DLC3.
- (i) Measure the fuel pressure regulator.

**Fuel pressure:**

**304 – 343 kPa (3.1 – 3.5 kgf/cm<sup>2</sup>, 44 – 50 psi)**

If pressure is high, replace the fuel pressure regulator.

If pressure is low, check the fuel hoses and connections, fuel pump, fuel filter and fuel pressure regulator.

- (j) Disconnect the hand-held tester from the DLC3.
- (k) Start the engine.
- (l) Measure the fuel pressure at idle.

**Fuel pressure:**

**304 – 343 kPa (3.1 – 3.5 kgf/cm<sup>2</sup>, 44 – 50 psi)**

- (m) Stop the engine.
- (n) Check that the fuel pressure remains as specified for 5 minutes after the engine has stopped.

**Fuel pressure: 147 kPa (1.5 kgf/cm<sup>2</sup>, 21 psi) or more**

If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

- (o) After checking fuel pressure, disconnect the negative (–) terminal cable from the battery and carefully remove the SST and fuel tube connector to prevent gasoline from splashing.
- (p) Reconnect the fuel tube (fuel tube connector).

**CAUTION:**

**Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.**

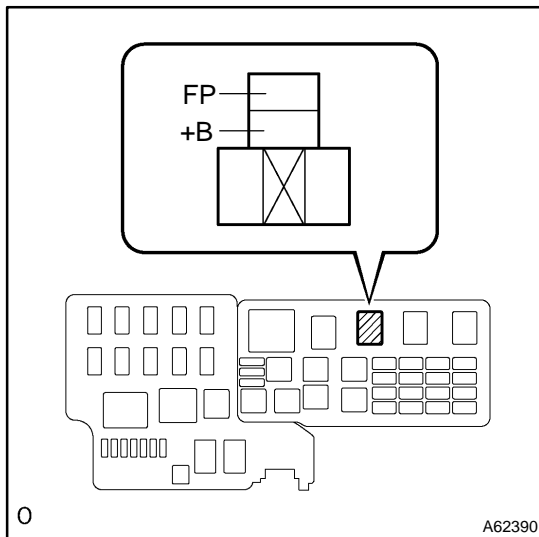
**2. CHECK FUEL PUMP OPERATION AND FUEL LEAK**

- (a) When using hand-held tester
  - (1) Connect the hand-held tester to the DLC3.
  - (2) Turn the ignition switch ON and hand-held tester main switch ON.

**NOTICE:**

**Do not start the engine.**

- (3) Select the active test mode on the hand-held tester.
- (4) Please refer to the hand-held tester operator's manual for further details.



- (b) When not using hand-held tester
- (1) Remove the circuit opening relay.
  - (2) Using a service wire connect terminals FP and +B of the relay block.

**NOTICE:**

**Pay due attention to the terminal connecting position to avoid a malfunction.**

- (3) Turn the ignition switch ON, and check that the fuel pump operates.

**NOTICE:**

**Do not start the engine.**

- (c) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.

## INSPECTION

### 1. FUEL INJECTOR ASSY

- (a) Inspect injector resistance  
 (1) Using an ohmmeter, measure the resistance between the terminals.

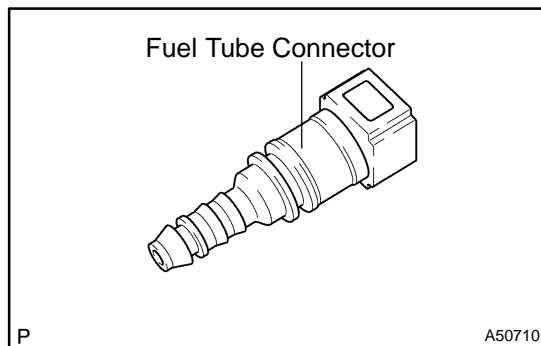
**Resistance: 13.4 – 14.2  $\Omega$  at 20°C (68°F)**

If the resistance is not as specified, replace the injector.

- (b) Inspect injector inspection

**CAUTION:**

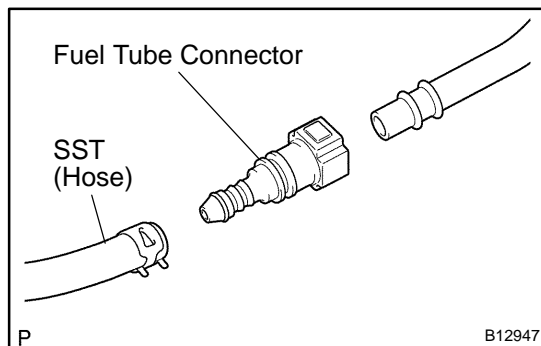
**Keep injector clear of sparks during the test.**



- (1) Purchase the new fuel tube and take out the fuel tube connector from its pipe.

**HINT:**

Part No. 23901-28130

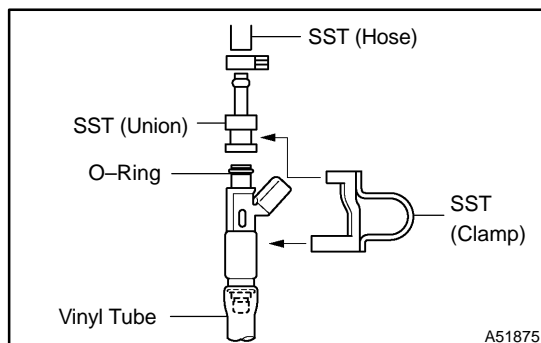


- (2) Connect SST and fuel tube connector to the fuel pipe.

SST 09268-41047 (90467-13001, 95336-08070)

**CAUTION:**

**Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.**



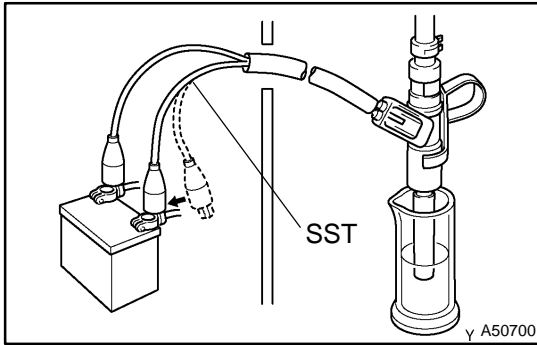
- (3) Install the O-ring to the injector.  
 (4) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp)  
 SST 09268-41047 (09268-41110, 09268-41300, 90467-13001, 95336-08070)  
 (5) Put the injector into a graduated cylinder.

**HINT:**

Install a suitable vinyl tube onto the injector to prevent gasoline from splashing out.

- (6) Operate the fuel pump. (See Page 11-5)





- (7) Connect SST to the connector of injector.
- (8) Connect SST (wire) to the battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector 2 or 3 time.

SST 09842-30080

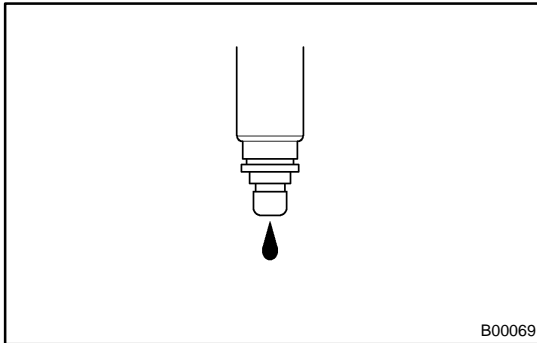
**Injection volume:**

Injection volume	Difference between each injector
68 – 82 cm <sup>3</sup> (4.1 – 4.9 cu in.) per 15 seconds	14 cm <sup>3</sup> (0.9 cu in.) or less

**NOTICE:**

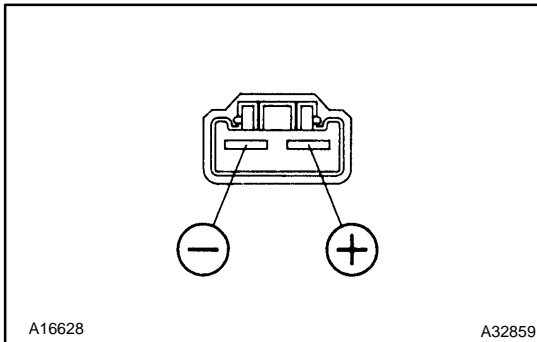
**Always do the switching at the battery side.**

If the injection volume is not as specified, replace the injector.



- (c) Inspect leakage
  - (1) In the condition above, disconnect the test probes of SST (wire) from the battery and check the fuel leakage from the injector.

**Fuel drop: 1 drop or less per 12 minutes**



## 2. FUEL PUMP

- (a) Inspect fuel pump resistance.
  - (1) Using an ohmmeter, measure the resistance between terminals.

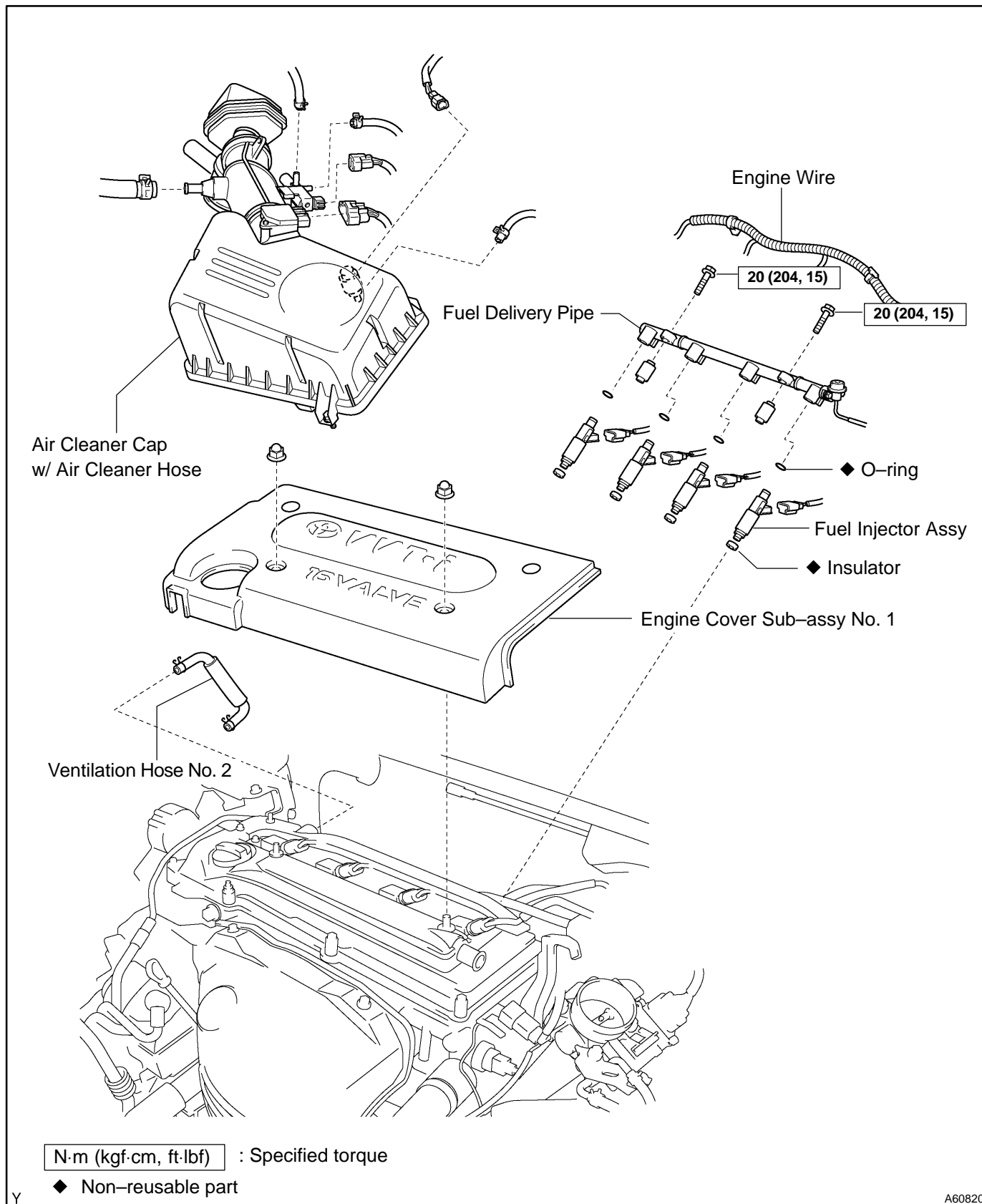
**Resistance: 0.2 – 3.0 Ω at 20°C (68°F)**
- (b) Inspect fuel pump operation
  - (1) Apply battery voltage to both terminals. Check that the pump operates.

**NOTICE:**

- **These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.**
- **Keep fuel pump as far away from the battery as possible.**
- **Always do the switching at the battery side.**

# FUEL INJECTOR ASSY (2AZ-FE) COMPONENTS

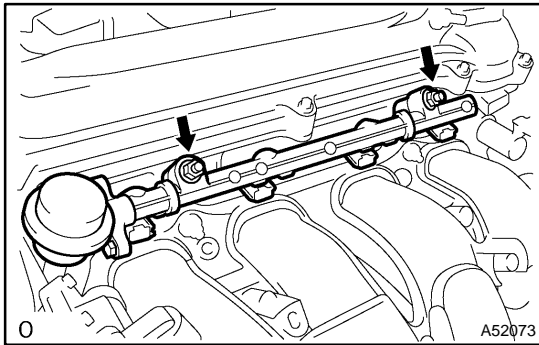
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## REPLACEMENT

1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT(See page 11-1)
2. REMOVE AIR CLEANER CAP WITH AIR CLEANER HOSE
3. REMOVE ENGINE COVER SUB-ASSY NO.1
4. DISCONNECT FUEL TUBE SUB-ASSY  
(See page 11-1)



### 5. REMOVE FUEL DELIVERY PIPE W/INJECTOR

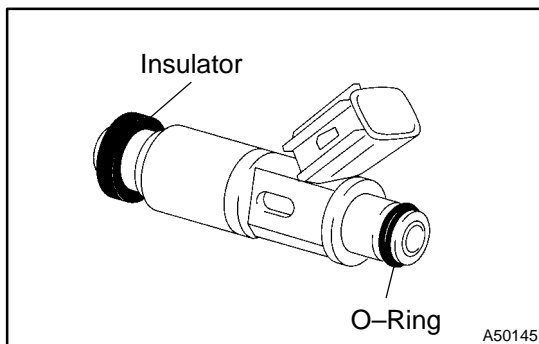
#### NOTICE:

Be careful not to drop the injectors when removing the delivery pipe.

- (a) Remove the ventilation hose No. 2.
- (b) Disconnect 4 injector connectors from the injector.
- (c) Remove 2 clamp and wire harness from the delivery pipe.
- (d) Remove 2 bolts and delivery pipe together with 4 injector.
- (e) Remove 2 spacers from the cylinder head.

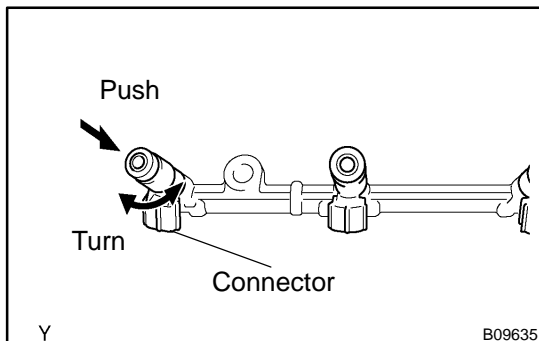
### 6. REMOVE FUEL INJECTOR ASSY

- (a) Pull out 4 injector from the delivery pipe.



### 7. INSTALL FUEL INJECTOR ASSY

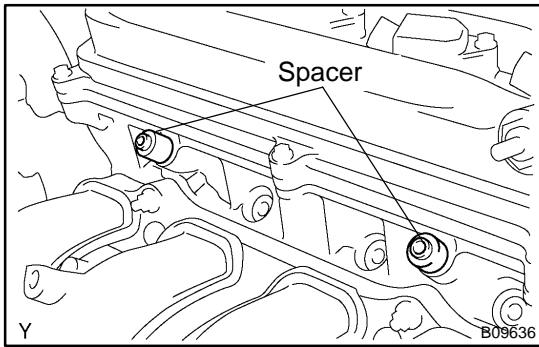
- (a) Install the new insulator to each injector.
- (b) Apply a light coat of spindle oil or gasoline to new O-ring and install them to each injector.



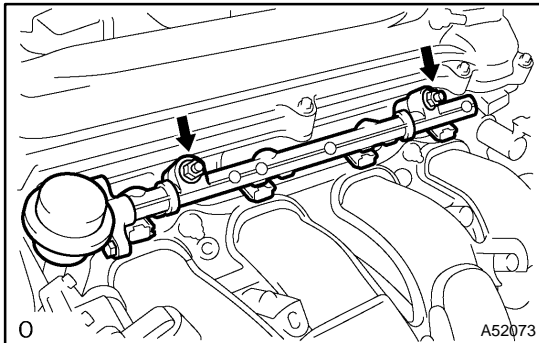
- (c) Apply a light coat of spindle oil or gasoline on the place where a delivery pipe touches on O-ring.
- (d) While turning the injector clockwise and counterclockwise, push it to the delivery pipes. install 4 injectors.

#### NOTICE:

- Be careful not to twist the O-ring.
  - After installing injectors, check that they turns smoothly. If an injector dose not, reinsiall it with a new O-ring.
- (e) Position the injector connector downward.

**8. INSTALL FUEL DELIVERY PIPE W/INJECTOR**

- (a) Place 2 spacers in position on the cylinder head.
- (b) Place the delivery pipe together with 4 injectors in position on the cylinder head.



- (c) Temporarily install 2 bolts holding the delivery pipe to the cylinder.

- (d) Check that the injectors rotate smoothly.

**HINT:**

If injectors do not rotate smoothly, the probable cause is incorrect installation of O-ring. Replace the O-ring.

- (e) Position the injector connector outward.
- (f) Tighten 2 bolts holding the delivery pipe to the cylinder head.

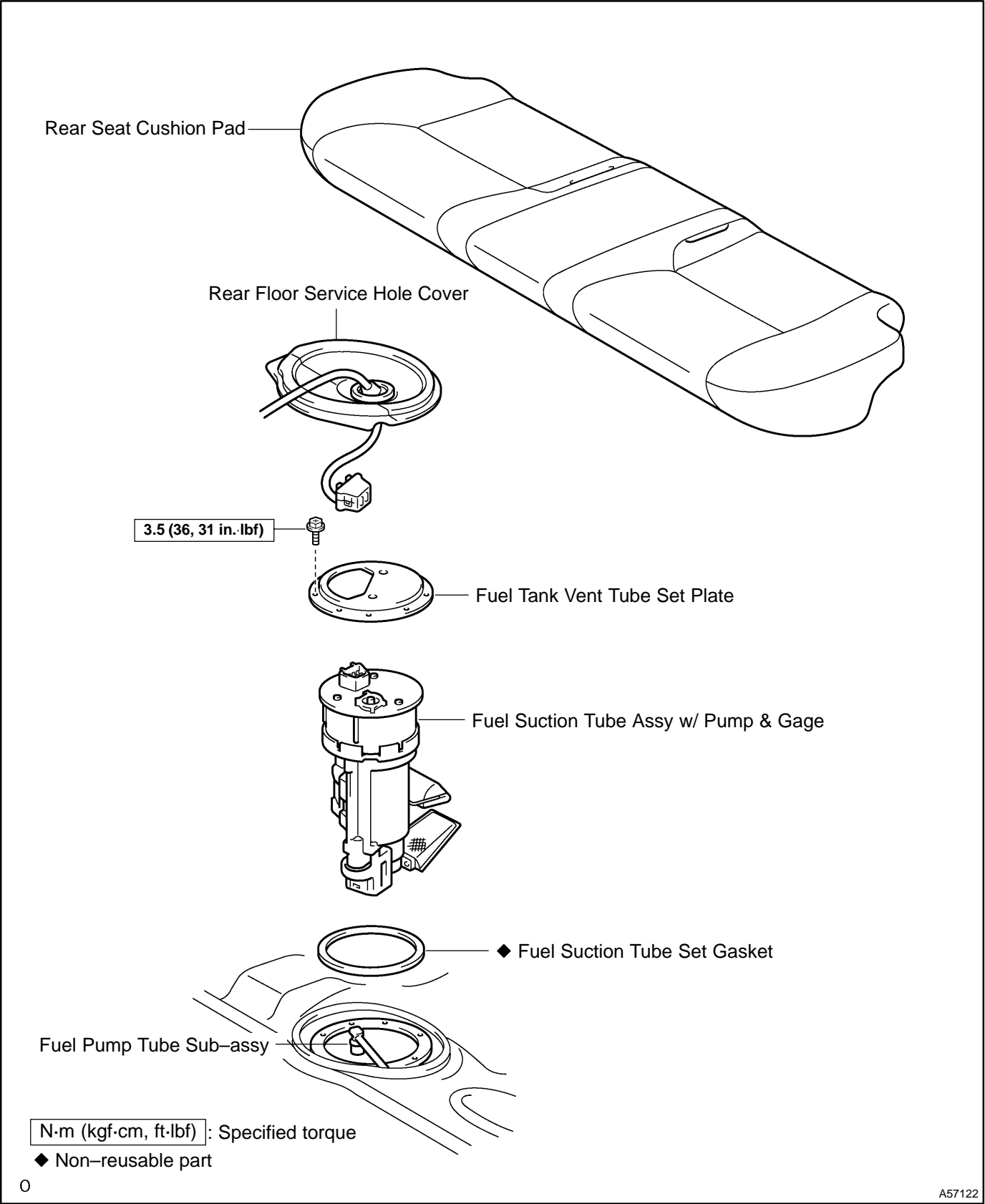
**Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)**

**9. INSPECT FUEL LEAK(See page11-5 )**

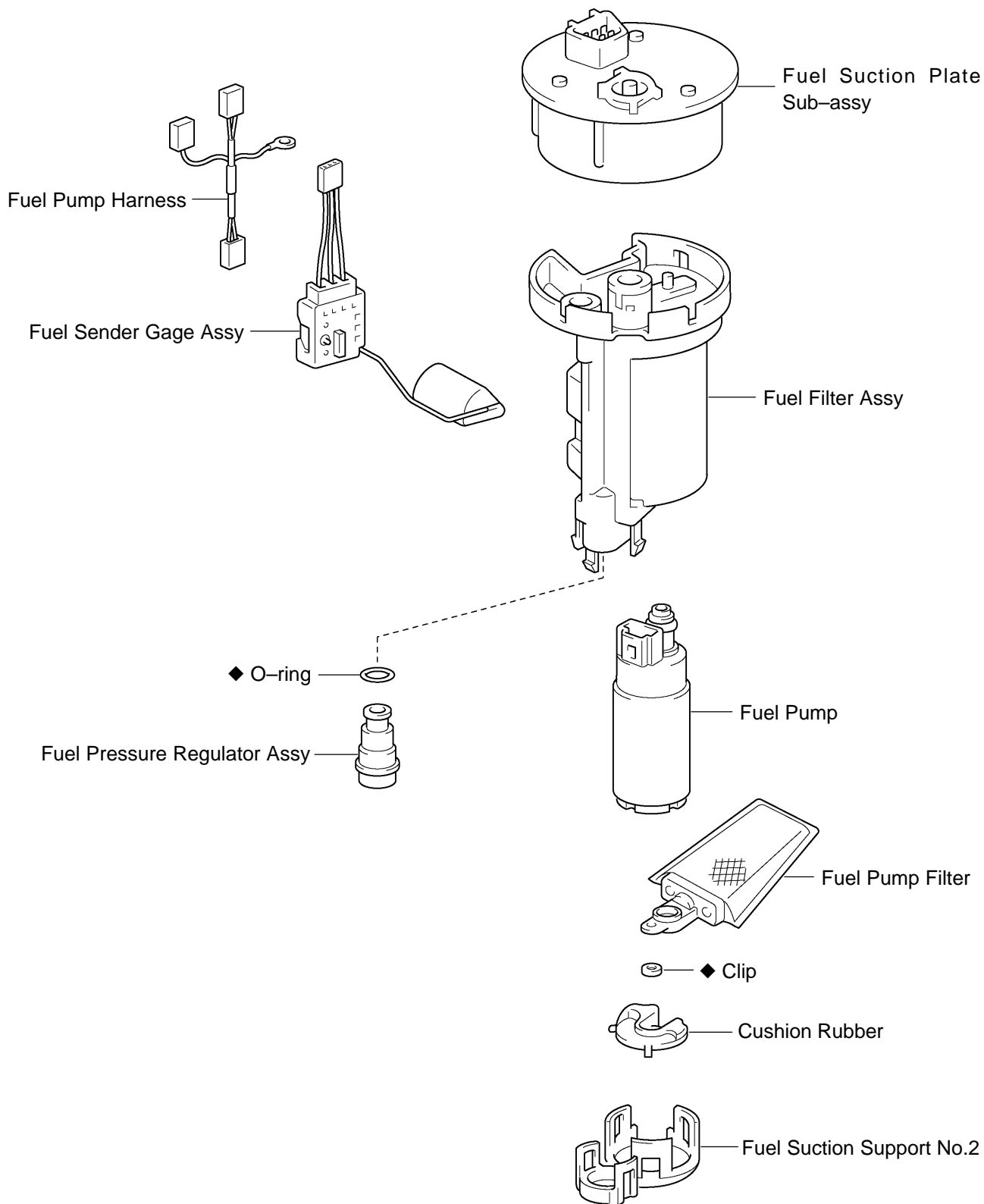
# FUEL PUMP ASSY (2AZ-FE)

## COMPONENTS

1109M-01



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◆ Non-reusable part

A57123

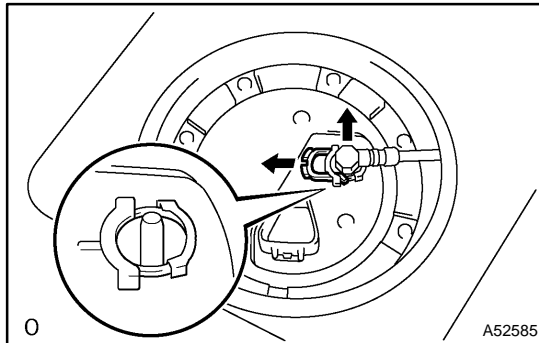
## Removal & Installation and Disassembly & Reassembly

### 1. REMOVE REAR SEAT CUSHION ASSEMBLY

### 2. REMOVE REAR FLOOR SERVICE HOLE COVER

- (a) Remove the service hole cover.
- (b) Disconnect the fuel pump connector.

### 3. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-1)

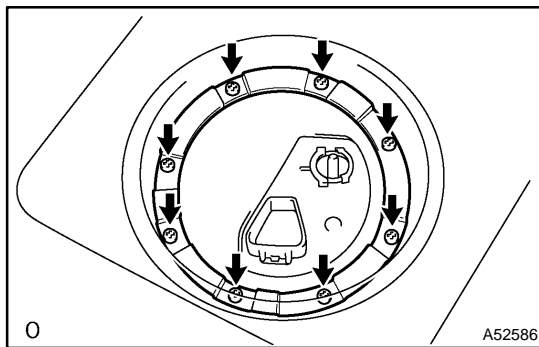
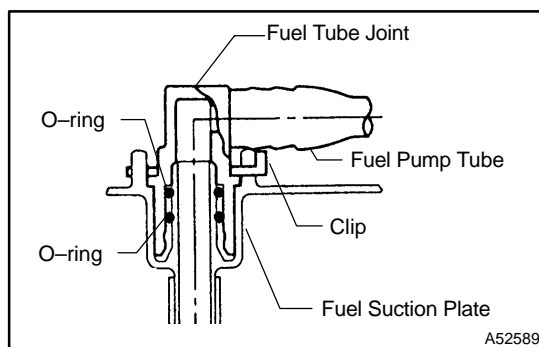


### 4. SEPARATE FUEL PUMP TUBE SUB-ASSY

- (a) Check if there is any dirt like mud around the connector before this work and clean dirt away.
- (b) Remove the joint clip, and pull out the fuel pump tube.

#### NOTICE:

- Be careful of dirt like mud because the quick connector has an O-ring to seal the pipe and the connector.
- Do not use any tool in this work.
- Do not bend or twist the nylon tube by force.
- Keep off plug from foreign subjects.
- To protect the fuel tube, cover it with a vinyl bag after checking.



### 5. REMOVE FUEL TANK VENT TUBE SET PLATE

- (a) Remove the 8 bolts and fuel tank vent tube set plate.

### 6. REMOVE FUEL SUCTION TUBE ASSY W/ PUMP & GAGE

- (a) Pull out the fuel suction w/pump & gage from the fuel tank.

#### NOTICE:

- Do not damage the fuel pump filter.
  - Be careful that the arm of the sender gage should not bent.
- (b) Remove the fuel suction tube gasket.

**7. REMOVE FUEL SUCTION SUPPORT NO.2**

- (a) Using a screwdriver, disconnect the snap claws from the claw holes and remove the fuel suction support No.2.

**8. REMOVE FUEL PUMP CUSHION RUBBER****9. REMOVE FUEL PRESSURE REGULATOR ASSY****10. REMOVE FUEL PUMP ASSY W/FILTER**

- (a) Disconnect the fuel pump connector from the fuel pump.  
(b) Pull out the fuel filter and the fuel pump assembly.

**11. REMOVE FUEL PUMP FILTER**

- (a) Using a screwdriver, remove the fuel pump filter clip and the fuel pump filter.

**12. REMOVE FUEL SUCTION PLATE SUB-ASSY**

- (a) Using a screwdriver, disconnect the snap claws from the claw holes and remove the fuel suction plate.

**13. REMOVE FUEL SENDER GAGE ASSY**

- (a) Unlock the sender gage, and move it downward to remove.

**14. REMOVE FUEL PUMP HARNESS**

- (a) Disconnect the connector, and remove the fuel pump harness.

**15. INSTALL FUEL SENDER GAGE ASSY**

- (a) Lock the sender gage by pushing it upward.

**NOTICE:**

**By pushing the sender gage downward, confirm that it is certainly locked.**

**16. INSTALL FUEL PUMP FILTER**

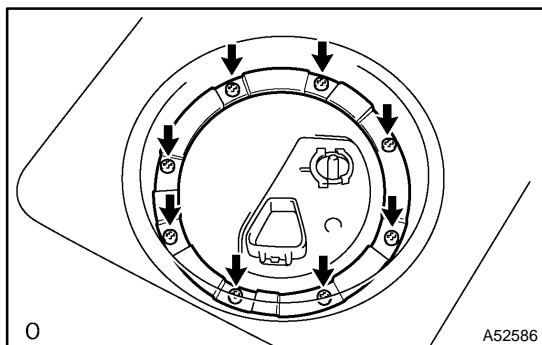
- (a) Install the fuel pump filter with a new fuel pump filter clip.

**17. INSTALL FUEL PRESSURE REGULATOR ASSY**

- (a) Apply gasoline to a new O-ring, and install it to the pressure regulator.  
(b) Insert the pressure regulator.

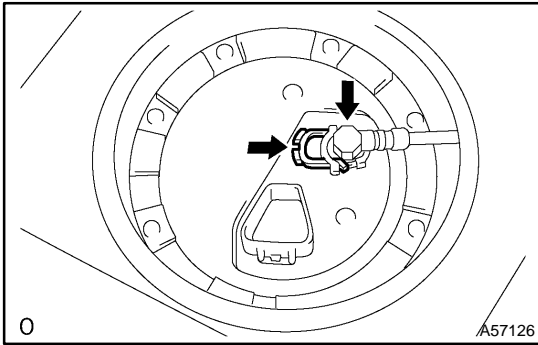
**18. INSTALL FUEL SUCTION TUBE ASSY W/ PUMP & GAGE**

- (a) Install a new gasket and fuel suction tube w/pump & gage.

**19. INSTALL FUEL TANK VENT TUBE SET PLATE**

- (a) Install the fuel tank vent tube set plate with the 8 bolts.  
**3.5 N·m (36 kgf·cm, 31 in.-lbf)**



**20. INSTALL FUEL PUMP TUBE SUB-ASSY**

- (a) Connect the main tube with the tube joint clip.

**NOTICE:**

- Check that there is no scratch or foreign objects on the connecting part.
- Check that the connector is inserted fully and securely.
- Check that the clip of the tube joint is on the collar of the connector.
- After installing the clip of the tube joint, check that the connector is not pulled off.

**21. INSTALL REAR FLOOR SERVICE HOLE COVER**

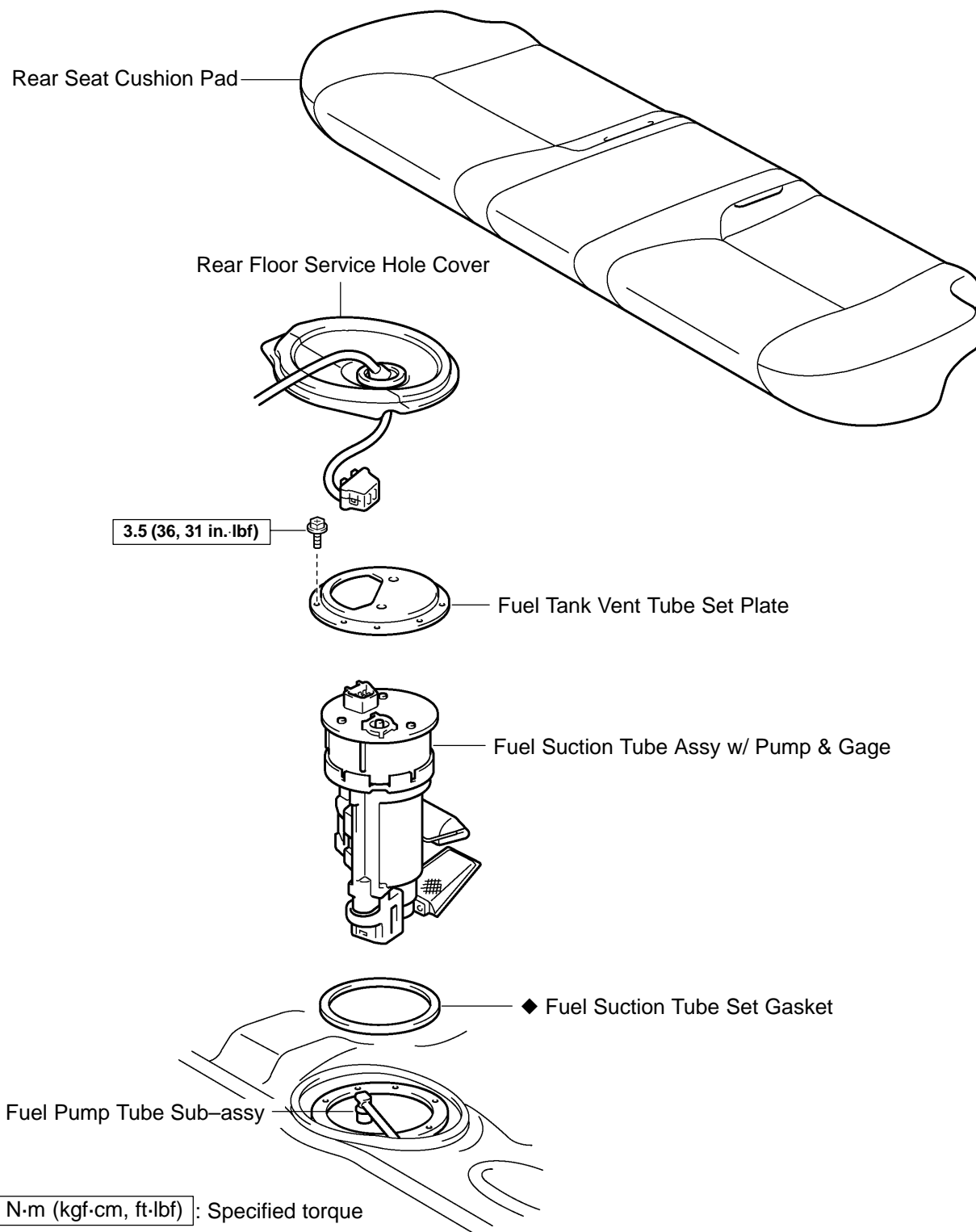
- (a) Using a new butyl tape set, and install the rear floor service hole cover.

**22. INSPECT FUEL LEAK**

# FUEL TANK ASSY (2AZ-FE)

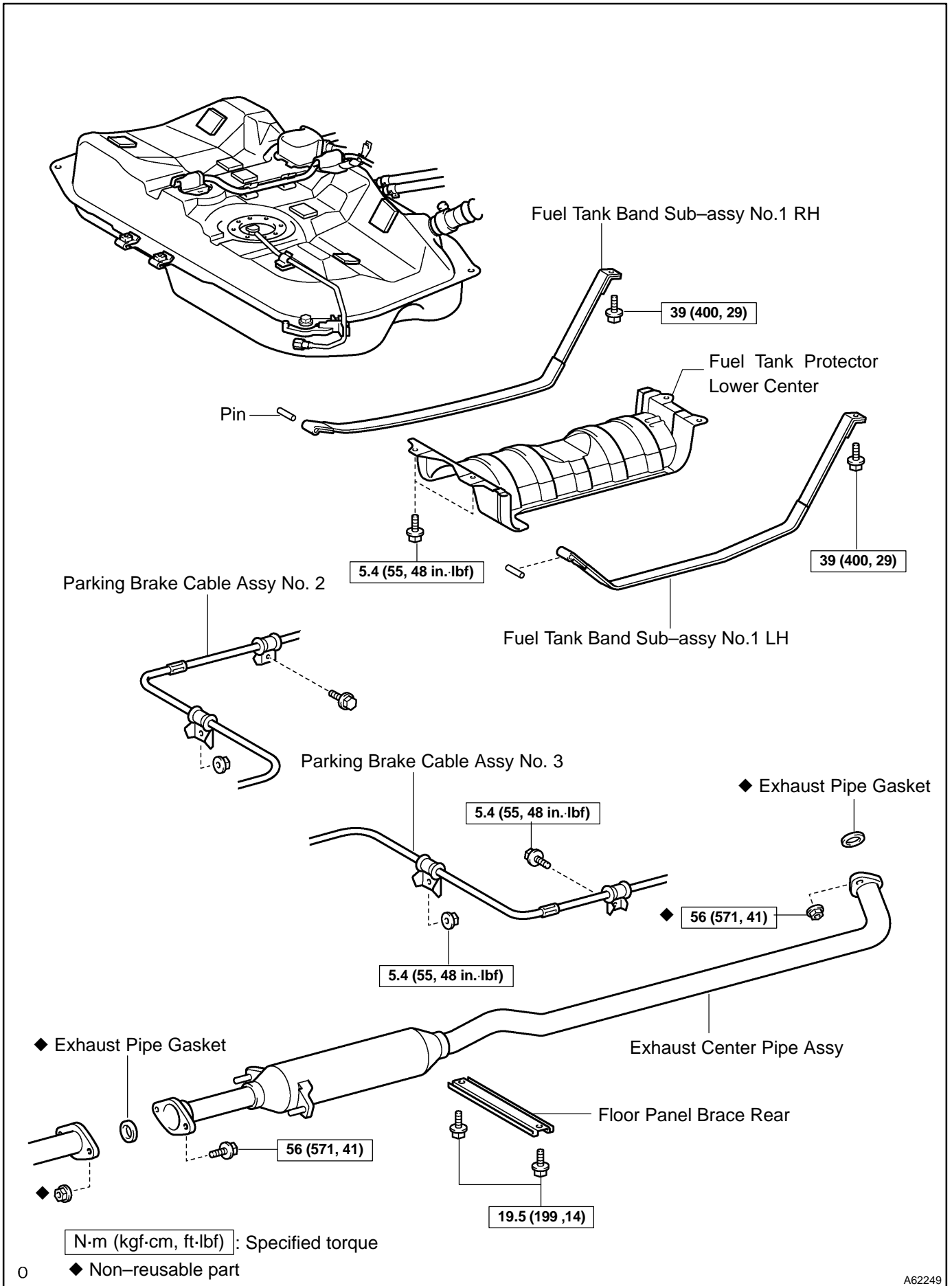
## COMPONENTS

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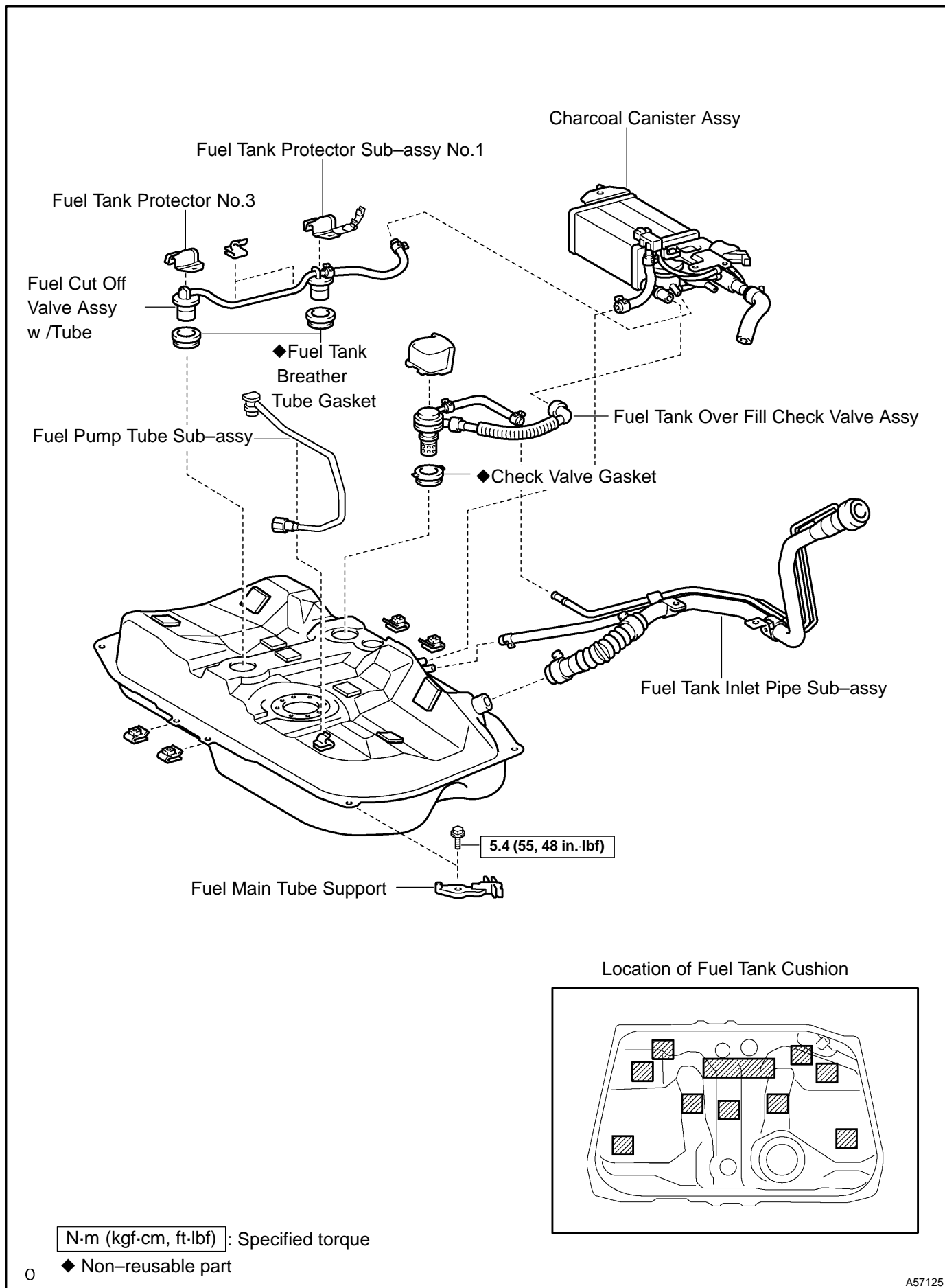


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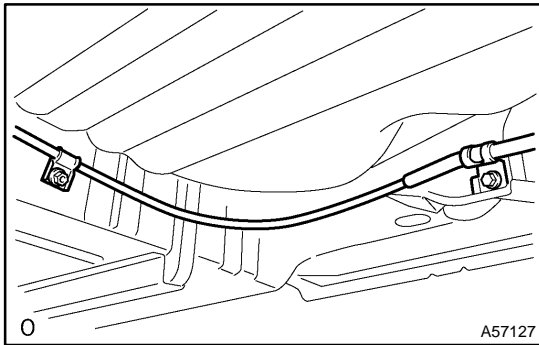
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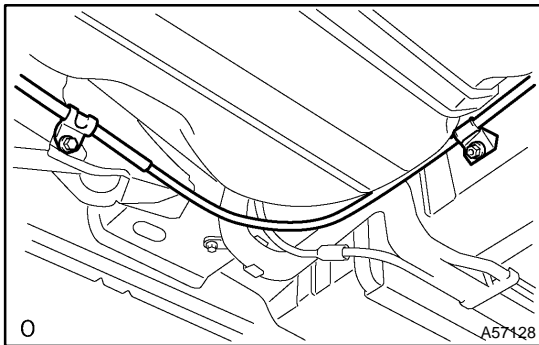
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## Removal & Installation and Disassembly & Reassembly

1. REMOVE REAR SEAT CUSHION PAD
2. REMOVE REAR FLOOR SERVICE HOLE COVER  
(See page 11-15)
3. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-26)
4. REMOVE FUEL PUMP TUBE SUB-ASSY  
(See page 11-15)
5. REMOVE FUEL TANK VENT TUBE SET PLATE
6. REMOVE FUEL SUCTION TUBE ASSY W/ PUMP & GAGE
7. DRAIN FUEL
8. REMOVE FLOOR PANEL BRACE REAR  
(See page 15-2)
9. REMOVE EXHAUST PIPE ASSY CENTER



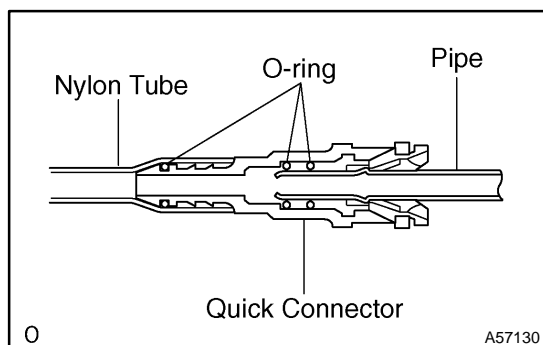
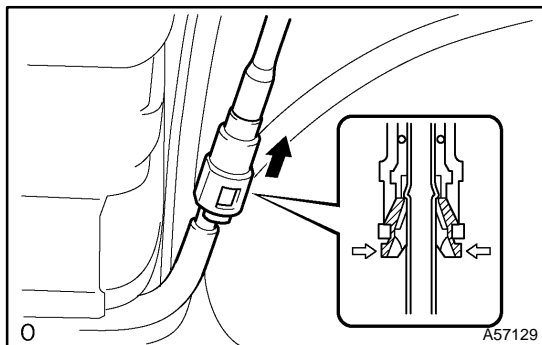
10. DISCONNECT PARKING BRAKE CABLE ASSY NO.2
  - (a) Remove the bolt and nut, and disconnect the parking brake cable.



11. DISCONNECT PARKING BRAKE CABLE ASSY NO.3
  - (a) Remove the bolt and nut, and disconnect the parking brake cable.

### 12. REMOVE FUEL TANK PROTECTOR LOWER CENTER

- (a) Remove the 4 bolts and the protector.



### 13. DISCONNECT FUEL PUMP TUBE SUB-ASSY

- (a) Pinch the fuel pump tube connector clip and then pull out the tube.

#### NOTICE:

- Check if there is any dirt like mud around the connector before this work and clean the dirt away.
- Be careful of dirt like mud because the quick connector has an O-ring to seal the pipe and the connector.
- Do not use any tool in this work.
- Do not bend or twist the nylon tube by force.
- After disconnecting the tube, cover the connector with a vinyl bag.
- When the connector and the pipe are stuck, pinch the tube between fingers, and turn it carefully to free and then disconnect the tube.

### 14. DISCONNECT FUEL TANK TO FILLER PIPE HOSE

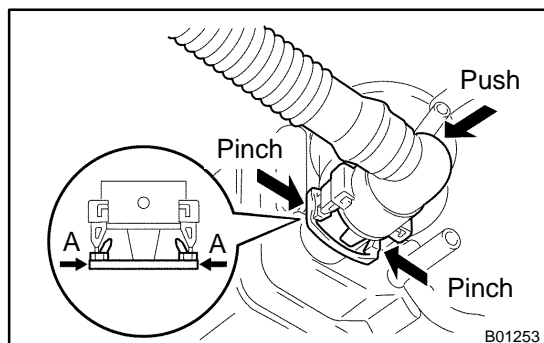
- (a) Disconnect the fuel tank to filler pipe hose from the fuel tank.

### 15. DISCONNECT FUEL TANK BREATHER HOSE

- (a) Disconnect the fuel tank breather hose from the fuel tank.

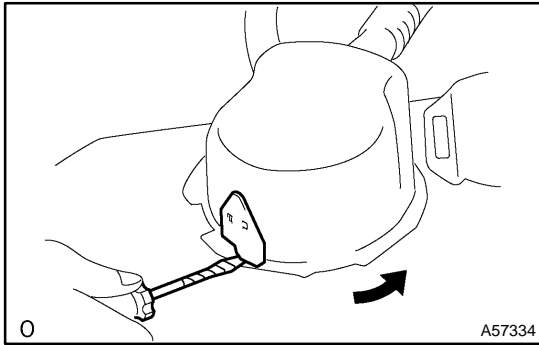
### 16. REMOVE FUEL TANK ASSY

- (a) Set the mission jack to the fuel tank.  
 (b) Remove the fuel tank bands.  
 (c) Disconnect the valve to fuel filler pipe hose from the fuel tank over fill check valve.  
 (d) Disconnect the fuel hose No. 3 from the fuel tank.



- (e) Disconnect the vent line hose from the charcoal canister.  
 (1) Push the connector deep inside.  
 (2) Pinch portion A.  
 (3) Pull out the connector.

- (f) Disconnect the fuel emission hose from the charcoal canister.  
 (g) Carefully, remove the fuel tank assembly from the vehicle.

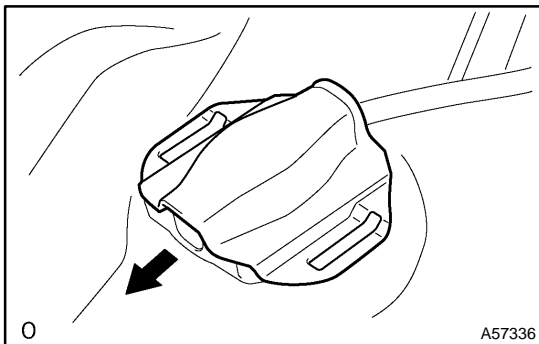
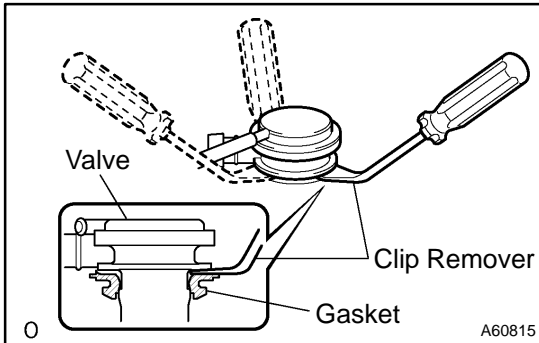


### 17. REMOVE FUEL TANK OVER FILL CHECK VALVE ASSY

- (a) Using a screwdriver, unlock the claw and remove the protector by turning it counter clockwise.
- (b) Insert a clip remover between the check valve and the gasket, remove the valve by gradually pushing it upward.

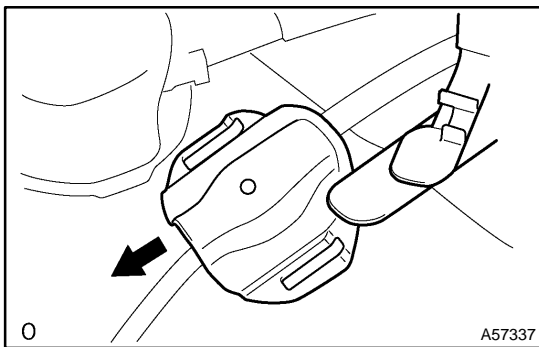
#### NOTICE:

- Work accurately to maintain the sealing performance of the check valve, since it is made from resin. It is easy to damage by removing and installing forcibly.
- Be sure to install new check valve and gasket.



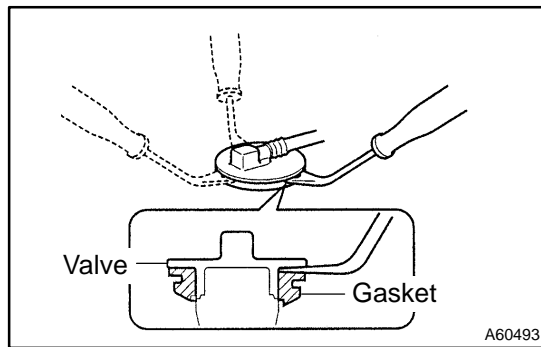
### 18. REMOVE FUEL TANK PROTECTOR NO.3

- (a) Remove the fuel tank protector No. 3 by sliding as shown in the illustration.



### 19. REMOVE FUEL TANK PROTECTOR SUB-ASSY NO.1

- (a) Remove the fuel tank protector No. 1 by sliding as shown in the illustration.



## 20. REMOVE FUEL CUT OFF W/TUBE VALVE ASSY

- Using a screwdriver, unlock the claw and remove the protector by turning it counter clockwise.
- Insert a clip remover between the cut off valve and the gasket, remove the cut off valve by gradually pushing it upward.

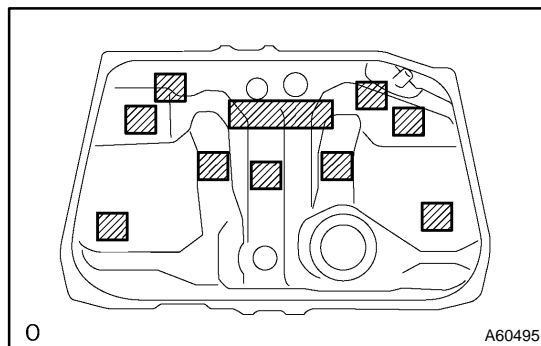
### NOTICE:

- Work accurately to maintain the sealing performance of the cut off valve, since it is made from resin. It is easy to damage by removing and installing forcibly.
- Be sure to install new cut off valve and gasket.

## 21. REMOVE FUEL MAIN TUBE SUPPORT

## 22. REMOVE FUEL TANK CUSHION NO.1

## 23. REMOVE FUEL TANK CUSHION NO.2



## 24. INSTALL FUEL TANK CUSHION NO.1

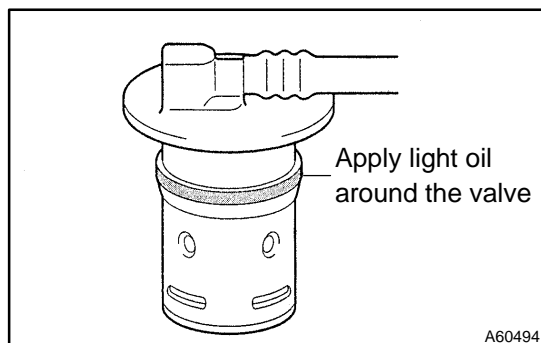
- Install new fuel tank cushions as shown in the illustration.

## 25. INSTALL FUEL TANK CUSHION NO.2

- Install new fuel tank cushion as shown in the illustration.

## 26. INSTALL FUEL MAIN TUBE SUPPORT

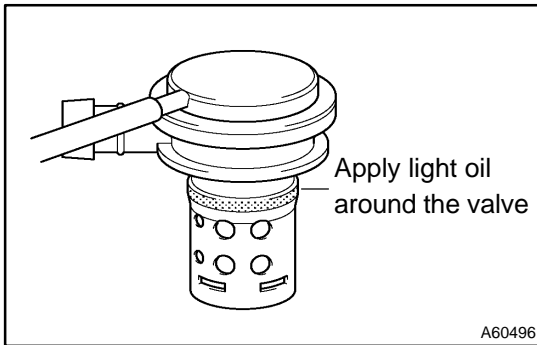
**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**



## 27. INSTALL FUEL CUT OFF W/TUBE VALVE ASSY

- Install a new gasket to the fuel tank.
- Apply light oil around the new fuel cut off valve as shown in the illustration, and insert it into the tank without force. Be careful not to drop the gasket into the tank.
- Check that the fuel cut off valve is fully inserted.





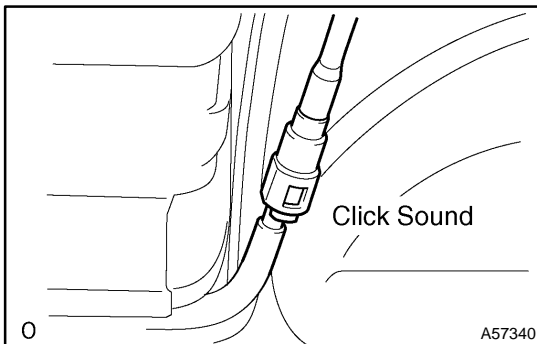
## 28. INSTALL FUEL TANK OVER FILL CHECK VALVE ASSY

- Install a new gasket to the fuel tank.
- Apply light oil around the new check valve as shown in the illustration, and insert it into the tank without force. Be careful not to drop the gasket into the tank.
- Check that the check valve is fully inserted.

## 29. INSTALL FUEL TANK ASSY

- Set the mission jack to the fuel tank.
- Install the fuel tank with the fuel tank bands.

**Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)**



## 30. INSTALL FUEL PUMP TUBE SUB-ASSY

- Push in the fuel tube connector to the fuel pipe until connector makes a "click" sound.

### NOTICE:

- Check if there is any damage or foreign objects on the connected part of the pipe.
- After connecting, check if the pipe and the connector are securely connected by pulling them.

## 31. INSTALL FUEL TANK PROTECTOR LOWER CENTER

- Install the protector with the 4 bolts.

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 32. INSTALL PARKING BRAKE CABLE ASSY NO.3

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 33. INSTALL PARKING BRAKE CABLE ASSY NO.2

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 34. INSTALL EXHAUST PIPE ASSY CENTER

(See page 15-2)

## 35. INSTALL FLOOR PANEL BRACE REAR

(See page 15-2)

## 36. INSTALL FUEL SUCTION TUBE ASSY W/ PUMP & GAGE (See page 11-15)

## 37. INSTALL FUEL TANK VENT TUBE SET PLATE

(See page 11-15)

## 38. INSTALL FUEL PUMP TUBE SUB-ASSY

(See page 11-15)

## 39. INSTALL REAR FLOOR SERVICE HOLE COVER

(See page 11-15)

## 40. INSPECT FUEL LEAK

## 41. CHECK EXHAUST LEAKAGE

# FUEL SYSTEM (1MZ-FE)

1109E-01

## PRECAUTION

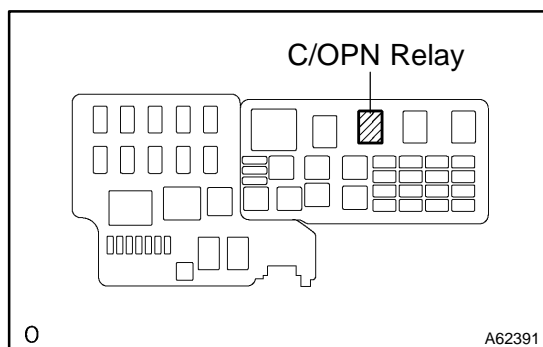
### 1. PRECAUTION

- (a) Before working on fuel system, disconnect negative (–) terminal cable from battery.
- (b) Do not smoke or work near an open flame when working on fuel system.
- (c) Keep gasoline away from rubber or leather parts.

### 2. WORK FOR PREVENT GASOLINE FROM SPILLING OUT

#### CAUTION:

- Perform disconnecting operation of the fuel system parts after working for prevent gasoline form spilling out.
- As there is remained pressure in the fuel line after working for prevent gasoline from spilling out, prevent it from splashing inside the vehicle compartment by covering them with a shop rag.



- (a) Remove the circuit opening relay in the engine room relay block.
- (b) Start the engine. After the engine has stopped on its own, turn the ignition switch OFF.

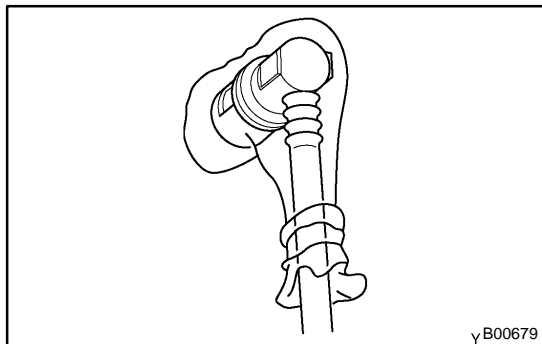
#### HINT:

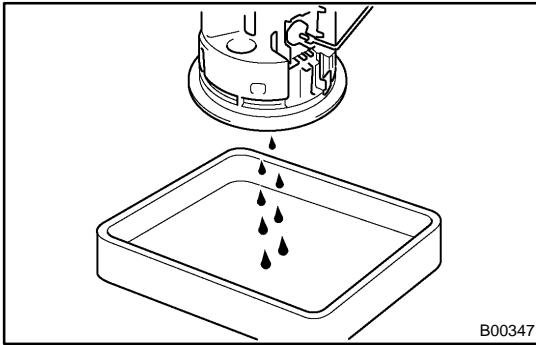
There is a case that DTC P0171 (system too lean) is output.

- (c) Check that the engine does not start.
- (d) Remove the fuel tank cap, and let the air out of the fuel tank.
- (e) Disconnect negative (–) terminal cable from battery.
- (f) Reinstall the circuit opening relay.

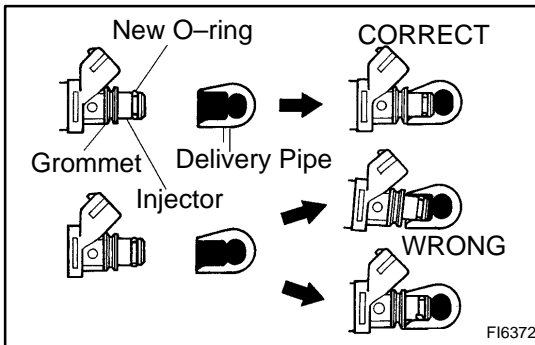
### 3. FUEL SYSTEM

- (a) When disconnecting the high fuel pressure line, a large amount of gasoline will spill out, so observe these procedures.
  - (1) Work for prevent gasoline from spilling out.
  - (2) Disconnect the fuel pump tube.  
(See page 11-39)
  - (3) Drain the fuel remained inside the fuel pump tube.
- (4) Prevent the disconnected fuel pump tube from damaging and mixing foreign objects by covering them with a vinyl bag.

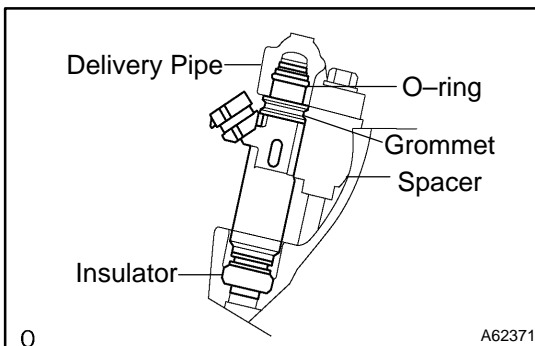




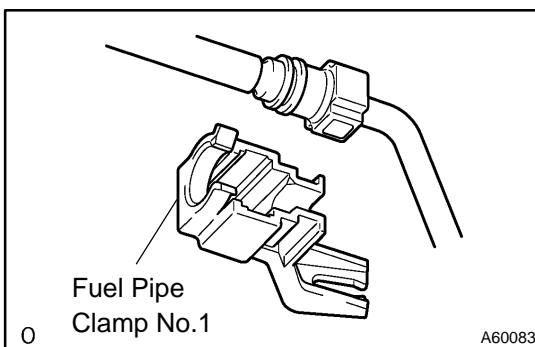
- (5) Put a container under the connection.



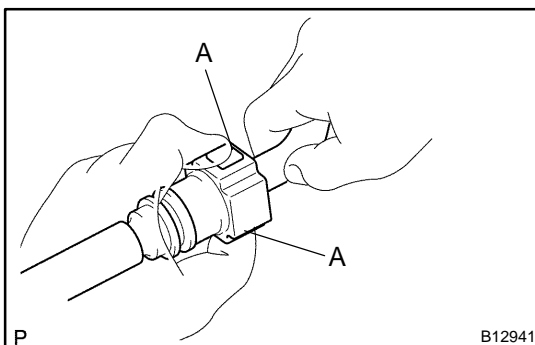
- (b) Observe these precautions when removing and installing the injector.
- (1) Never reuse the O-ring.
  - (2) When placing the new O-rings on the injector, take care not to damage it in any way.
  - (3) Coat a new O-rings with spindle oil or gasoline before installing. Never use engine, gear or brake oil.



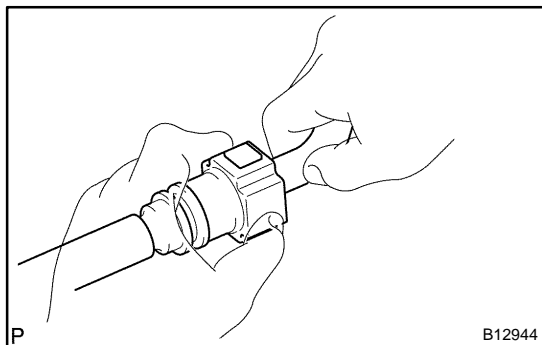
- (c) Install the injector to the delivery pipe and intake manifold, as shown in the illustration. Before installing the injector, be sure to apply spindle oil or gasoline on the place where a delivery pipe or an intake manifold touches an O-ring of the injector.



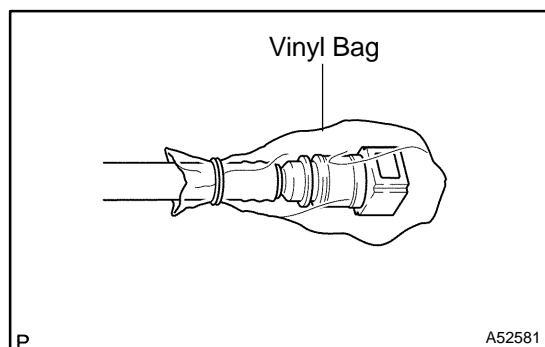
- (d) Observe these precautions when disconnecting the fuel tube connector.
- (1) Remove the fuel pipe clamp No.1.
  - (2) Check if there is any dirt like mud on the pipe and around the connector before disconnecting them and clean the dirt away.



- (3) Disconnect the connector from the hose while pinching part A with fingers as shown in the illustration.



- (4) When the connector and the pipe are stuck, pinch the fuel pipe between the hands, push and pull the connector to free to disconnect and pull it out. Do not use any tool at this time.
- (5) Inspect if there is any dirt or the likes on the seal surface of the disconnected pipe and clean it away.

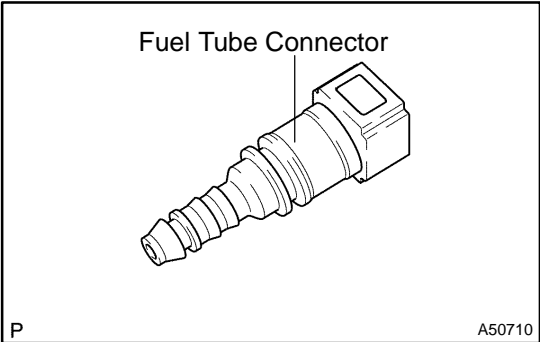


- (6) Prevent the disconnected pipe and connector from damaging and mixing foreign objects by covering them with a vinyl bag.

#### 4. CHECK FUEL LEAK

- (a) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.  
(See page [11-29](#))

# ON-VEHICLE INSPECTION



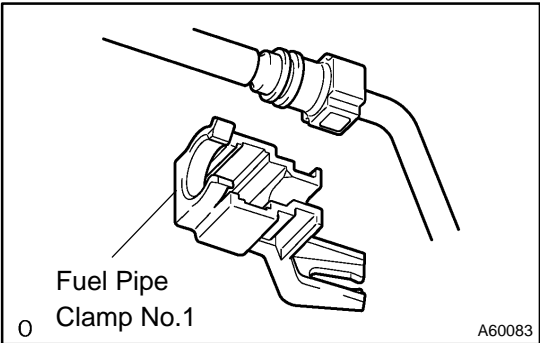
## 1. CHECK FUEL PRESSURE

- (a) Prepare for inspection.
  - (1) Purchase the new No.1 fuel pipe and take out the fuel tube connector from its pipe.

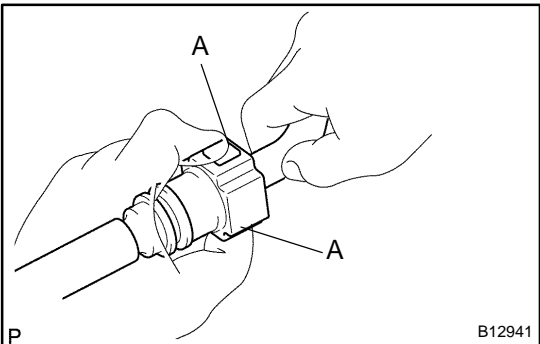
### HINT:

Part No. 23801-20140

- (b) Work for prevent gasoline from spilling out.  
(See page 11-26)



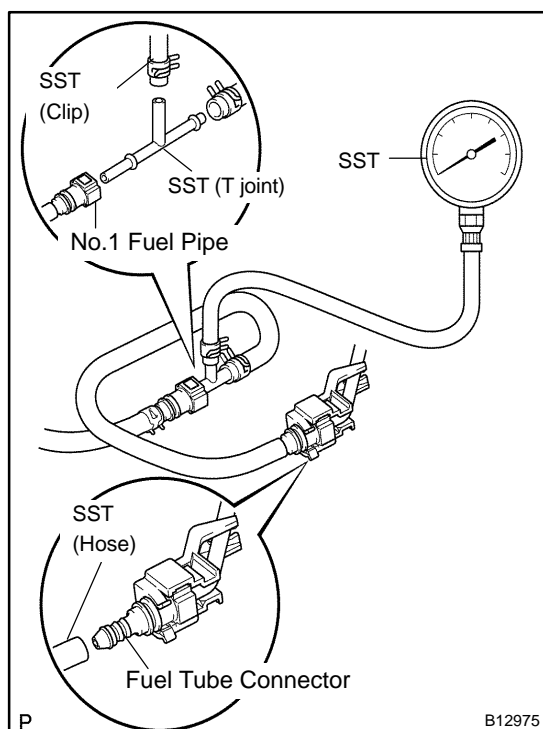
- (c) Remove the fuel pipe clamp No.1 from the fuel tube connector.



- (d) Disconnect the fuel tube connector from the fuel pipe while pinching part A with fingers as shown in the illustration.

### CAUTION:

- Perform disconnecting operations of the fuel tube connector (quick type) after observing the precautions.
- As there is retained pressure in the fuel pipe line, prevent it from splashing inside the engine compartment.



- (e) Install SST (pressure gauge) as shown in the illustration by using SST and fuel tube connector.  
SST 09268-41047 (95336-08070), 09268-45014 (09268-41250)
- (f) Wipe off any splattered gasoline.
- (g) Reconnect the negative (–) terminal cable to the battery.
- (h) Connect the hand-held tester to the DLC3.
- (i) Measure the fuel pressure regulator.

**Fuel pressure:****304 – 343 kPa (3.1 – 3.5 kgf/cm<sup>2</sup>, 44 – 50 psi)**

If pressure is high, replace the fuel pressure regulator.

If pressure is low, check the fuel hoses and connections, fuel pump, fuel filter and fuel pressure regulator.

- (j) Disconnect the hand-held tester from the DLC3.
- (k) Start the engine.
- (l) Measure the fuel pressure at idle.

**Fuel pressure:****304 – 343 kPa (3.1 – 3.5 kgf/cm<sup>2</sup>, 44 – 50 psi)**

- (m) Stop the engine.
- (n) Check that the fuel pressure remains as specified for 5 minutes after the engine has stopped.

**Fuel pressure: 147 kPa (1.5 kgf/cm<sup>2</sup>, 21 psi) or more**

If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

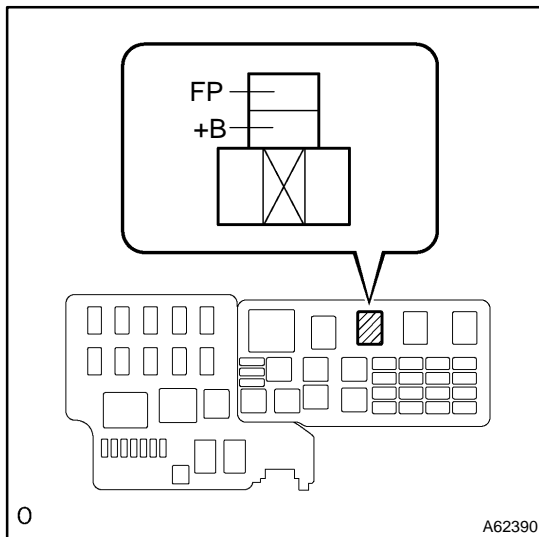
- (o) After checking fuel pressure, disconnect the negative (–) terminal cable from the battery and carefully remove the SST and fuel tube connector to prevent gasoline from splashing.
- (p) Reconnect the No. 1 fuel pipe (fuel tube connector).

**CAUTION:****Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.****2. CHECK FUEL PUMP OPERATION AND FUEL LEAK**

- (a) When using hand-held tester
  - (1) Connect the hand-held tester to the DLC3.
  - (2) Turn the ignition switch ON and hand-held tester main switch ON.

**NOTICE:****Do not start the engine.**

- (3) Select the active test mode on the hand-held tester.
- (4) Please refer to the hand-held tester operator's manual for further details.



- (b) When not using hand-held tester
- (1) Remove the circuit opening relay.
  - (2) Using a service wire connect terminals FP and +B of the relay block.

**NOTICE:**

**Pay due attention to the terminal connecting position to avoid a malfunction.**

- (3) Turn the ignition switch ON, and check that the fuel pump operates.

**NOTICE:**

**Do not start the engine.**

- (c) Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.

## INSPECTION

### 1. FUEL INJECTOR ASSY

- (a) Inspect injector resistance  
 (1) Using an ohmmeter, measure the resistance between the terminals.

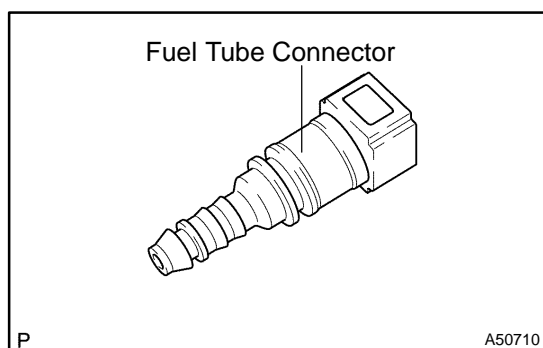
**Resistance: 13.4 – 14.2  $\Omega$  at 20°C (68°F)**

If the resistance is not as specified, replace the injector.

- (b) Inspect injector inspection

**CAUTION:**

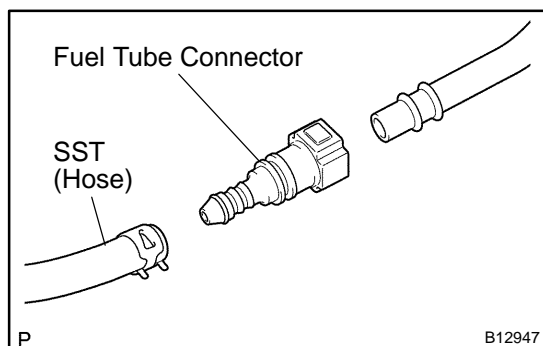
**Keep injector clear of sparks during the test.**



- (1) Purchase the new No.1 fuel pipe and take out the fuel tube connector from its pipe.

**HINT:**

Part No. 23801 – 20140

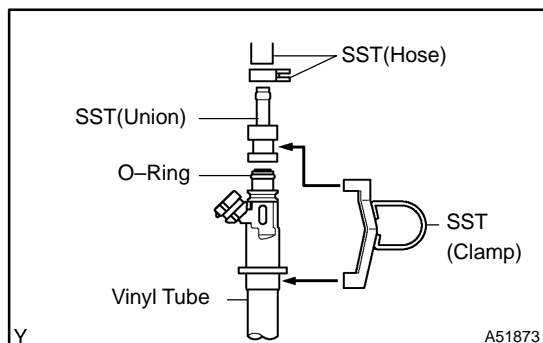


- (2) Connect SST and fuel tube connector to the fuel pipe.

SST 09268-41047 (95336-08070)

**CAUTION:**

**Perform connecting operations of the fuel tube connector (quick type) after observing the precautions.**



- (3) Install the grommet and O-ring to the injector.  
 (4) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp)  
 SST 09268-41047 (09268-41110, 09268-41300, 95336-08070)

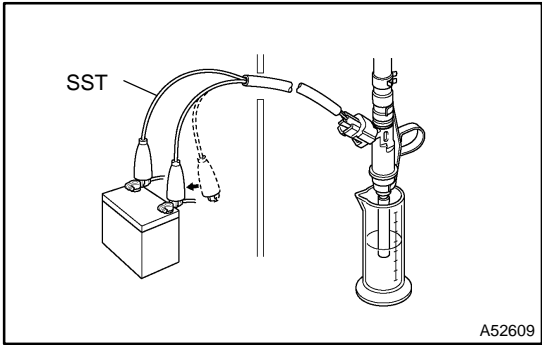
- (5) Put the injector into a graduated cylinder.

**HINT:**

Install a suitable vinyl tube onto the injector to prevent gasoline from splashing out.

- (6) Operate the fuel pump. (See Page 11-29)





- (7) Connect SST (wire) to the injector and battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector 2 or 3 time.

SST 09842-30070

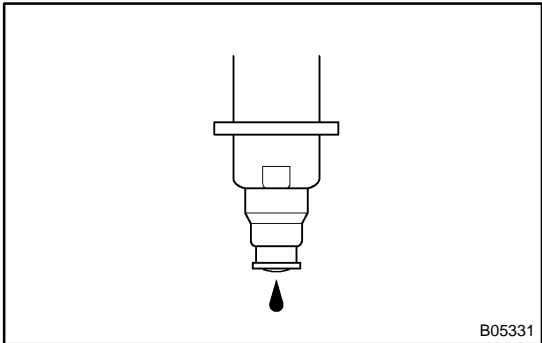
**Injection volume:**

Injection volume	Difference between each injector
60 – 73 cm <sup>3</sup> (3.7 – 4.5 cu in.) per 15 seconds	13 cm <sup>3</sup> (0.8 cu in.) or less

**NOTICE:**

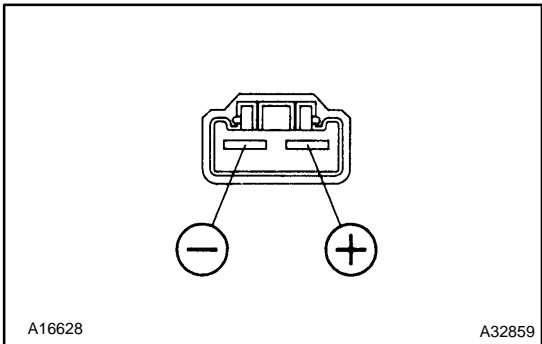
**Always do the switching at the battery side.**

If the injection volume is not as specified, replace the injector.



- (c) Inspect leakage
- (1) In the condition above, disconnect the test probes of SST (wire) from the battery and check the fuel leakage from the injector.

**Fuel drop: 1 drop or less per 12 minutes**



**2. FUEL PUMP**

- (a) Inspect fuel pump resistance.
- (1) Using an ohmmeter, measure the resistance between terminals.
- Resistance: 0.2 – 3.0 Ω at 20°C (68°F)**
- (b) Inspect fuel pump operation
- (1) Apply battery voltage to both terminals. Check that the pump operates.

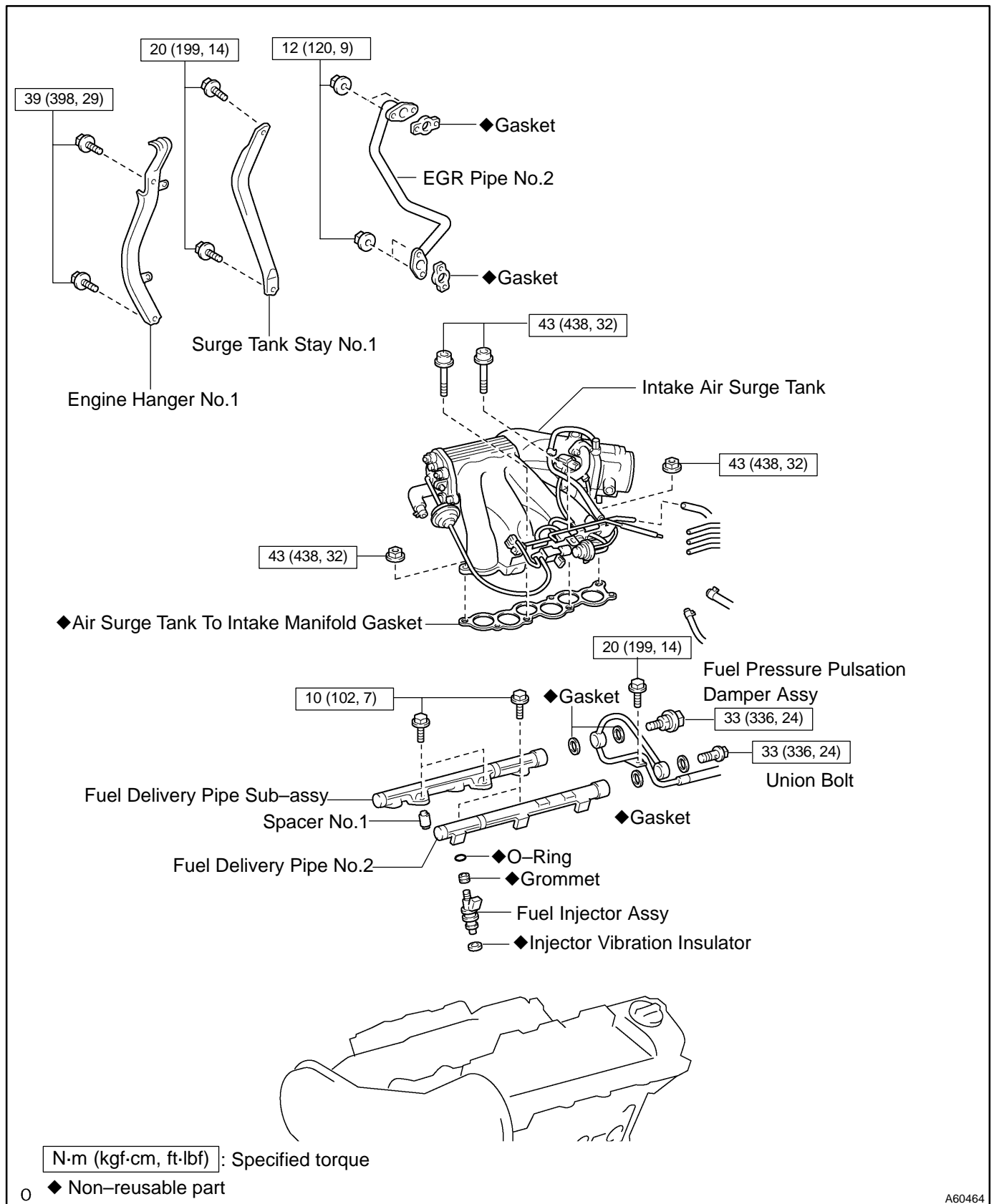
**NOTICE:**

- **These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.**
- **Keep fuel pump as far away from the battery as possible.**
- **Always do the switching at the battery side.**

# FUEL INJECTOR ASSY (1MZ-FE)

## COMPONENTS

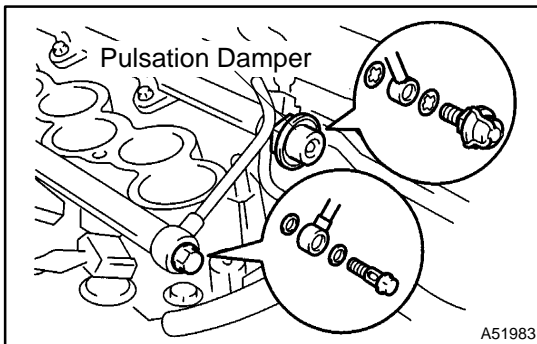
1109F-01



A60464

## REPLACEMENT

1. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-26)
2. DRAIN COOLANT (See page 16-20)
3. REMOVE V-BANK COVER SUB-ASSY  
(See page 14-155)
4. REMOVE BATTERY
5. REMOVE AIR CLEANER ASSEMBLY WITH HOSE (See page 10-12)
6. REMOVE FRONT SUSPENSION UPPER BRACE CENTER  
(W/ FRONT SUSPENSION BRACE UPPER CENTER)
7. REMOVE INTAKE AIR SURGE TANK  
(See page 14-142)

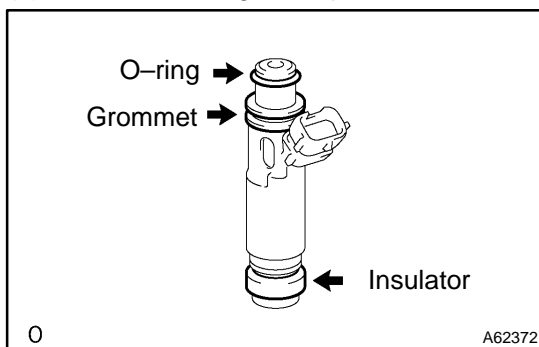


### 8. SEPARATE FUEL PIPE SUB-ASSY NO.1

- (a) Remove the pulsation damper and 2 gaskets.
- (b) Remove the bolt and 2 gaskets.
- (c) Remove the bolt and disconnect the fuel pipe sub-assembly No. 1 from the intake manifold.

### 9. REMOVE FUEL INJECTOR ASSY

- (a) Disconnect the injector connectors.
- (b) Remove the 2 bolts and fuel delivery pipe, while pulling out both ends of the fuel delivery pipe equally.
- (c) While turning the injector clockwise and counterclockwise, pull out the injector from the delivery pipe.



### 10. INSTALL FUEL INJECTOR ASSY

- (a) Apply a light coat of gasoline to a new O-ring and install them to each injectors.
- (b) While turning the injector clockwise and counterclockwise, install it to the delivery pipe.
- (c) Check that the injectors rotate smoothly.

#### NOTICE:

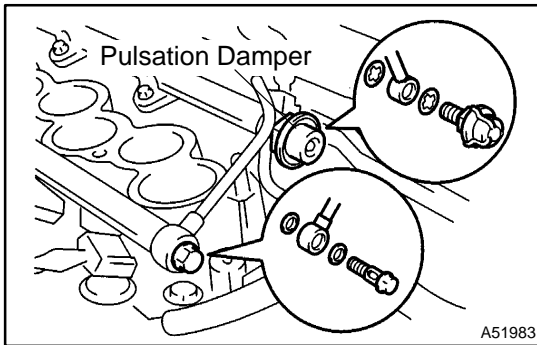
If injectors do not rotate smoothly, the probable cause is incorrect installation of the O-rings. Replace new O-rings.

- (d) Install the delivery pipe with the injectors.

**Torque: 10 N·m (102 kgf·cm, 7 ft·lbf)**

#### NOTICE:

- Be careful not to drop the injectors when installing the delivery pipe.
- Check that the injectors rotate smoothly after installing the delivery pipe.

**11. INSTALL FUEL PIPE SUB-ASSY NO.1**

- (a) Install the fuel pipe No. 1 with the 2 new pulsation damper gaskets and the pulsation damper.  
**Torque: 33 N·m (336 kgf·cm, 24 ft·lbf)**
- (b) Install the delivery pipe with 2 new fuel pipe No. 1 gaskets and a bolt to the fuel pipe No. 1.  
**Torque: 33 N·m (336 kgf·cm, 24 ft·lbf)**
- (c) Install the fuel pipe No. 1 to the intake manifold with a bolt.  
**Torque: 20 N·m (199 kgf·cm, 14 ft·lbf)**

**12. INSTALL INTAKE AIR SURGE TANK**

(See page [14-142](#))

**13. INSTALL FRONT SUSPENSION UPPER BRACE CENTER  
(W/ FRONT SUSPENSION BRACE UPPER CENTER)**

**Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)**

**14. INSTALL AIR CLEANER ASSEMBLY WITH HOSE (See page [10-12](#))****15. INSTALL V-BANK COVER SUB-ASSY**

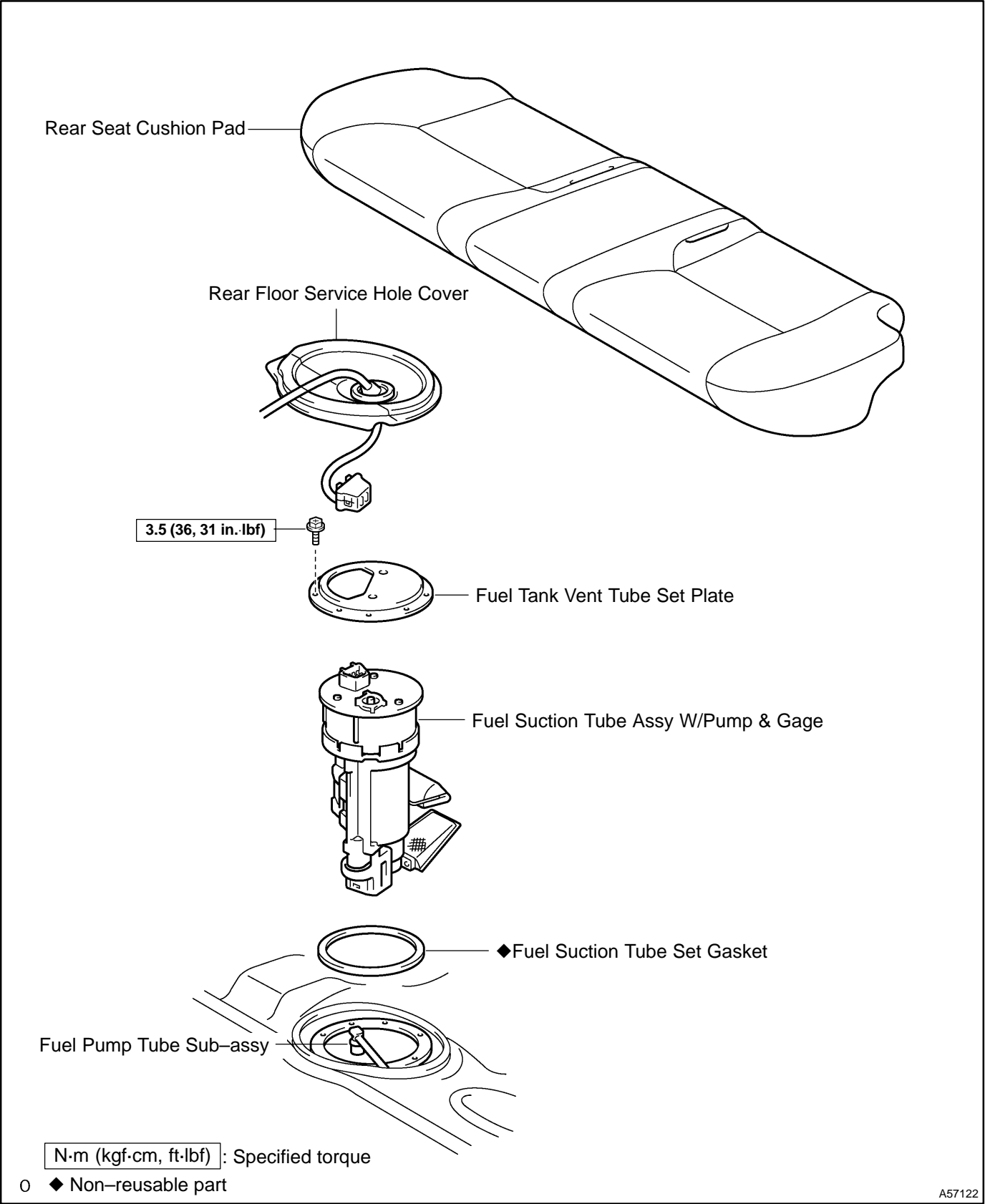
(See page [14-155](#))

**16. ADD COOLANT (See page [16-20](#))****17. CHECK ENGINE COOLANT LEAK (See page [16-20](#))****18. INSPECT FUEL LEAK**

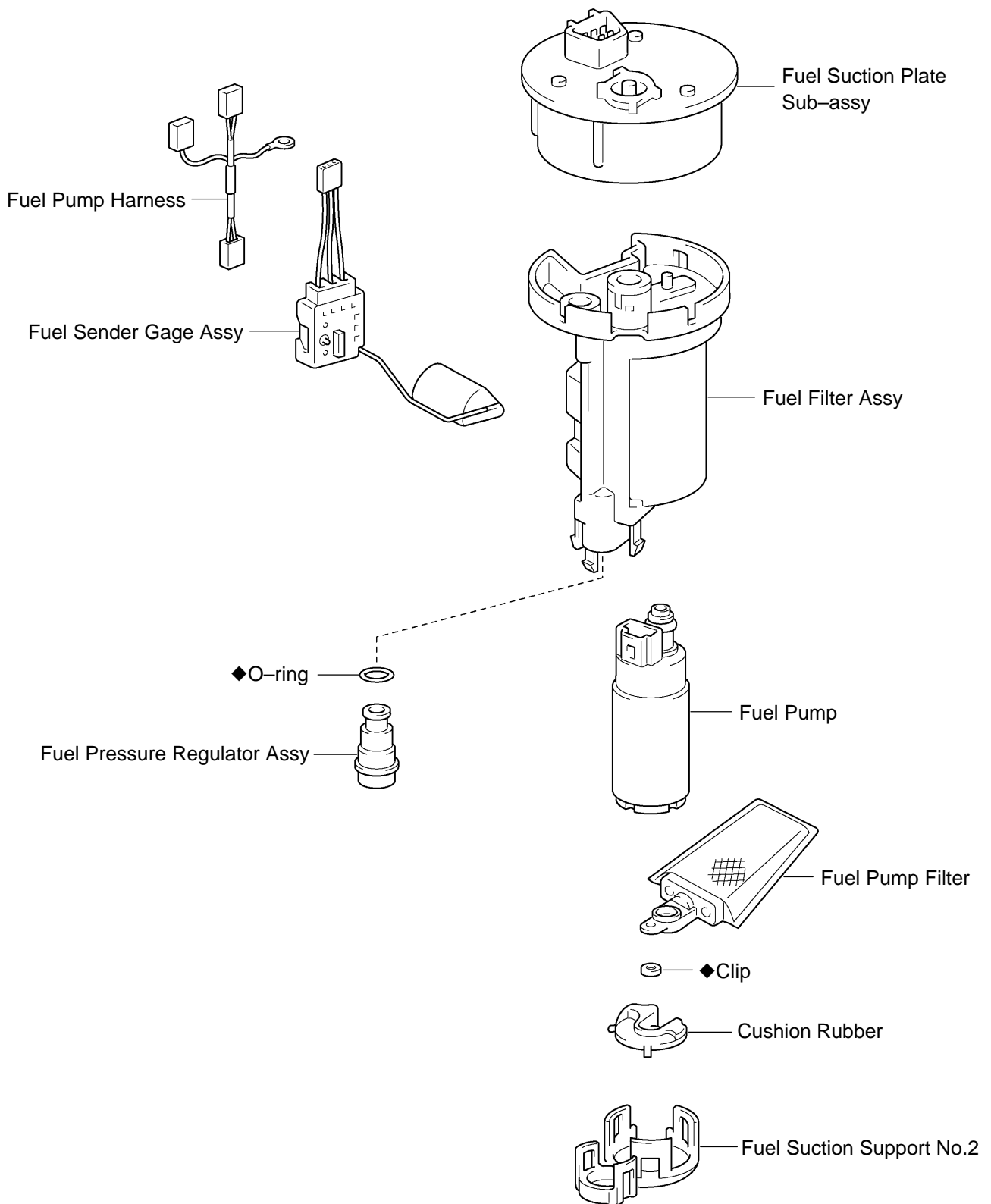
# FUEL PUMP ASSY (1MZ-FE)

## COMPONENTS

1109G-01



A57122



o ◆ Non-reusable part

A57123

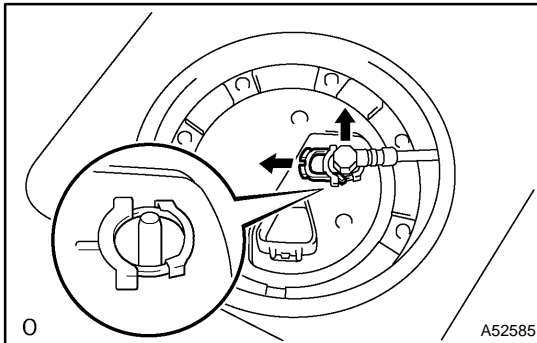
## Removal & Installation and Disassembly & Reassembly

### 1. REMOVE REAR SEAT CUSHION PAD

### 2. REMOVE REAR FLOOR SERVICE HOLE COVER

- (a) Remove the service hole cover.
- (b) Disconnect the fuel pump connector.

### 3. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-26)

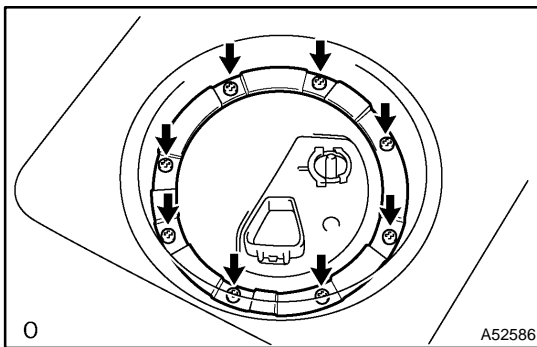
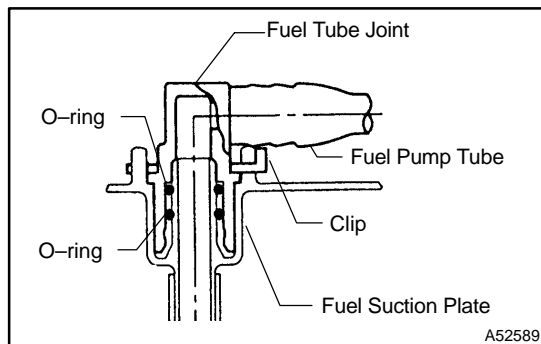


### 4. DISCONNECT FUEL PUMP TUBE SUB-ASSY

- (a) Check if there is any dirt like mud around the connector before this work and clean dirt away.
- (b) Remove the joint clip, and pull out the fuel pump tube.

#### NOTICE:

- Be careful of dirt like mud because the quick connector has an O-ring to seal the pipe and the connector.
- Do not use any tool in this work.
- Do not bend or twist the nylon tube by force.
- Keep off plug from foreign objects.
- To protect the fuel tube, cover it with a vinyl bag after checking.



### 5. REMOVE FUEL TANK VENT TUBE SET PLATE

- (a) Remove the 8 bolts and fuel tank vent tube set plate.

### 6. REMOVE FUEL SUCTION TUBE ASSY W/ PUMP & GAGE

- (a) Pull out the fuel suction tube w/pump & gage from the fuel tank.

#### NOTICE:

- Do not damage the fuel pump filter.
  - Be careful that the arm of the sender gauge should not bent.
- (b) Remove the fuel suction tube gasket.

### 7. REMOVE FUEL SUCTION SUPPORT NO.2

- (a) Using a screwdriver, disconnect the snap claws from the claw holes and remove the fuel suction support No.2.

**8. REMOVE FUEL PUMP CUSHION RUBBER****9. REMOVE FUEL PRESSURE REGULATOR ASSY****10. REMOVE FUEL PUMP ASSY W/FILTER**

- (a) Disconnect the fuel pump connector from the fuel pump.
- (b) Pull out the fuel filter and the fuel pump assembly.

**11. REMOVE FUEL PUMP FILTER**

- (a) Using a screwdriver, remove the fuel pump filter clip and the fuel pump filter.

**12. REMOVE FUEL SUCTION PLATE SUB-ASSY**

- (a) Using a screwdriver, disconnect the snap claws from the claw holes and remove the fuel suction plate.

**13. REMOVE FUEL SENDER GAGE ASSY**

- (a) Unlock the sender gage, and move it downward to remove.

**14. REMOVE FUEL PUMP HARNESS**

- (a) Disconnect the connector, and remove the fuel pump harness.

**15. INSTALL FUEL SENDER GAGE ASSY**

- (a) Lock the sender gage by pushing it upward.

**NOTICE:**

**By pushing the sender gage downward, confirm that it is certainly locked.**

**16. INSTALL FUEL PUMP FILTER**

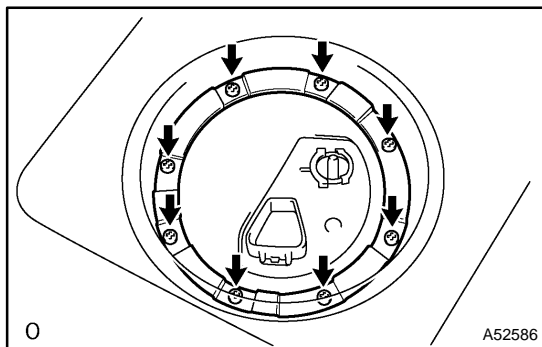
- (a) Install the fuel pump filter with a new fuel pump filter clip.

**17. INSTALL FUEL PRESSURE REGULATOR ASSY**

- (a) Apply gasoline to a new O-ring, and install it to the pressure regulator.
- (b) Insert the pressure regulator.

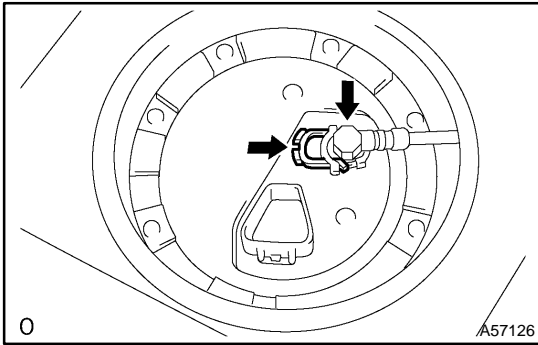
**18. INSTALL FUEL SUCTION TUBE ASSY W/ PUMP & GAGE**

- (a) Install a new gasket and fuel suction tube w/pump & gage.

**19. INSTALL FUEL TANK VENT TUBE SET PLATE**

- (a) Install the fuel tank vent tube set plate with the 8 bolts.  
**Torque: 3.5 N·m (36 kgf·cm, 31 in·lbf)**



**20. INSTALL FUEL PUMP TUBE SUB-ASSY**

- (a) Connect the main tube with the tube joint clip.

**NOTICE:**

- Check that there is no scratch or foreign objects on the connecting part.
- Check that the connector is inserted fully and securely.
- Check that the clip of the tube joint is on the collar of the connector.
- After installing the clip of the tube joint, check that the connector is not pulled off.

**21. INSTALL REAR FLOOR SERVICE HOLE COVER**

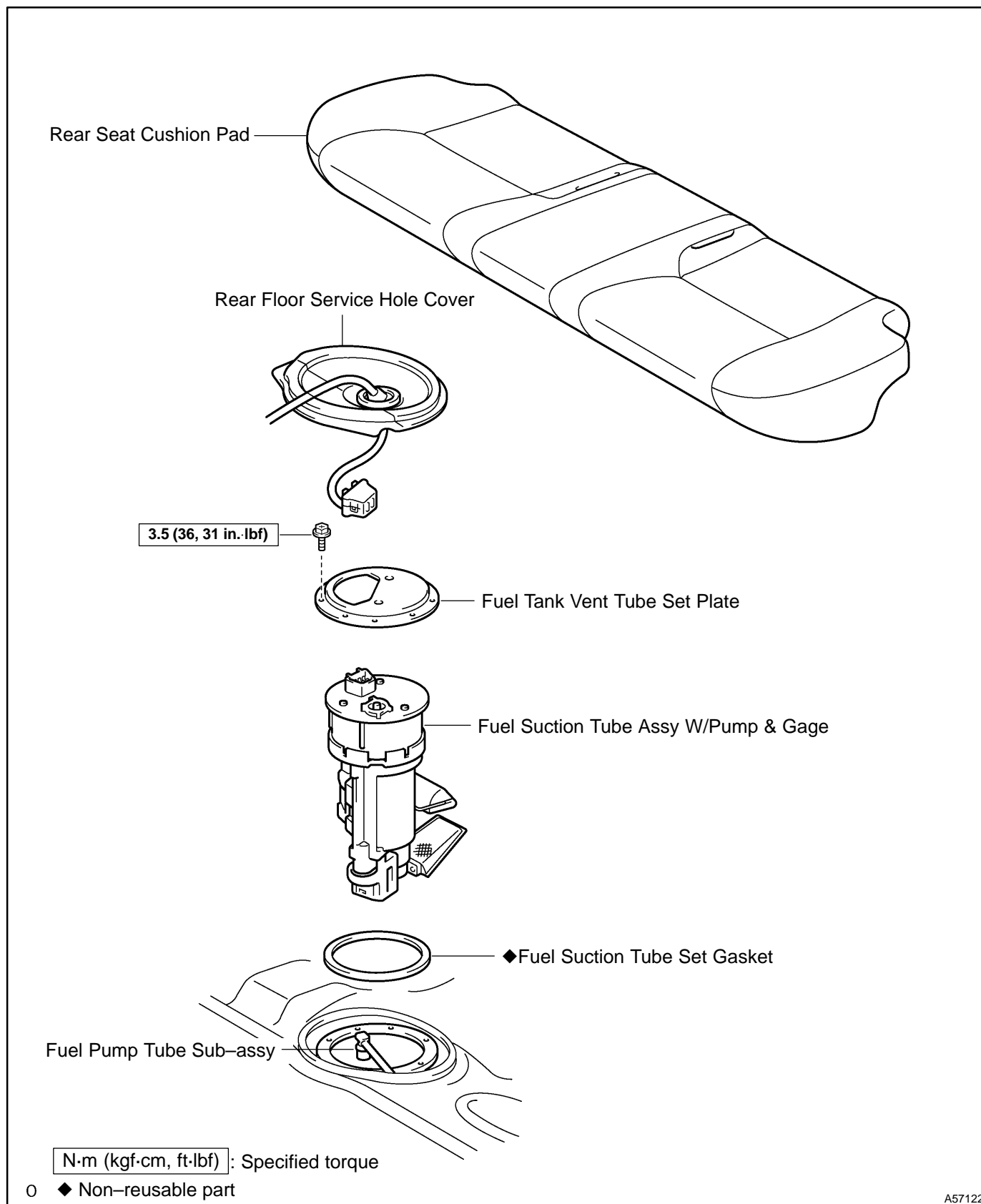
- (a) Using a new butyl tape set, and install the rear floor service hole cover.

**22. INSPECT FUEL LEAK**

# FUEL TANK ASSY (1MZ-FE)

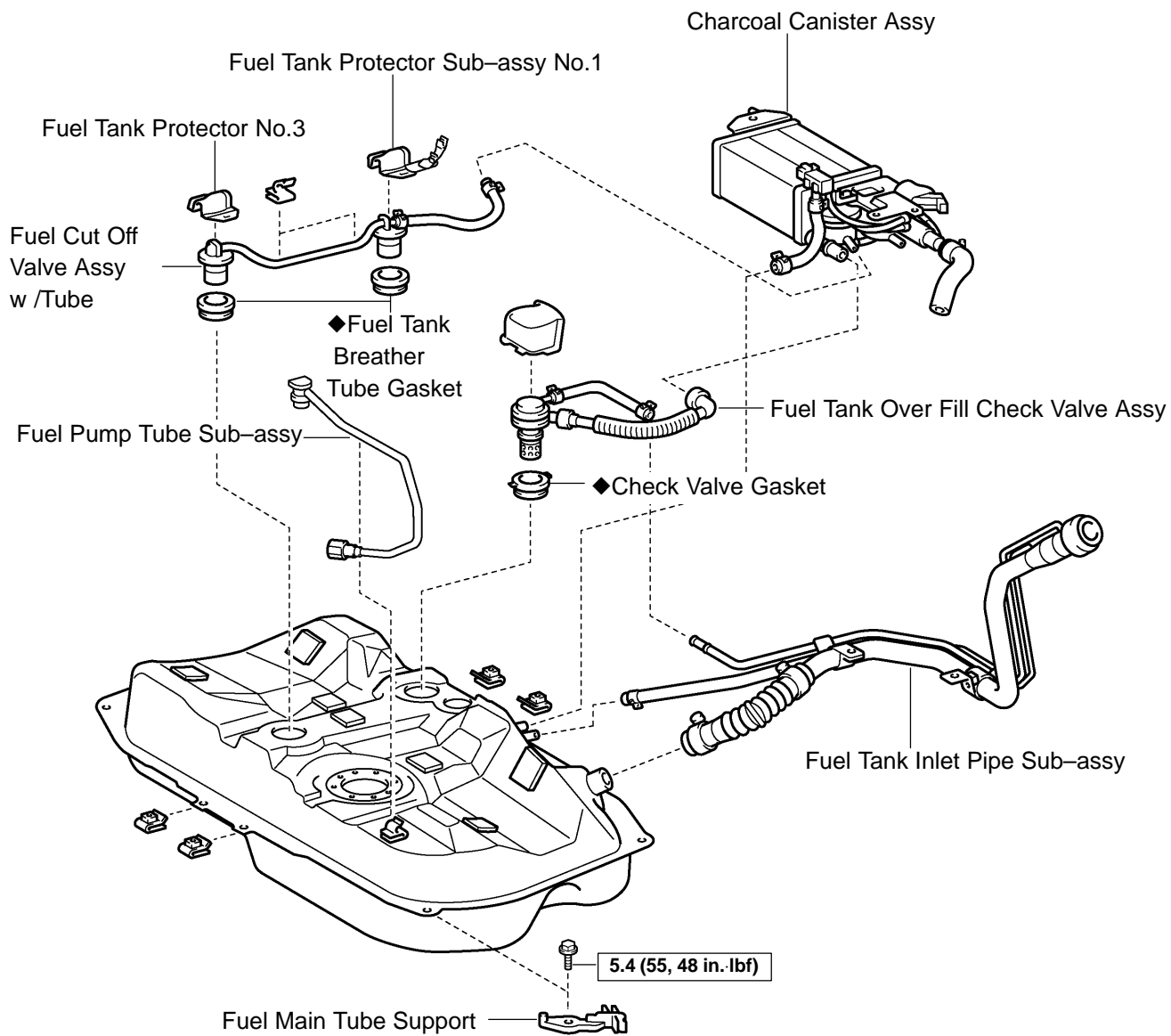
## COMPONENTS

1109I-01

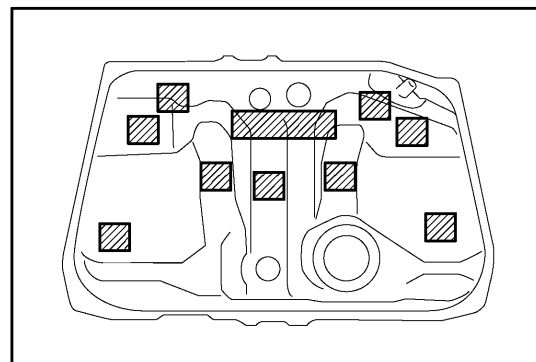


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Location of Fuel Tank Cushion



N·m (kgf·cm, ft·lbf) : Specified torque

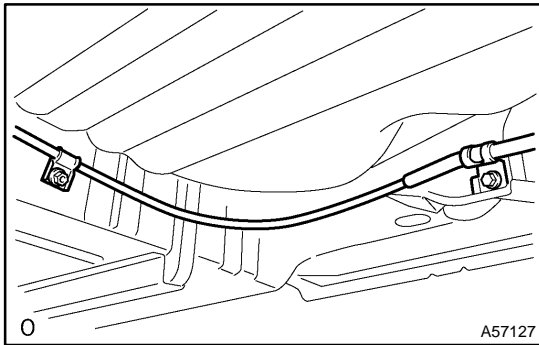
◆ Non-reusable part

0

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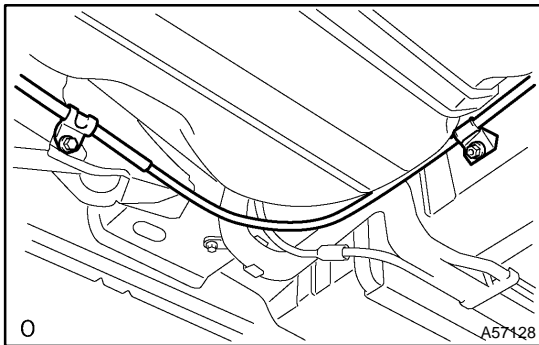
## Removal & Installation and Disassembly & Reassembly

1. REMOVE REAR SEAT CUSHION PAD
2. REMOVE REAR FLOOR SERVICE HOLE COVER  
(See page 11-39)
3. WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See page 11-26)
4. DISCONNECT FUEL PUMP TUBE SUB-ASSY  
(See page 11-39)
5. REMOVE FUEL TANK VENT TUBE SET PLATE  
(See page 11-39)
6. REMOVE FUEL SUCTION TUBE ASSY W/ PUMP & GAGE (See page 11-39)
7. DRAIN FUEL
8. REMOVE FLOOR PANEL BRACE REAR  
(See page 15-5)
9. REMOVE EXHAUST PIPE ASSY CENTER



### 10. DISCONNECT PARKING BRAKE CABLE ASSY NO.2

- (a) Remove the bolt and nut, and disconnect the parking brake cable.

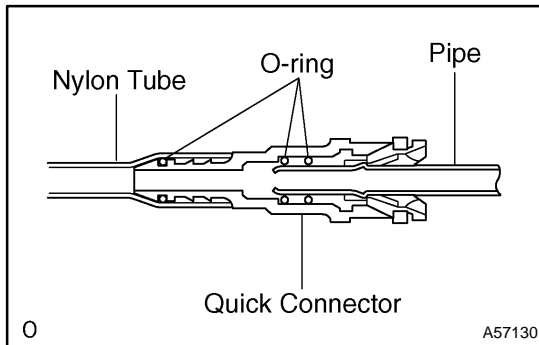
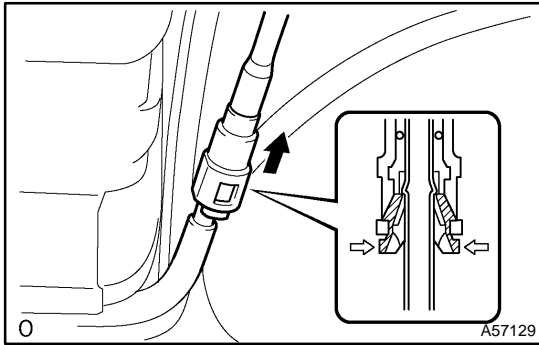


### 11. DISCONNECT PARKING BRAKE CABLE ASSY NO.3

- (a) Remove the bolt and nut, and disconnect the parking brake cable.

### 12. REMOVE FUEL TANK PROTECTOR LOWER CENTER

- (a) Remove the 4 bolts and remove the protector.



### 13. DISCONNECT FUEL PUMP TUBE SUB-ASSY

- (a) Pinch the fuel pump tube connector clip and then pull out the tube.

#### NOTICE:

- Check if there is any dirt like mud around the connector before this work and clean the dirt away.
- Be careful of dirt like mud because the quick connector has an O-ring to seal the pipe and the connector.
- Do not use any tool in this work.
- Do not bend or twist the nylon tube by force.
- After disconnecting the tube, cover the connector with a vinyl bag.
- When the connector and the pipe are stuck, pinch the tube between fingers, and turn it carefully to free and then disconnect the tube.

### 14. DISCONNECT FUEL TANK TO FILLER PIPE HOSE

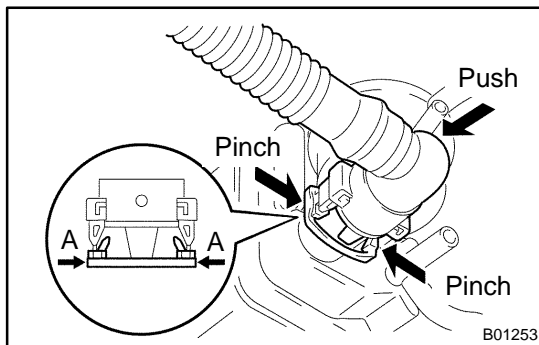
- (a) Disconnect the fuel tank to filler pipe hose from the fuel tank.

### 15. DISCONNECT FUEL TANK BREATHER HOSE

- (a) Disconnect the fuel tank breather hose from the fuel tank.

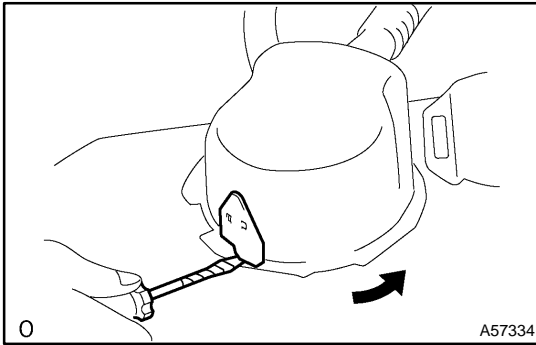
### 16. REMOVE FUEL TANK ASSY

- (a) Set the mission jack to the fuel tank.  
 (b) Remove the fuel tank bands.  
 (c) Disconnect the valve to fuel filler pipe hose from the fuel tank over fill check valve.  
 (d) Disconnect the fuel hose No. 3 from the fuel tank.



- (e) Disconnect the vent line hose from the charcoal canister.  
 (1) Push the connector deep inside.  
 (2) Pinch portion A.  
 (3) Pull out the connector.

- (f) Disconnect the fuel emission hose from the charcoal canister.  
 (g) Carefully, remove the fuel tank assembly from the vehicle.

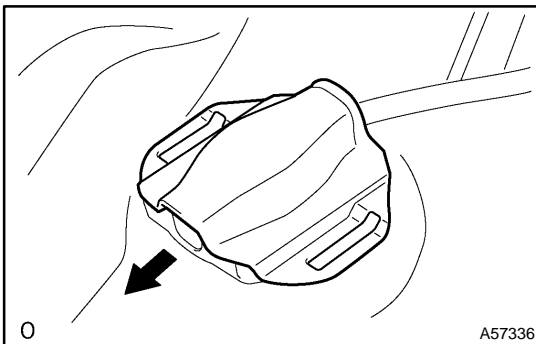
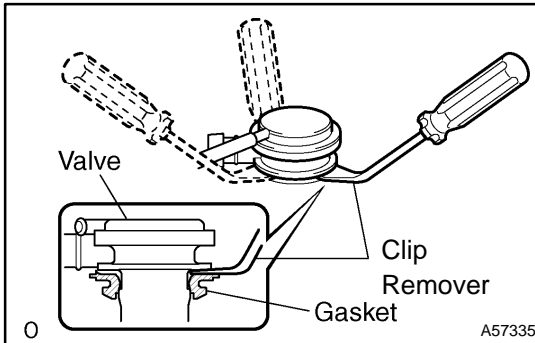


## 17. REMOVE FUEL TANK OVER FILL CHECK VALVE ASSY

- Using a screwdriver, unlock the claw and remove the protector by turning it counter clockwise.
- Insert a clip remover between the check valve and the gasket, remove the valve by gradually pushing it upward.

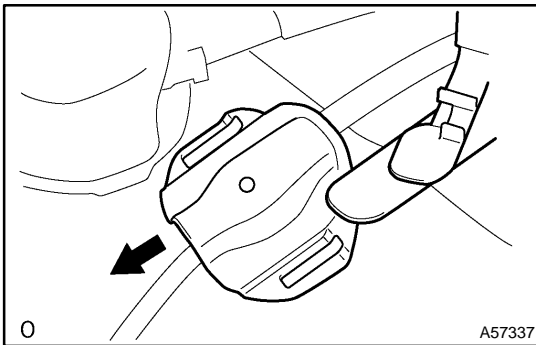
### NOTICE:

- Work accurately to maintain the sealing performance of the check valve, since it is made from resin. It is easy to damage by removing and installing forcibly.
- Be sure to install new check valve and gasket.



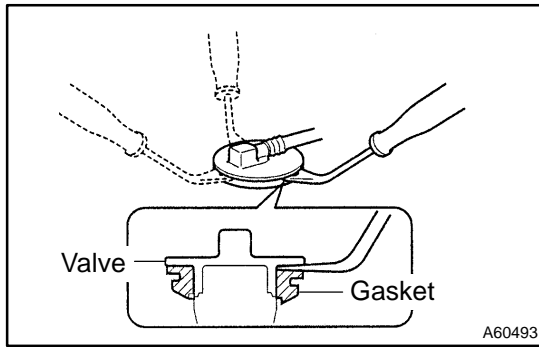
## 18. REMOVE FUEL TANK PROTECTOR NO.3

- Remove the fuel tank protector No. 3 by sliding as shown in the illustration.



## 19. REMOVE FUEL TANK PROTECTOR SUB-ASSY NO.1

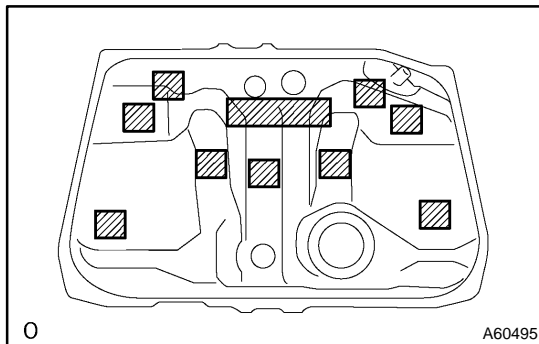
- Remove the fuel tank protector No. 1 by sliding as shown in the illustration.

**20. REMOVE FUEL CUT OFF W/TUBE VALVE ASSY**

- (a) Using a screwdriver, unlock the claw and remove the protector by turning it counter clockwise.
- (b) Insert a clip remover between the cut off valve and the gasket, remove the cut off valve by gradually pushing it upward.

**NOTICE:**

- Work accurately to maintain the sealing performance of the cut off valve, since it is made from resin. It is easy to damage by removing and installing forcibly.
- Be sure to install new cut off valve and gasket.

**21. REMOVE FUEL MAIN TUBE SUPPORT****22. REMOVE FUEL TANK CUSHION NO.1****23. REMOVE FUEL TANK CUSHION NO.2****24. INSTALL FUEL TANK CUSHION NO.1**

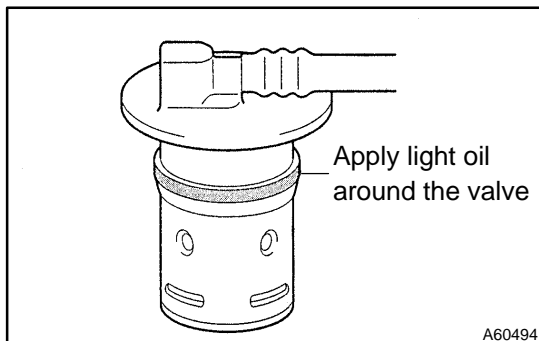
- (a) Install new fuel tank cushions as shown in the illustration.

**25. INSTALL FUEL TANK CUSHION NO.2**

- (a) Install new fuel tank cushions as shown in the illustration.

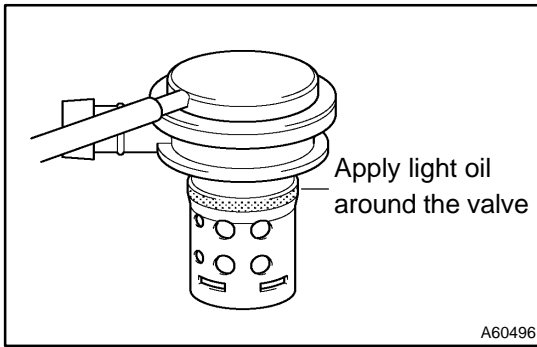
**26. INSTALL FUEL MAIN TUBE SUPPORT**

**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**

**27. INSTALL FUEL CUT OFF W/TUBE VALVE ASSY**

- (a) Install a new gasket to the fuel tank.
- (b) Apply light oil around the new fuel cut off valve as shown in the illustration, and insert it into the tank without force. Be careful not to drop the gasket into the tank.
- (c) Check that the fuel cut off valve is fully inserted.





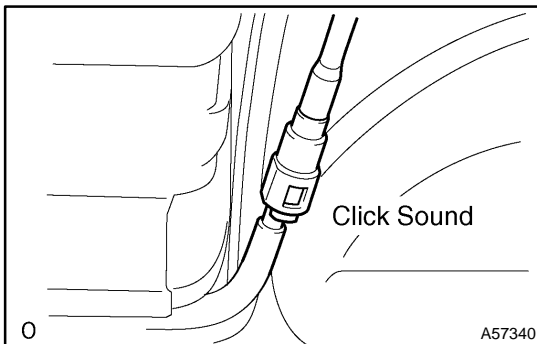
## 28. INSTALL FUEL TANK OVER FILL CHECK VALVE ASSY

- Install a new gasket to the fuel tank.
- Apply light oil around the new check valve as shown in the illustration, and insert it into the tank without force. Be careful not to drop the gasket into the tank.
- Check that the check valve is fully inserted.

## 29. INSTALL FUEL TANK ASSY

- Set the mission jack to the fuel tank.
- Install the fuel tank with the fuel tank bands.

**Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)**



## 30. INSTALL FUEL PUMP TUBE SUB-ASSY

- Push in the fuel tube connector to the fuel pipe until connector makes a "click" sound.

### NOTICE:

- Check if there is any damage or foreign objects on the connected part of the pipe.
- After connecting, check if the pipe and the connector are securely connected by pulling them.

## 31. INSTALL FUEL TANK PROTECTOR LOWER CENTER

- Install the protector with the 4 bolts.

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 32. INSTALL PARKING BRAKE CABLE ASSY NO.3

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 33. INSTALL PARKING BRAKE CABLE ASSY NO.2

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

## 34. INSTALL EXHAUST PIPE ASSY CENTER

(See page 15-5)

## 35. INSTALL FLOOR PANEL BRACE REAR

(See page 15-5)

## 36. INSTALL FUEL SUCTION TUBE ASSY W/ PUMP & GAGE (See page 11-39)

## 37. INSTALL FUEL TANK VENT TUBE SET PLATE

(See page 11-39)

## 38. INSTALL FUEL PUMP TUBE SUB-ASSY

(See page 11-39)

## 39. INSTALL REAR FLOOR SERVICE HOLE COVER

(See page 11-39)

## 40. INSPECT FUEL LEAK

## 41. CHECK EXHAUST LEAKAGE