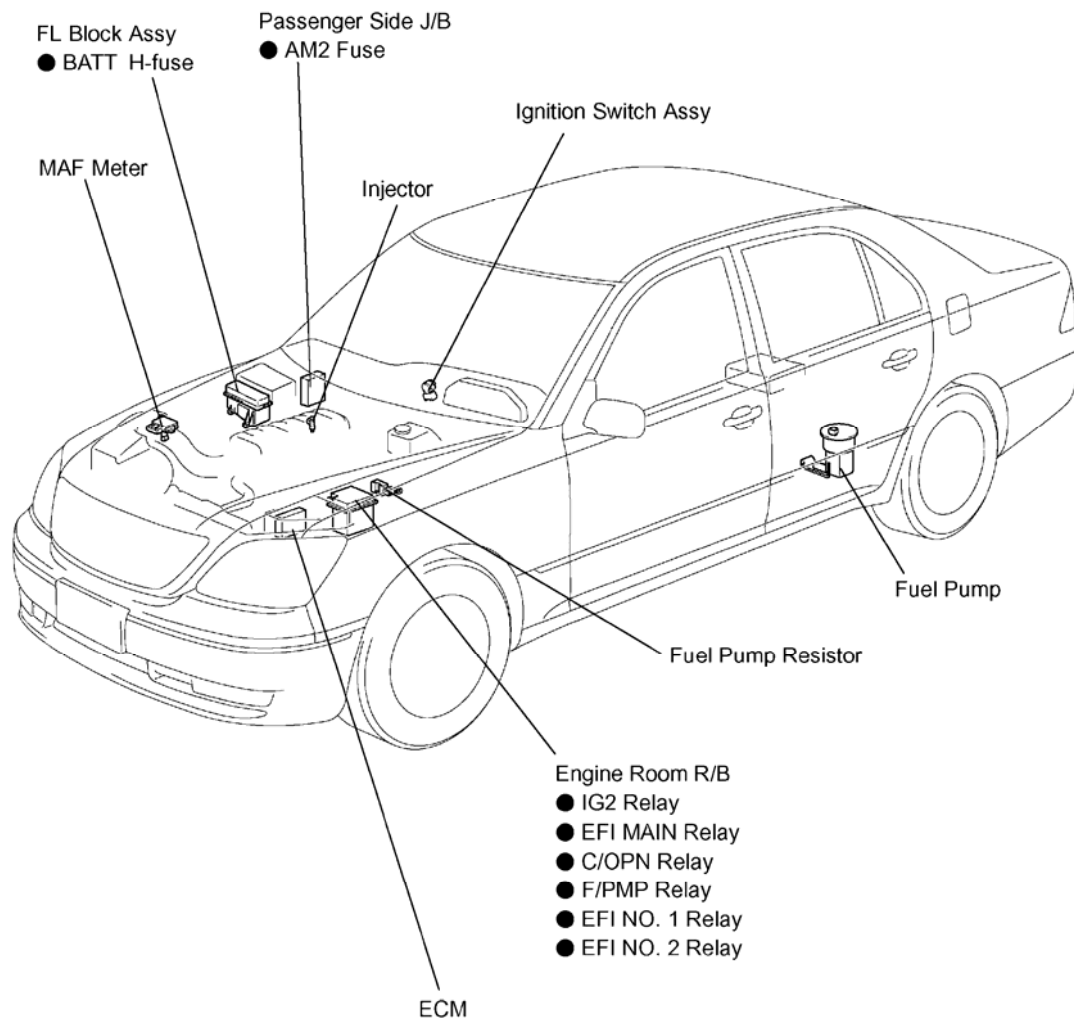


## Fuel - LS430

# FUEL SYSTEM

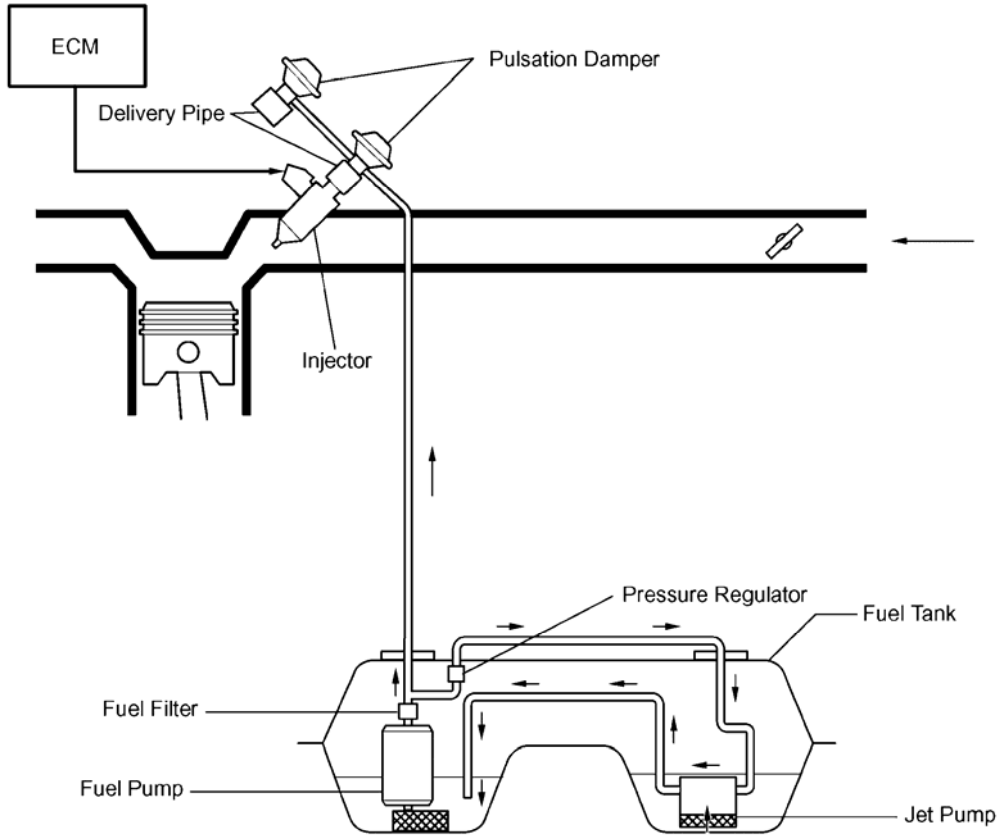
## LOCATION



Y  
G02998955

**Fig. 1: Identifying Fuel System Component Location**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## SYSTEM DIAGRAM

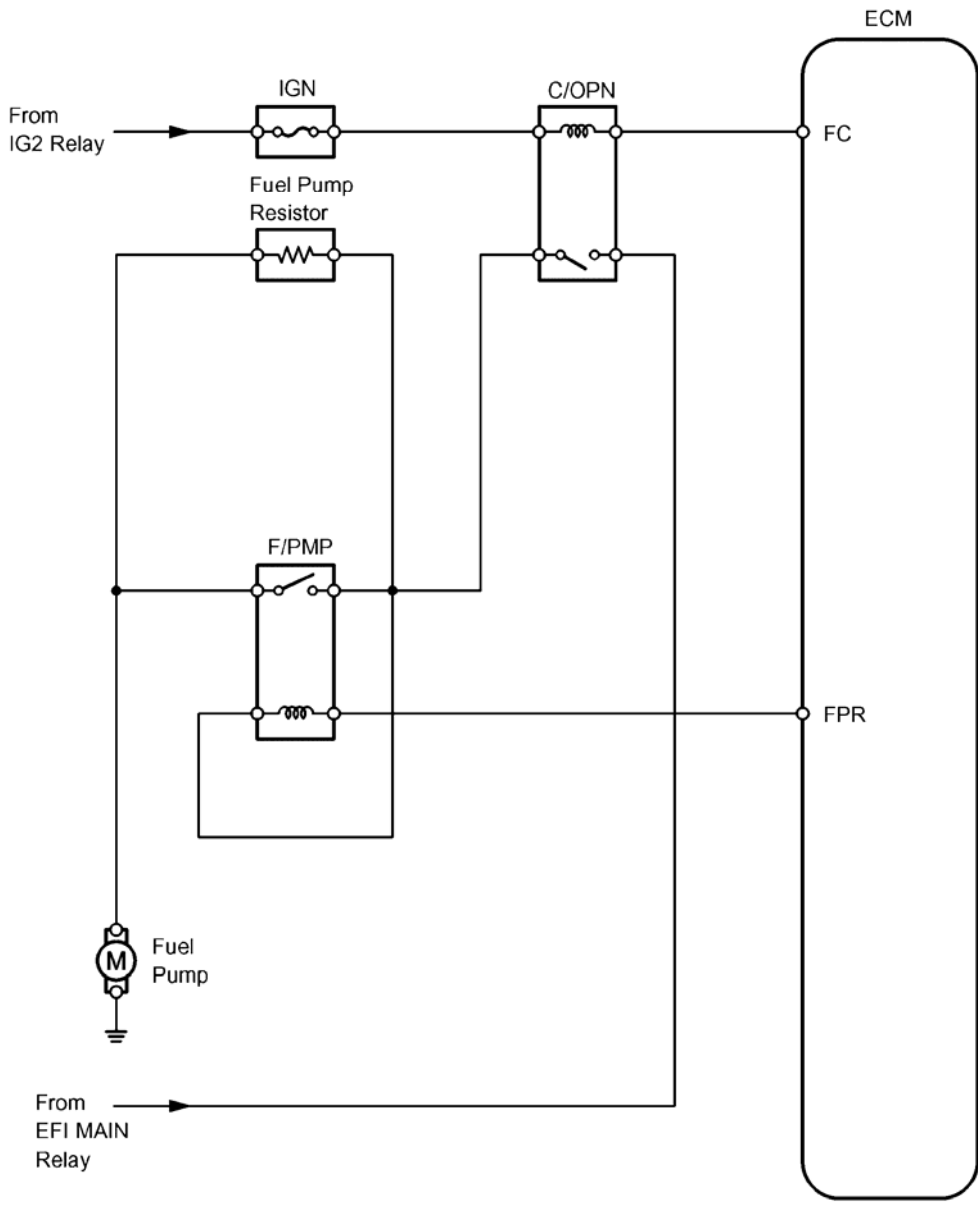


Y

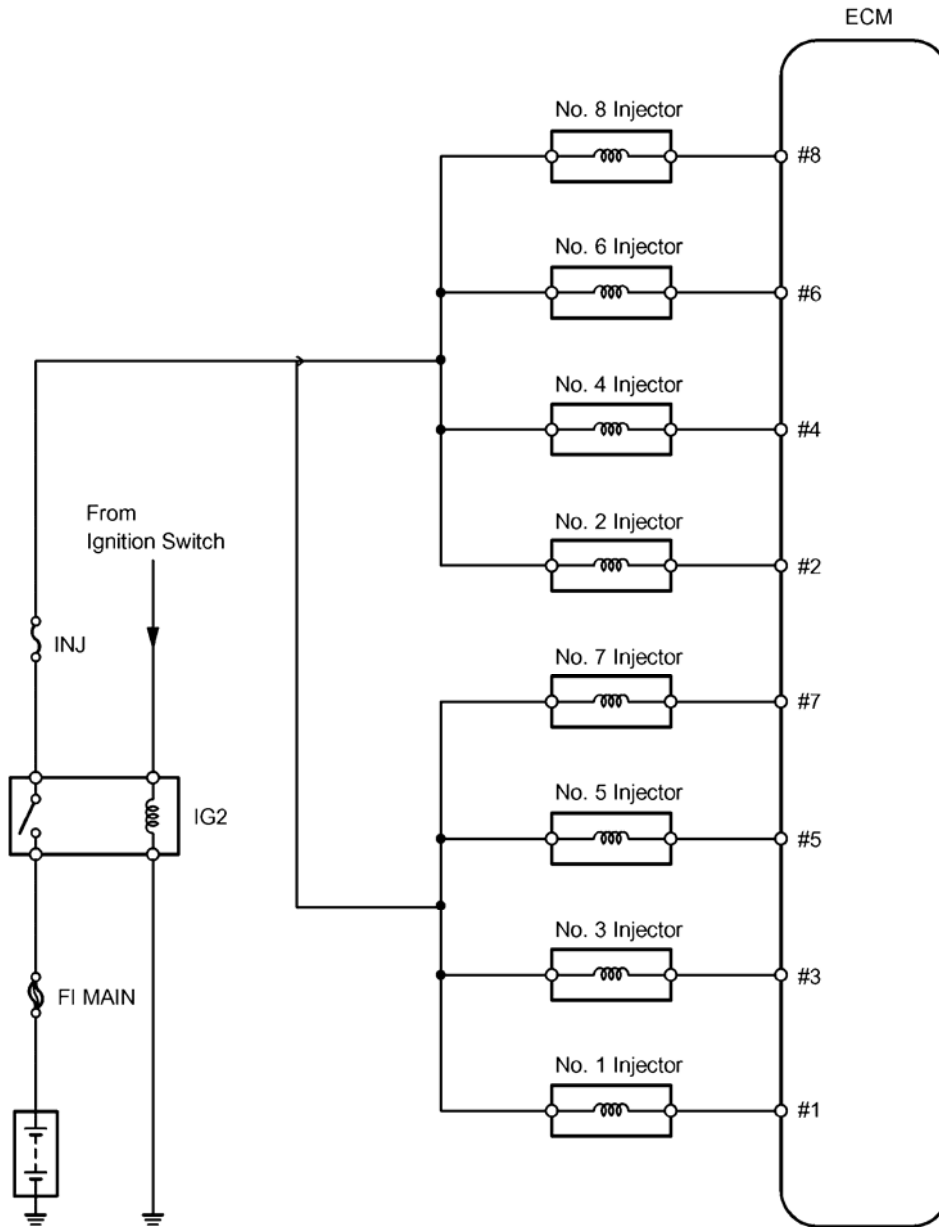
A10620

**Fig. 2: Fuel System - System Diagram (1 Of 3)**  
**Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

Fuel system is determined by the ECM based on signals from various sensors.



**Fig. 3: Fuel System - System Diagram (2 Of 3)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



P

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**Fig. 4: Fuel System - System Diagram (3 Of 3)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**PRECAUTION**

1. **BEFORE WORKING ON FUEL SYSTEM, DISCONNECT NEGATIVE (-) TERMINAL CABLE FROM BATTERY**
2. **DO NOT SMOKE OR WORK NEAR AN OPEN FLAME WHEN WORKING ON FUEL**

## SYSTEM

3. **KEEP GASOLINE AWAY FROM RUBBER AND LEATHER PARTS**
4. **DISCHARGE FUEL SYSTEM PRESSURE**

### NOTE:

- **Perform the following procedures to prevent fuel from spilling out before removing any fuel system parts.**
- **Pressure will still remain in the fuel line even after performing the following procedures. When disconnecting the fuel line, cover the opening with a shop rag or a piece of cloth to prevent fuel from spraying.**

#### a. Using the F/PMP relay:

1. Remove the engine room R/B cover upper.
2. Remove the F/PMP relay.
3. Start the engine.
4. After the engine has stopped, turn the ignition switch OFF.

**NOTE: DTC P0171 and P0174 (Lean fuel-trim) may be present. Clear DTCs after the repair.**

5. Crank the engine. Check that the engine does not start.
6. Remove the fuel tank cap to discharge pressure from the fuel tank.
7. Disconnect the negative (-) battery terminal cable.
8. Reinstall the F/PMP relay.

#### b. Using the fuel pump connector:

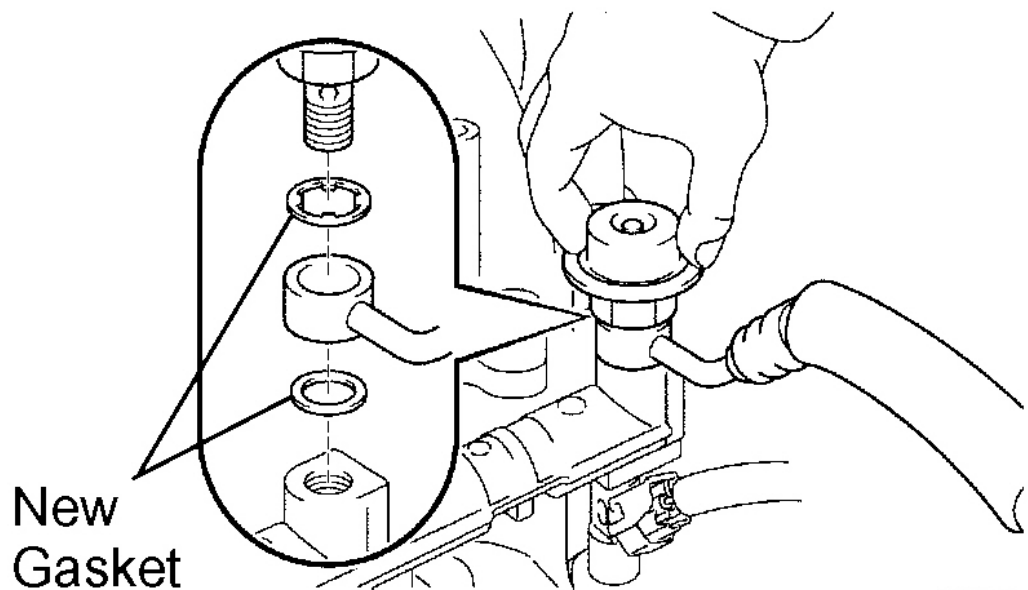
1. Remove the rear seat cushion.
2. Remove the rear floor service hole cover.
3. Disconnect the fuel pump connector.
4. Start the engine.
5. After the engine has stopped, turn the ignition switch OFF.

**NOTE: DTC P0171 and P0174 (Lean fuel-trim) may be present. Clear DTCs after the repair.**

6. Crank the engine. Check that the engine does not start.
7. Remove the fuel tank cap to discharge pressure from the fuel tank.
8. Disconnect the cable from the negative (-) battery terminal.
9. Reconnect the fuel pump connector.
10. Install the rear floor service hole cover.
11. Install the rear seat.

## 5. FUEL SYSTEM

- a. When disconnecting the high fuel pressure line, a large amount of gasoline will spill out. Observe these procedures:
  1. Perform the "DISCHARGE FUEL SYSTEM PRESSURE" procedures above. Put a container under the connection.
  2. Disconnect the fuel tube.
  3. Drain the fuel remaining inside the fuel tube.
  4. Protect the disconnected fuel tube from damage and foreign material by covering it with a plastic bag.
- b. When connecting the union bolt (fuel pressure pulsation damper) on the high pressure pipe union, observe these procedures:
  1. Always use 2 new gaskets.
  2. Tighten the union bolt by hand.



B02076

**Fig. 5: Tightening Union Bolt By Hand**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

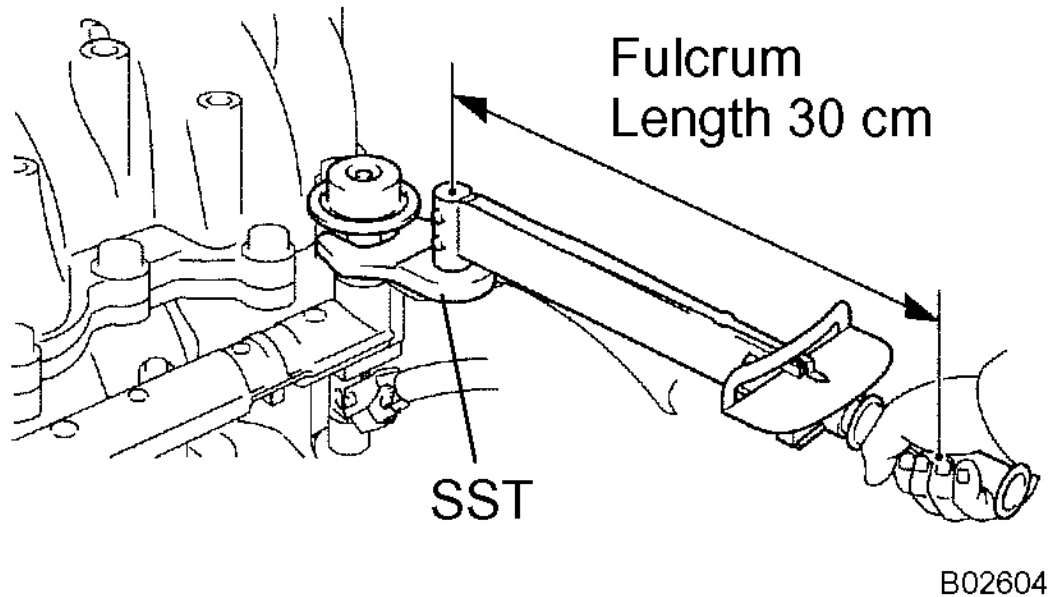
3. Using SST, tighten the union bolt to the specified torque.

SST 09612-24014 (09617-24011)

**Torque:**

33 N.m (340 kgf.cm, 24 ft.lbf) for use with SST

39 N.m (400 kgf.cm, 29 ft.lbf)

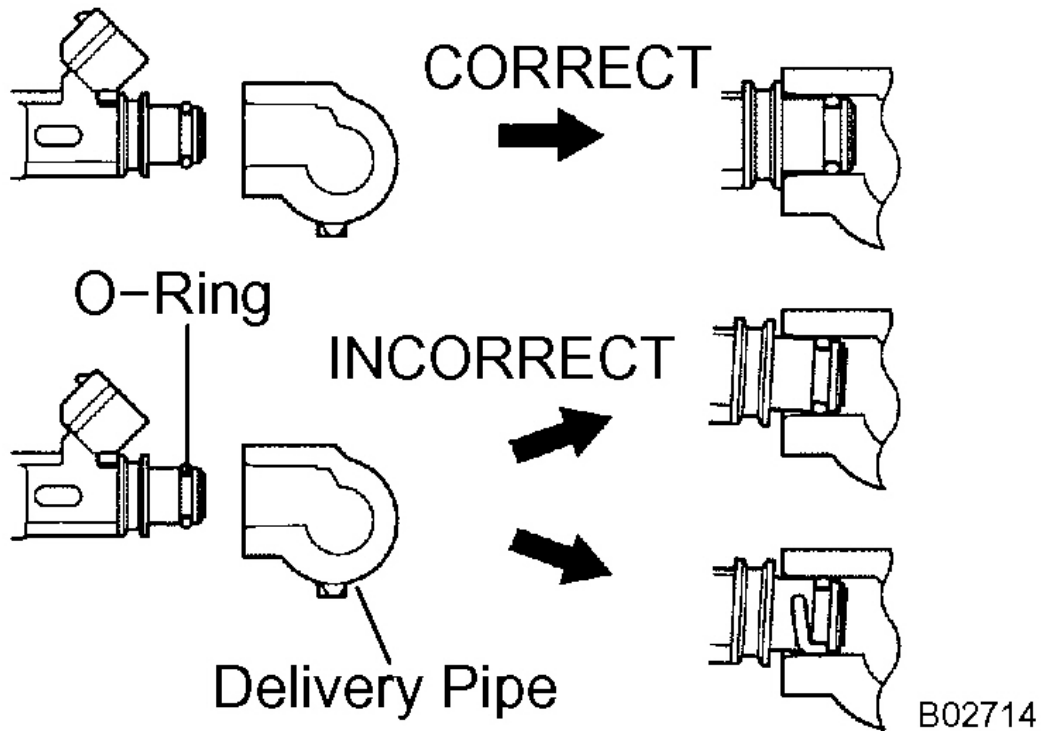


**Fig. 6: Tightening Union Bolt To Specified Torque**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

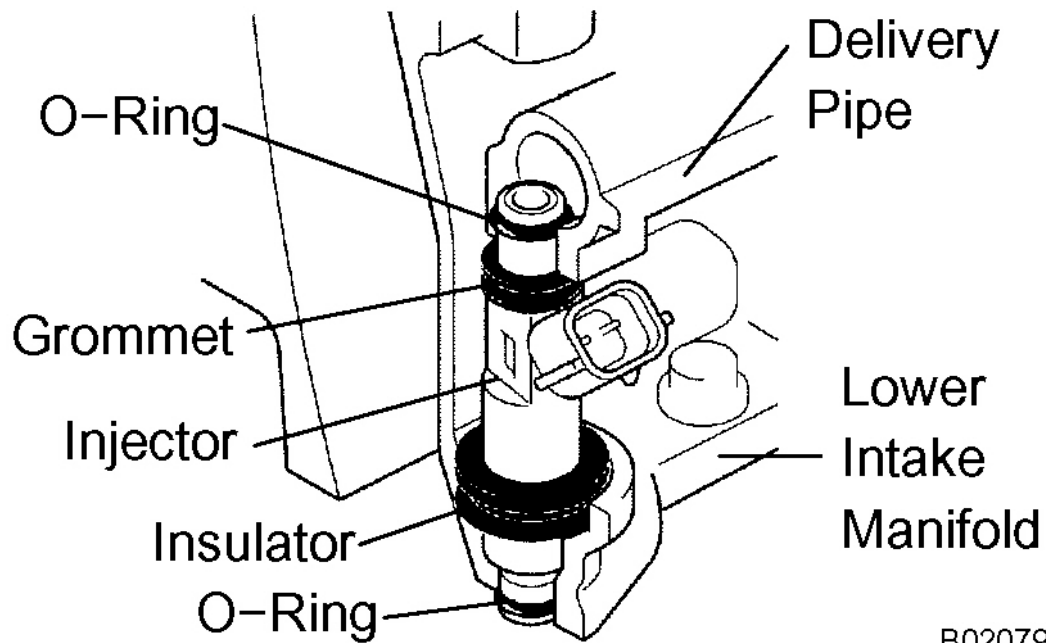
- c. Observe these precautions when removing and installing the injector.
  1. Never reuse the O-ring.
  2. When placing a new O-ring on the injector, take care not to damage it.
  3. Coat a new O-ring with spindle oil or gasoline before installing. Never use engine, gear or brake oil.



**Fig. 7: Installing O-Ring With Spindle Oil Or Gasoline**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Install the injector to the delivery pipe and the lower intake manifold as shown in the illustration. Before installing the injector, apply spindle oil or gasoline on the place where the delivery pipe or intake manifold touches O-ring of the injector.

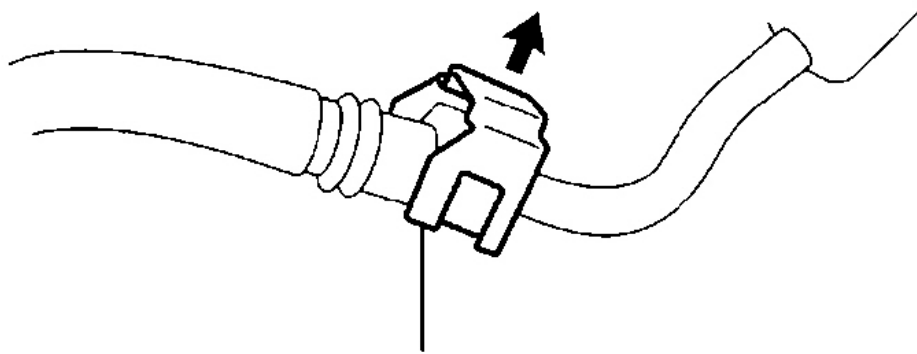




B02079

**Fig. 8: Installing Injector To Delivery Pipe And Lower Intake Manifold**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Observe these precautions when disconnecting the fuel tube connector (quick type):
  1. Disengage the lock claw by lifting up the cover, as shown in the illustration.

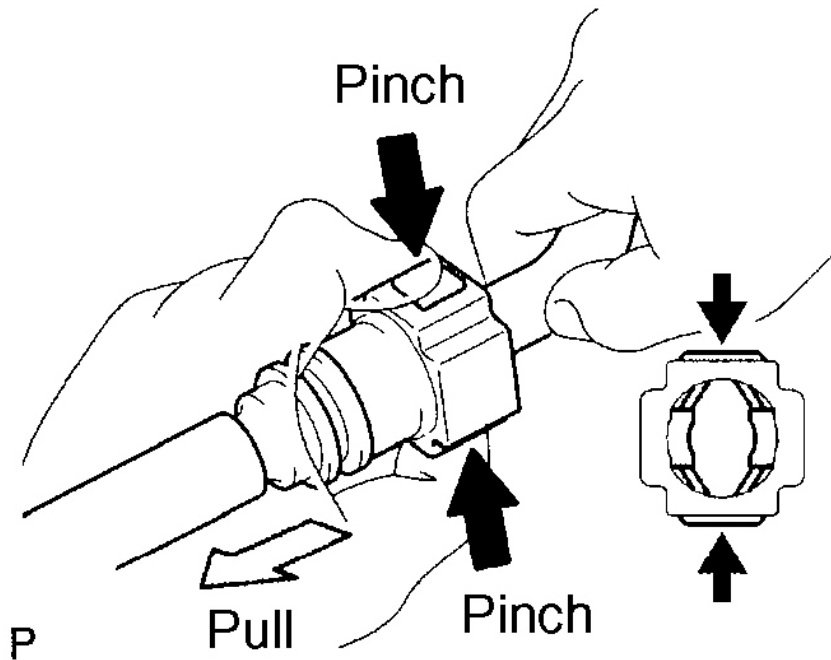


Fuel Hose Connector Cover

A099425

**Fig. 9: Lifting Up Cover, Disengaging Lock Claw**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. If the connector and pipe are stuck, pinch the connector, and push and pull the pipe to disconnect them. Do not use any tools.
3. Check for foreign matter on the seal surface of the disconnected pipe. Clean it if necessary.

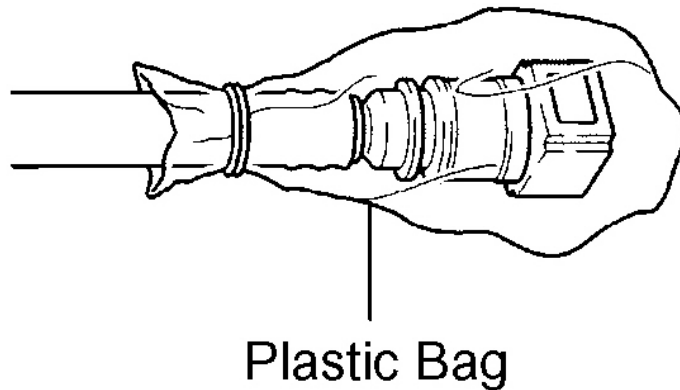


A088336

**Fig. 10: Pinching Connector**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. To protect the disconnected pipe and connector from damage and foreign matter, cover it with a plastic bag.

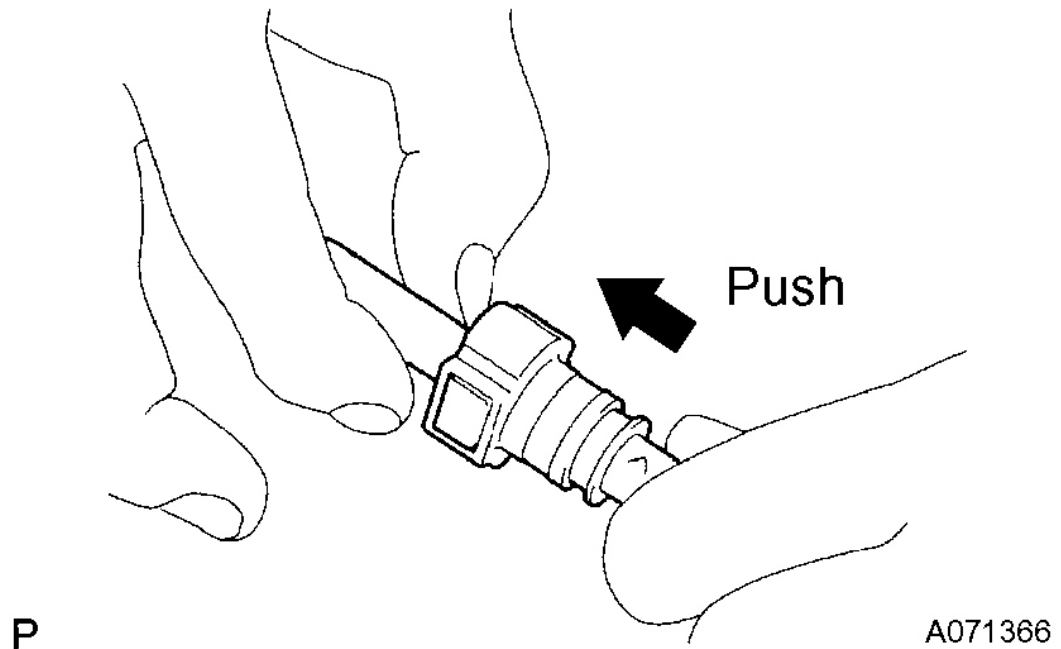


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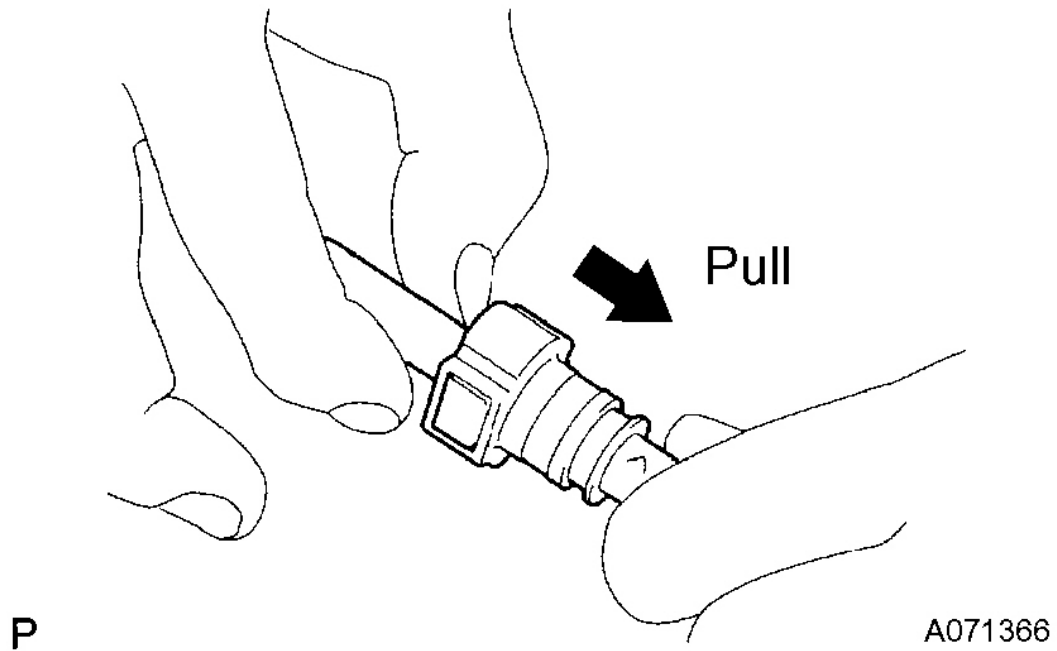
**Fig. 11: Covering Disconnected Pipe And Connector With Plastic Bag**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. Observe these precautions when connecting the fuel tube connector (quick type).
1. Check that there is no damage or foreign matter on the part of the pipe that contacts the connector.
  2. Align the axis of the connector with the axis of the pipe. Push the pipe into the connector until the connector makes a `click' sound. If the connection is too tight, apply a small amount of fresh engine oil on the tip of the pipe.



**Fig. 12: Aligning Axis Of Connector With Axis Of Pipe**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

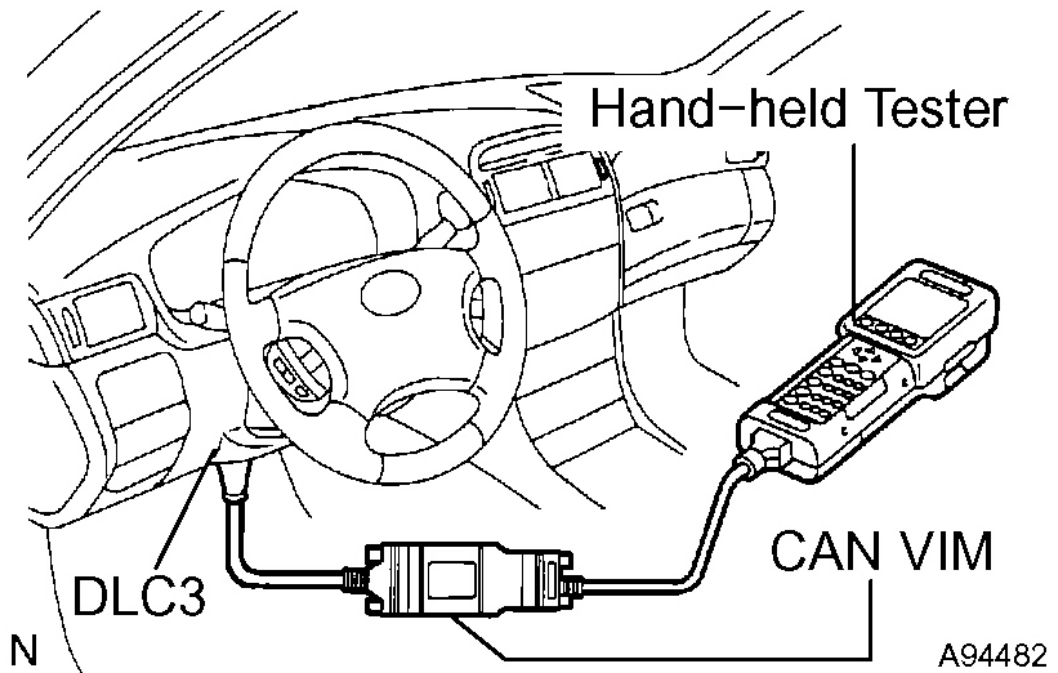
3. After connecting the pipe and connector, try to pull them apart to confirm that they are securely connected.
4. Install the No. 1 fuel pipe clamp to the connector.



**Fig. 13: Pulling Pipe And Connector**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**6. CHECK FUEL LEAK**

- a. Check that there are no fuel leaks after doing maintenance anywhere on the fuel system.
  1. Connect the hand-held tester (with CAN VIM) to the DLC3.
  2. Turn the ignition switch ON and hand-held tester main switch ON.



**Fig. 14: Connecting Hand-Held Tester (With CAN VIM) To DLC3 Connector Terminal**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

3. Select the ACTIVE TEST mode on the hand-held tester.

HINT:

Please refer to the hand-held tester operator's manual for further details.

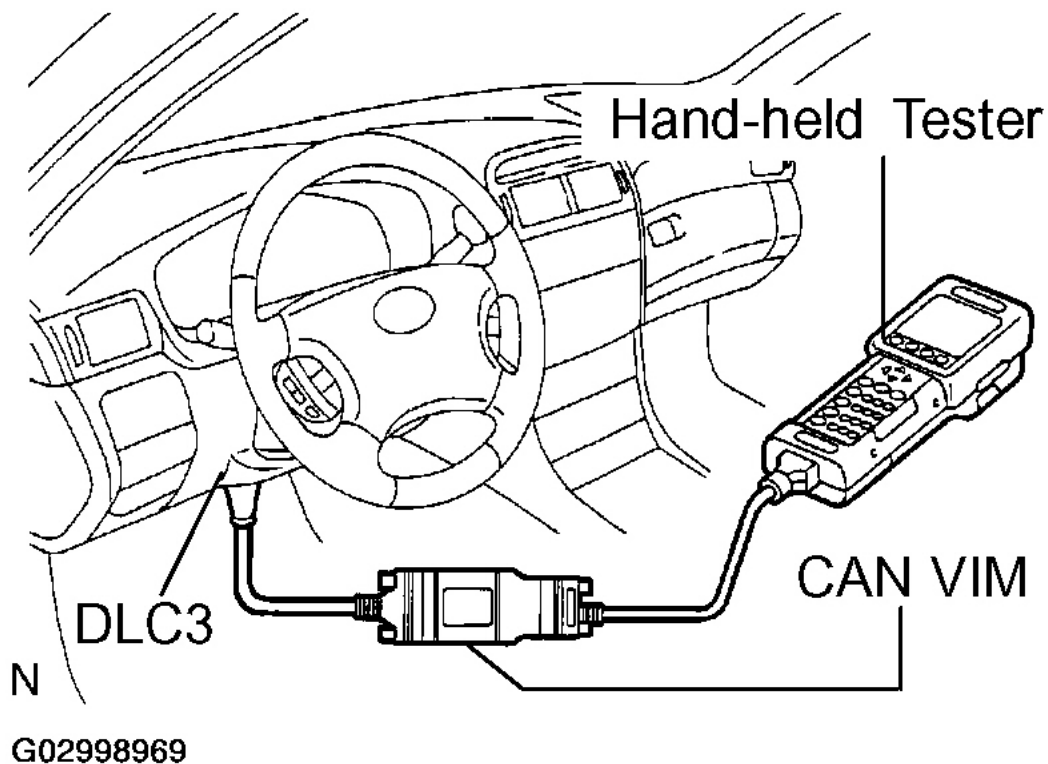
4. Check that there are no leaks from any part of the fuel system.
5. Turn the ignition switch LOCK.
6. Disconnect the hand-held tester from the DLC3.

## ON-VEHICLE INSPECTION

### 1. CHECK FUEL PUMP OPERATION

- a. Connect the hand-held tester (with CAN VIM) to the DLC3.
- b. Turn the ignition switch ON and push the hand-held tester main switch ON.

**Do not start the engine.**



**Fig. 15: Connecting Hand-Held Tester DLC3**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Select the ACTIVE TEST mode on the hand-held tester.
- d. Please refer to the hand-held tester operator's manual for further details.
- e. Check that there is pressure in the fuel inlet hose from the fuel filter.

HINT:

If there is fuel pressure, you will hear the sound of fuel flowing. If there is no pressure, check the fusible link, fuses, EFI MAIN relay, fuel pump, ECM and wiring connections.

- f. Turn the ignition switch to LOCK.
- g. Disconnect the hand-held tester from the DLC3.

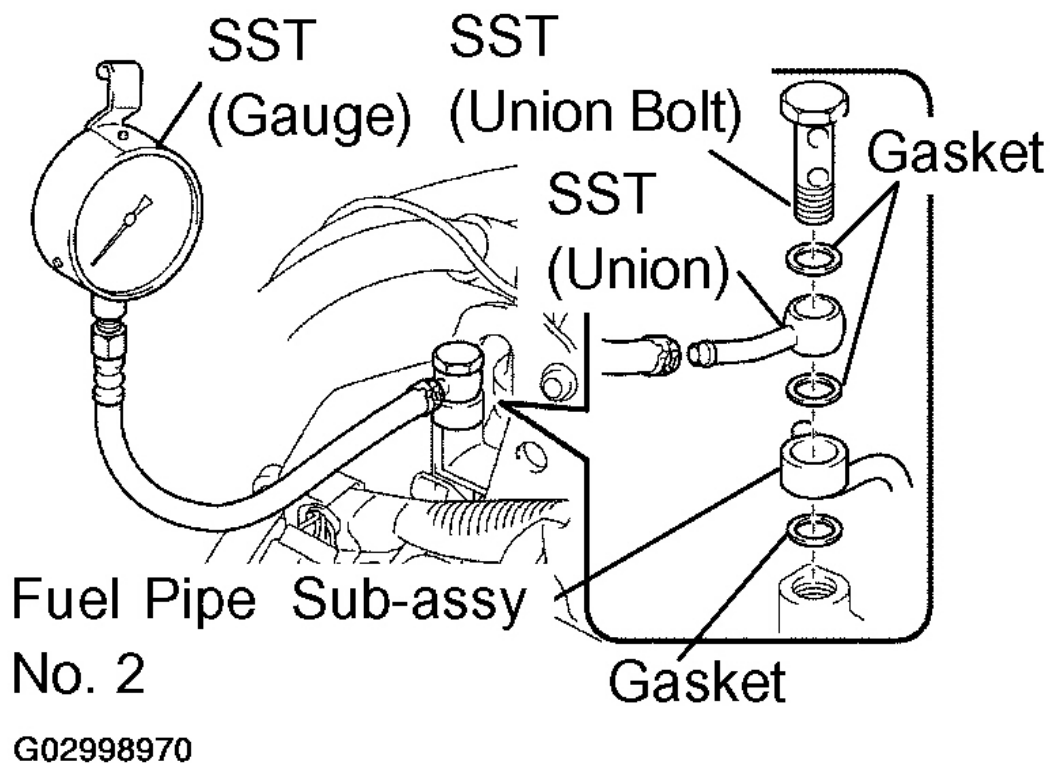
## 2. CHECK FUEL PRESSURE

- a. Check that the battery positive voltage is above 12 V.
- b. Disconnect the negative (-) terminal cable from the battery.
- c. Remove the fuel pressure pulsation damper from the RH delivery pipe (see **REPLACEMENT**).
- d. Install the fuel pipe sub-assy No. 2 and SST (pressure gauge) to the delivery pipe with the 3 lower

gaskets and SST (union bolt).

SST 09268-45014 (09268-41190, 90405-06167)

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



**Fig. 16: Checking Fuel Pressure**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Wipe off any splattered gasoline.
- f. Reconnect the negative (-) terminal cable to the battery.
- g. Connect the hand-held tester (with CAN VIM) to the DLC3 (see step 1 (a) b c d to (e)).
- h. Measure the fuel pressure.

**Fuel pressure:**

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

If pressure is high, replace the fuel pressure regulator.

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



pressure regulator.

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

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

- l. Stop the engine.
- m. 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**

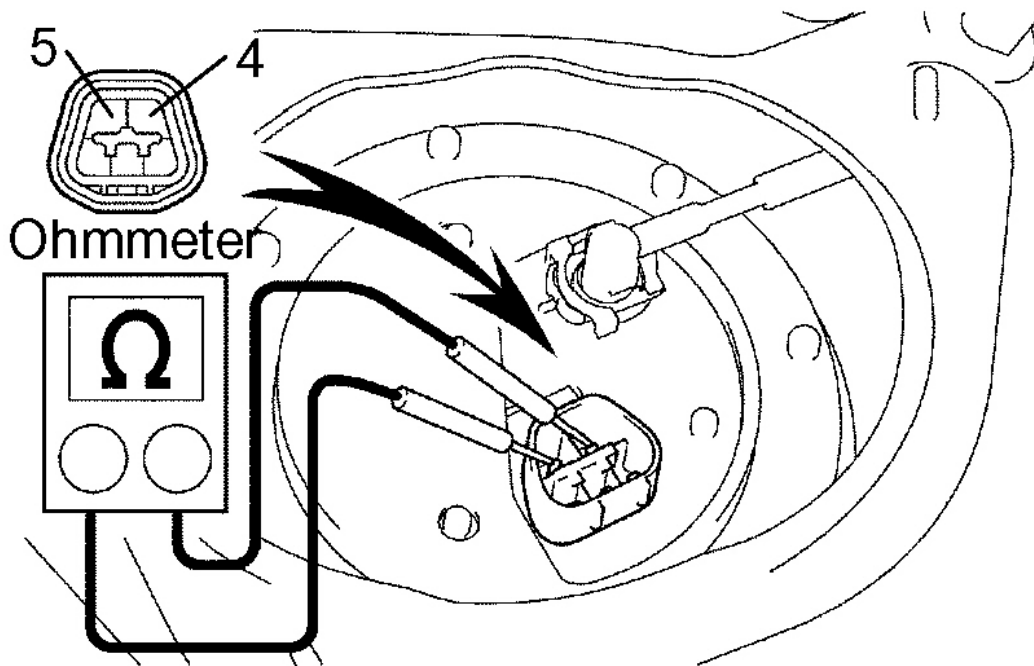
If pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

- n. After checking fuel pressure, disconnect the negative (-) terminal cable from the battery and carefully remove the SST to prevent gasoline from spilling.

SST 09268-45014

- o. Reinstall the fuel pressure pulsation damper to the RH delivery pipe (see **REPLACEMENT** ).
- p. Reconnect the negative (-) terminal cable to the battery.
- q. Check for fuel leaks.

### 3. **INSPECT FUEL PUMP**



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**Fig. 17: Measuring Resistance Between Terminals 4 And 5**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

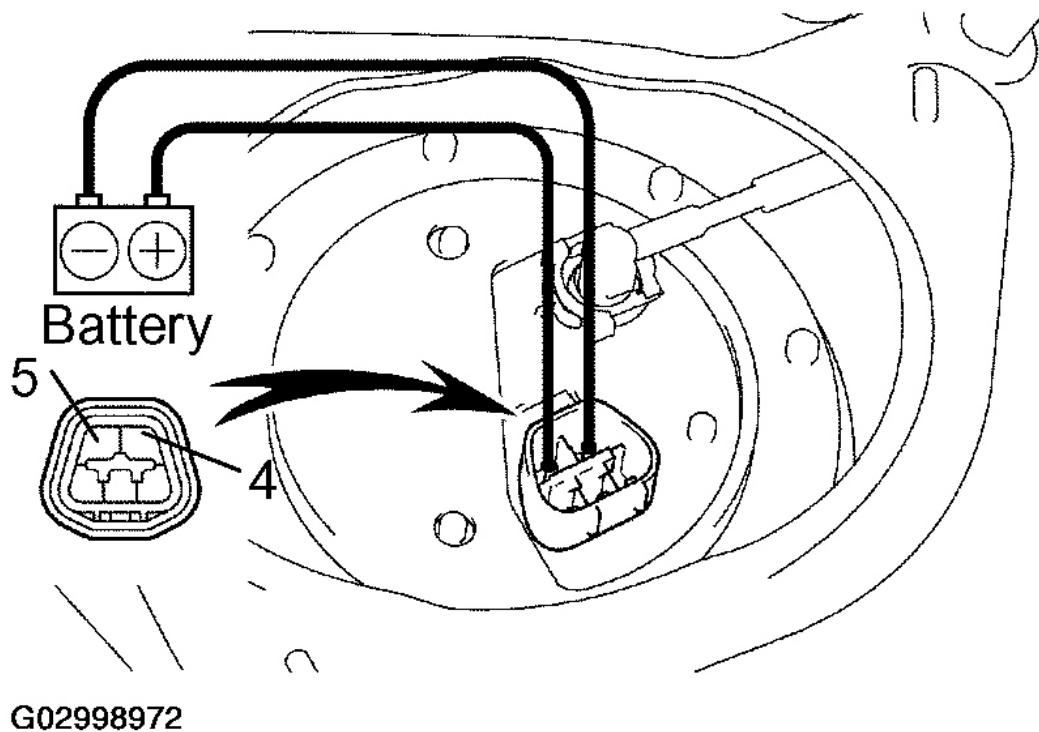
- a. Remove the rear seat cushion.
- b. Remove the 3 cap nuts and floor service hole cover.
- c. Disconnect the fuel pump & sender gauge connector.
- d. Using an ohmmeter, measure the resistance between terminals 4 and 5.

**Standard: 0.2 to 3.0 ohms at 20°C (68°F)**

If the resistance is not as specified, replace the fuel pump.

- e. Inspect the fuel pump operation.

Connect the battery's positive (+) lead to terminal 4 of the connector, and the negative (-) lead to terminal 5. Check that the fuel pump operates.



**Fig. 18: Inspecting Fuel Pump Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:**

- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep the fuel pump as far away from the battery as possible.
- Always turn on and off the voltage on the battery side, not the fuel pump side.

If operation is not as specified, replace the fuel pump.

- f. Reconnect the fuel pump & sender gauge connector.
- g. Reinstall the floor service hole cover with the cap nuts.
- h. Reinstall the rear seat cushion.

**INSPECTION**

1. **INSPECT FUEL INJECTOR ASSY**
  - a. Inspect the injector resistance.

Using an ohmmeter, measure the resistance between the terminals.

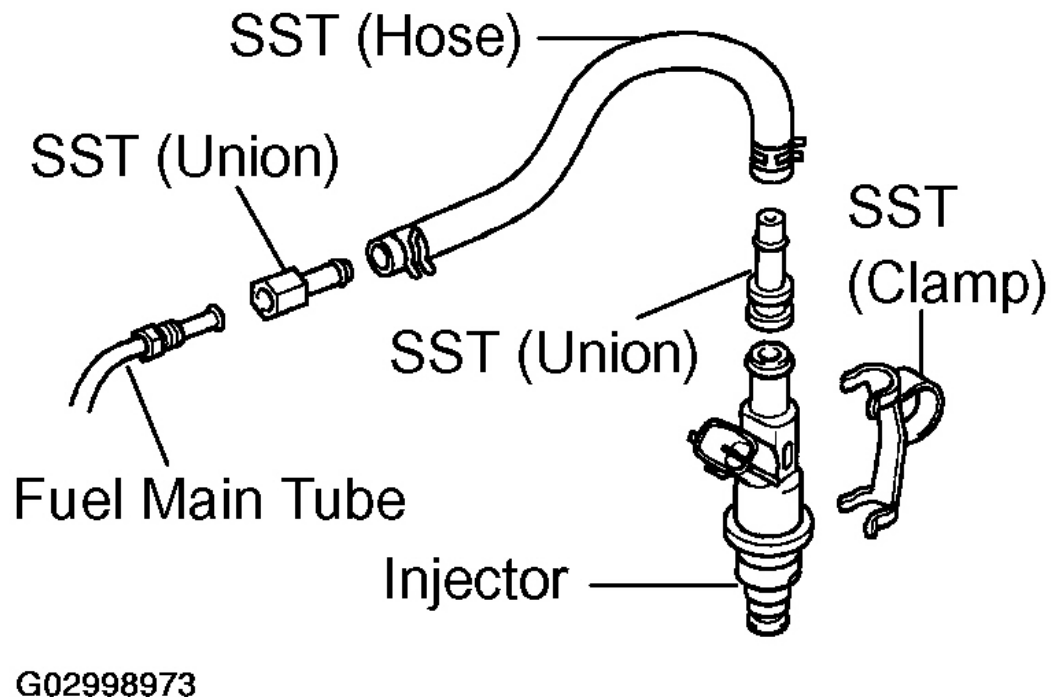
**Standard: 13.4 to 14.2 ohms at 20°C (68°F)**

HINT:

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

- b. Inspect the injector injection.

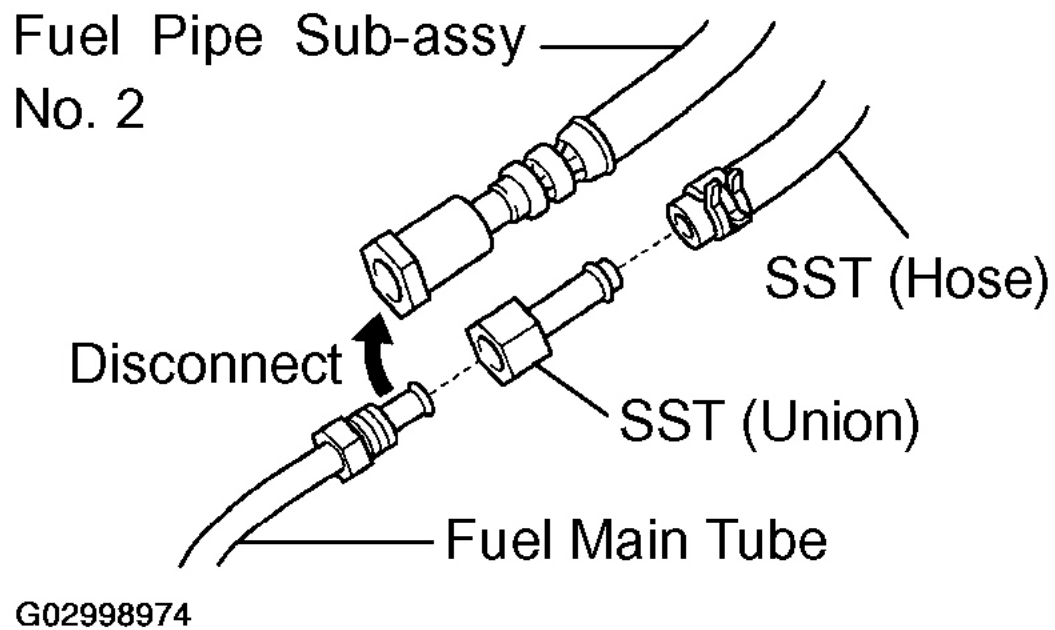
**CAUTION: Keep injector clear of sparks during the test.**



**Fig. 19: Inspecting Injector Injection**

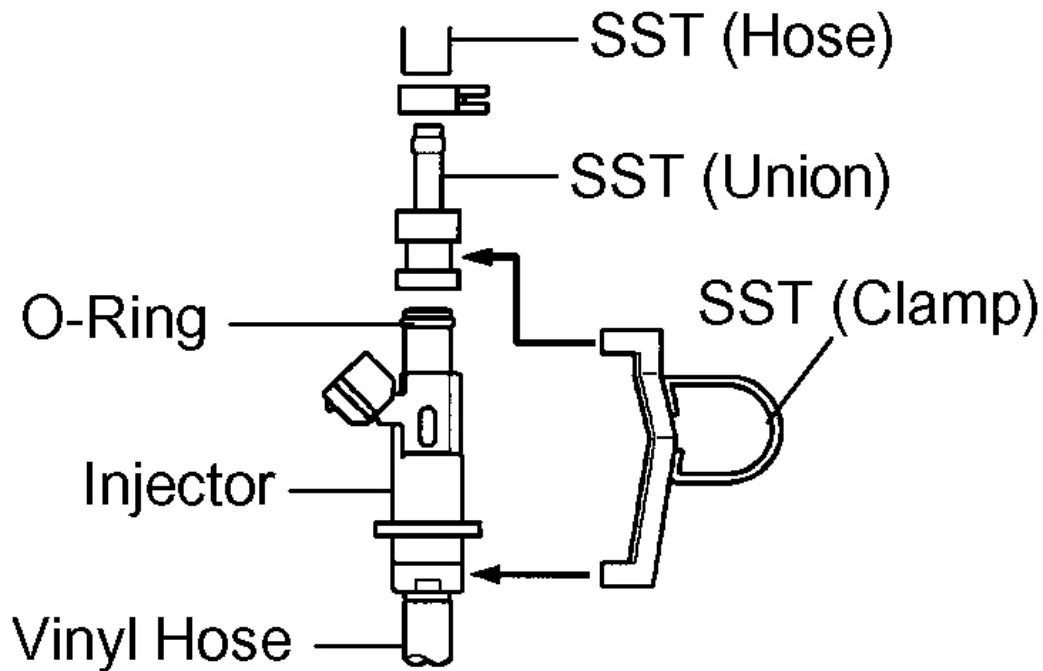
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Disconnect the fuel pipe No. 2 from the fuel main tube.  
d. Temporarily install SST (union) to the fuel pipe No. 2.  
SST 09268-41047 (09268-52011)  
e. Tighten the flare nut on the fuel main tube (see **PRECAUTION**).



**Fig. 20: Disconnecting Main Fuel Pipe**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. Connect SST (hose) to the SST (union).  
SST 09268-41047



G02998975

**Fig. 21: Installing O-Ring To Injector**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

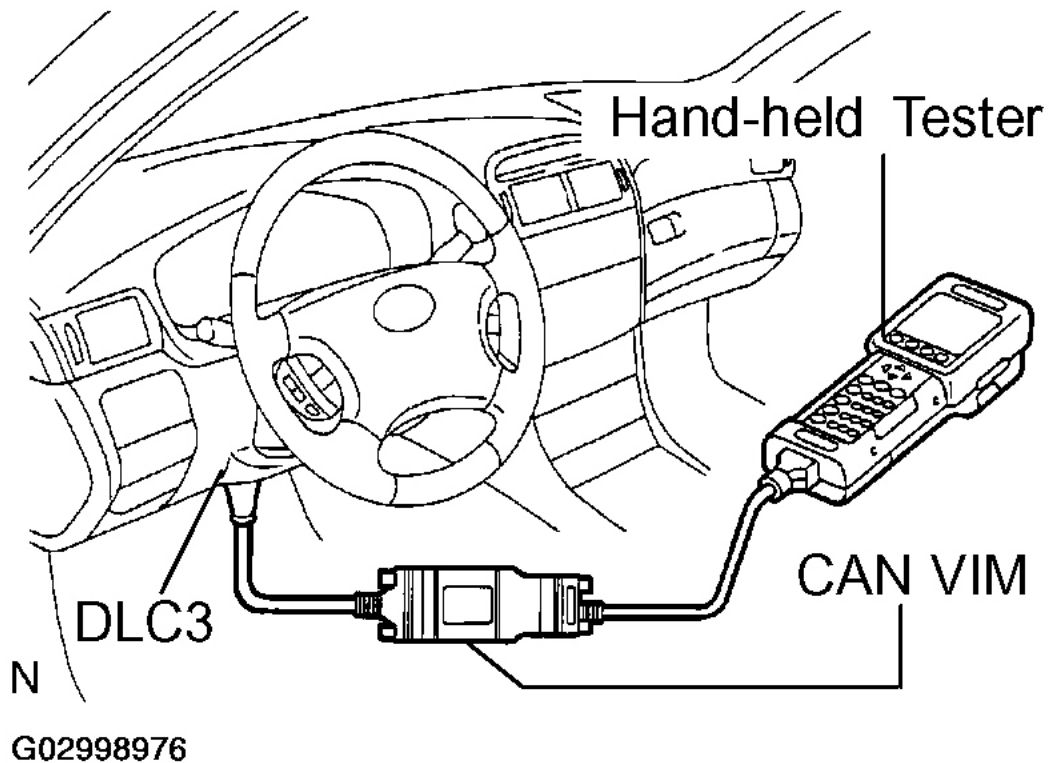
- g. Install a new O-ring to the injector.
- h. Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp).  
SST 09268-41047 (09268-41110, 09268-41300)
- i. Put the injector into the graduated cylinder.

**CAUTION: Install a suitable vinyl hose onto the injector to prevent gasoline from spilling out.**

- j. Connect the hand-held tester (with CAN VIM) to the DLC3.
- k. Connect the battery negative (-) cable to the battery.
- l. Turn the ignition switch ON and push the hand-held tester main switch ON.

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

- m. Select the ACTIVE TEST mode on the hand-held tester.
- n. Please refer to the hand-held tester operator's manual for further details.



**Fig. 22: Connecting Hand-Held Tester DLC3**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- o. 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 times.

SST 09842-30070

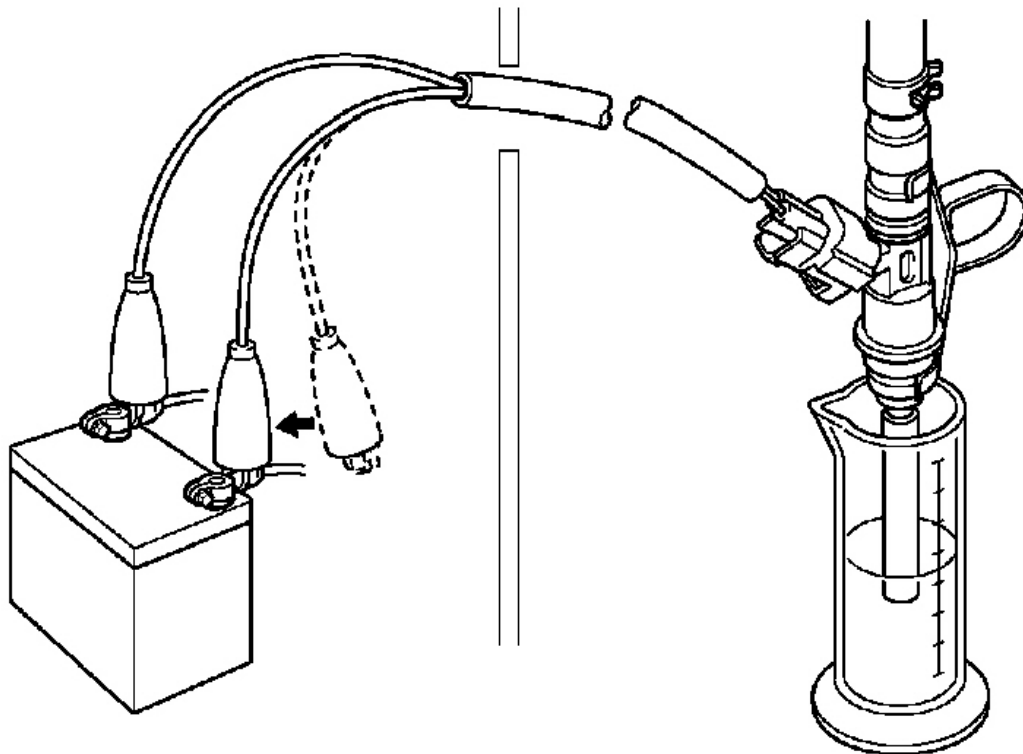
**Injection volume:**

**60 to 73 cm<sup>3</sup> (3.7 to 4.5 cu in.) per 15 seconds. Difference between each injector:**

**13 cm<sup>3</sup> (0.6 cu in.) or less**

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

- p. Inspect the fuel leakage.



**G02998977**

**Fig. 23: Measuring Injection Volume**

**Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

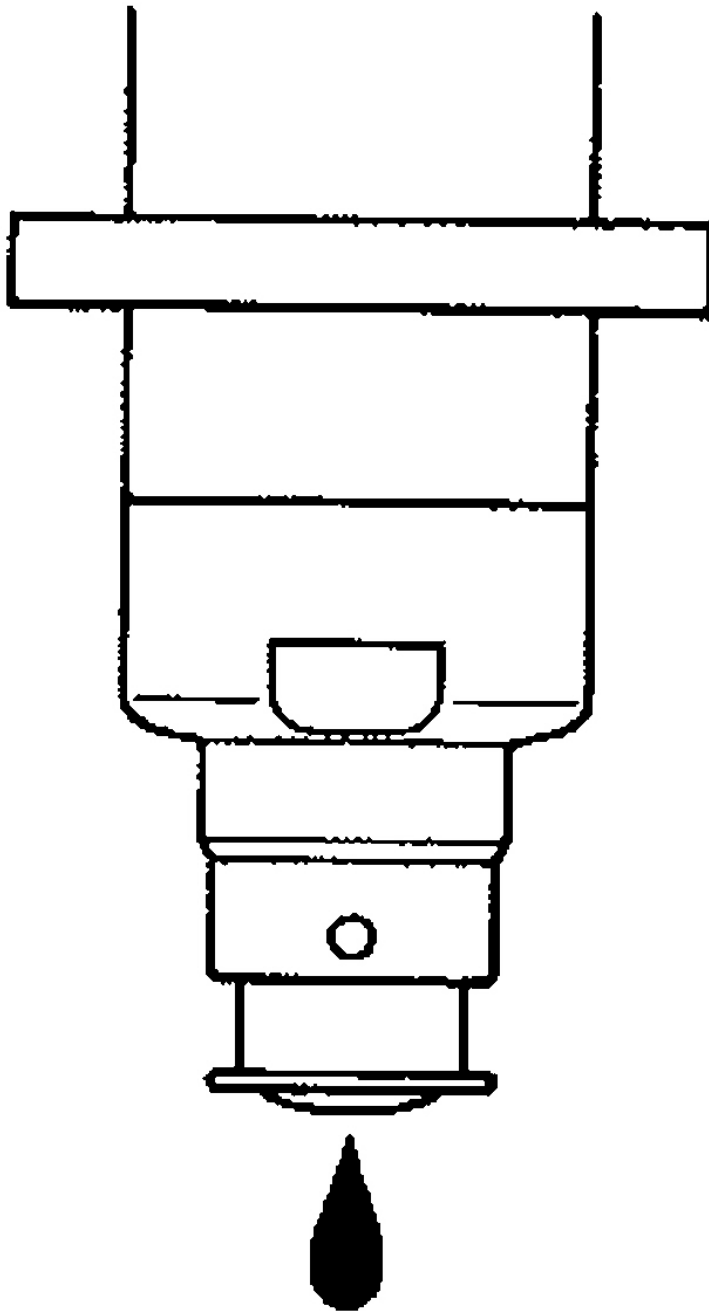
1. In the condition above, disconnect the tester probes of SST (wire) from the battery and check the fuel leakage from the injector.

SST 09842-30070

**Fuel drop: 1 drop or less per 27 minutes**

- q. Turn the ignition switch OFF.
- r. Disconnect the negative (-) terminal cable from the battery.
- s. Remove the SST.  
SST 09268-41047, 09842-30070
- t. Disconnect the hand-held tester from the DLC3.





G02998978

**Fig. 24: Inspecting Fuel Leakage**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

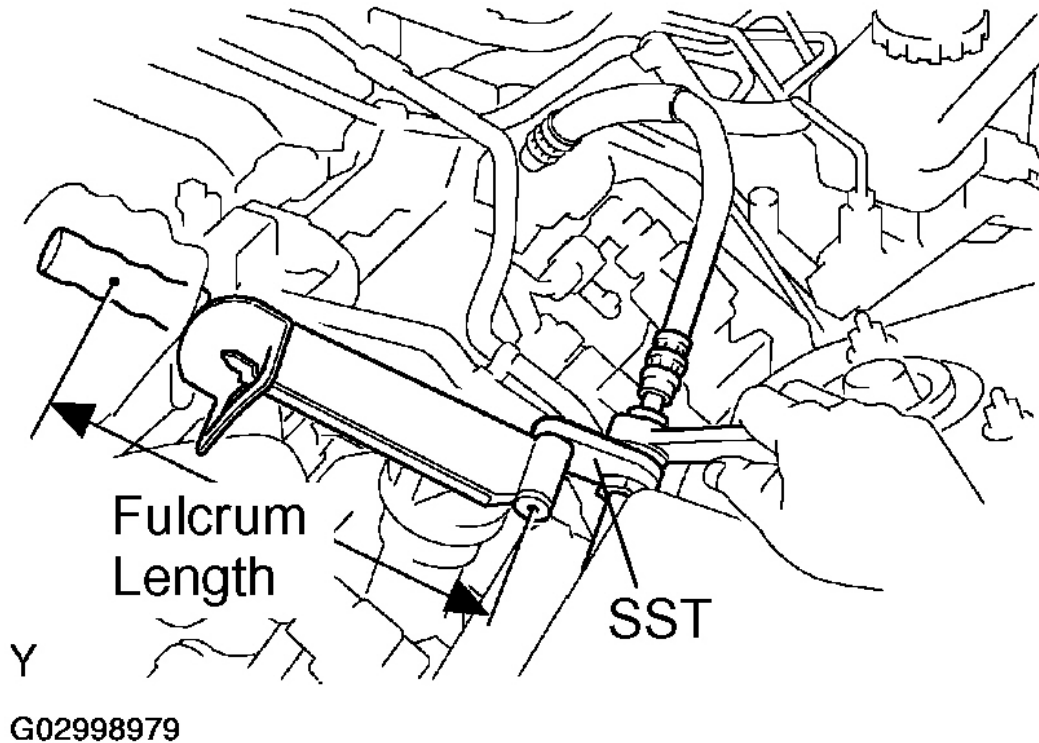
- u. Reconnect the fuel pipe No. 2 to the fuel main tube.

SST 09023-12701

**Torque: 30 N.m (310 kgf.cm, 22 ft.lbf)**

HINT:

Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).



**Fig. 25: Measuring Fulcrum Length**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSPECT FUEL PUMP ASSY

- a. Inspect the fuel pump resistance.
  1. Using an ohmmeter, measure the resistance between terminals 4 and 5.

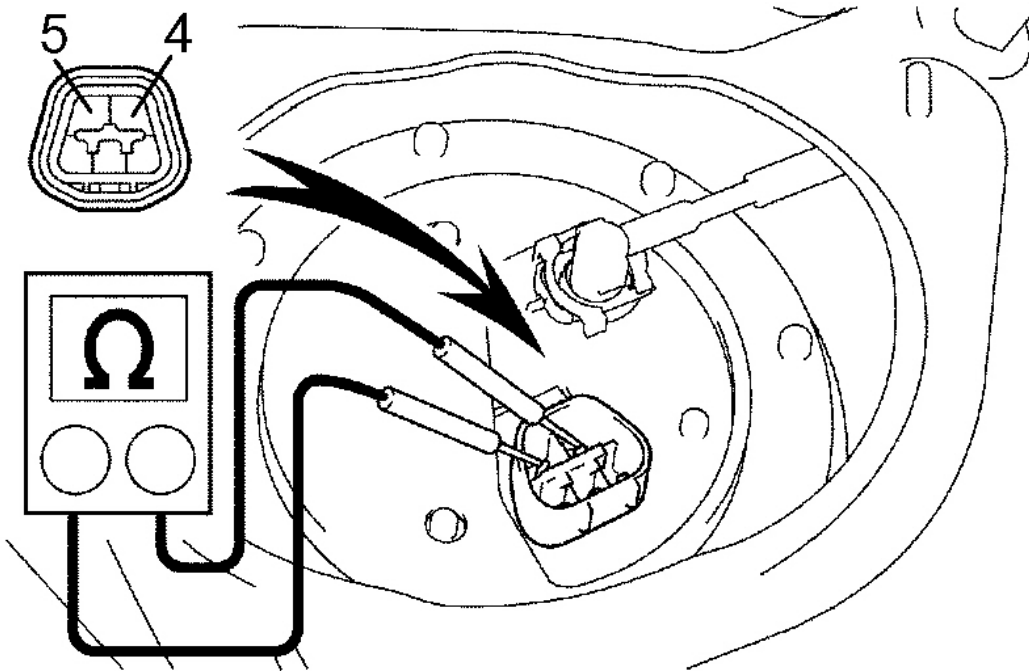
**Standard: 0.2 to 3.0 ohms at 20°C (68°F)**

- b. Inspect fuel pump operation.
  1. Apply battery voltage to both terminals. Check that the pump operates.

### NOTE:

- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.

- Keep the fuel pump as far away from the battery as possible.
- Always turn on and off the voltage on the battery side, not the fuel pump side.

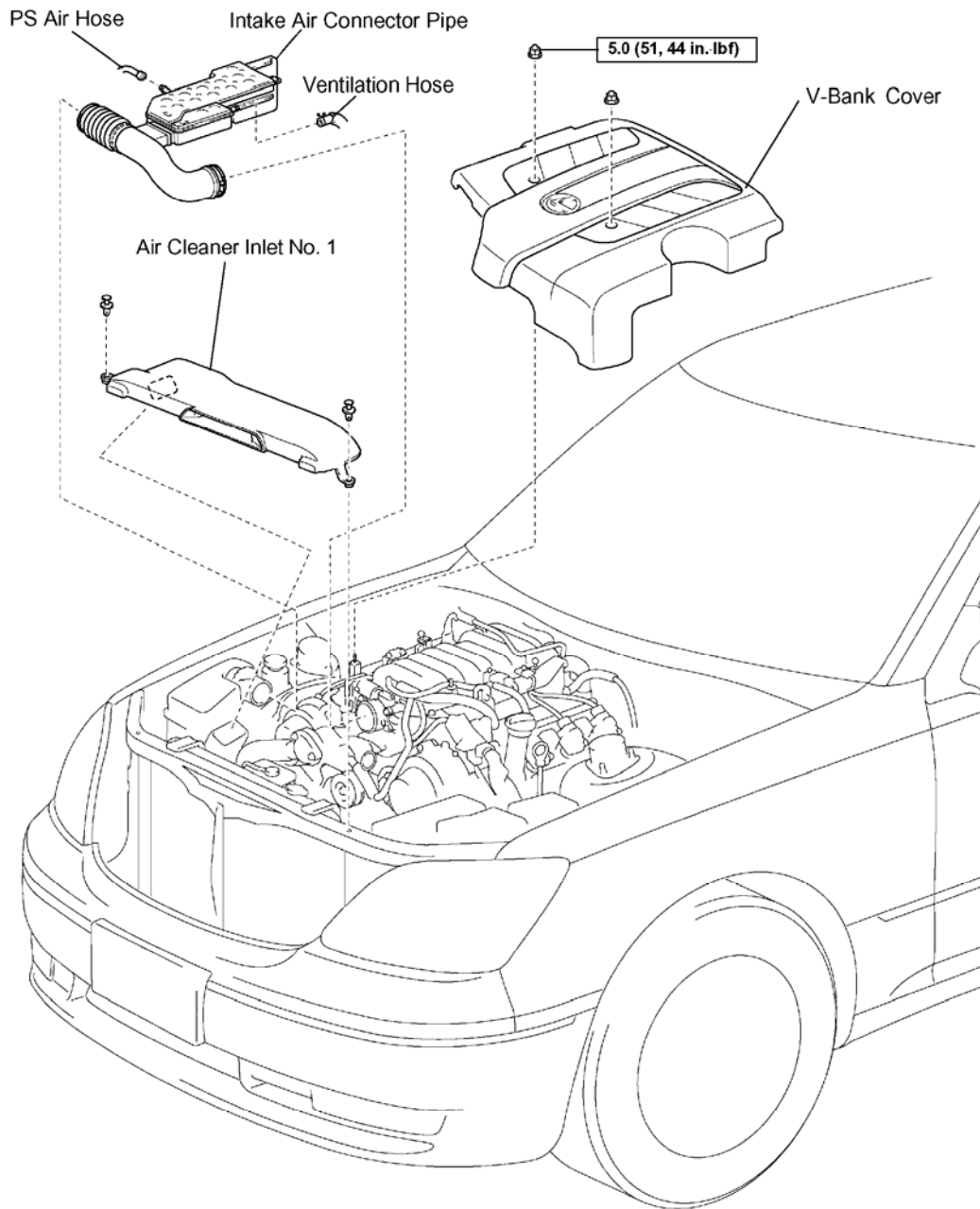


G02998980

**Fig. 26: Measuring Resistance Between Terminals 4 And 5**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## FUEL INJECTOR ASSY

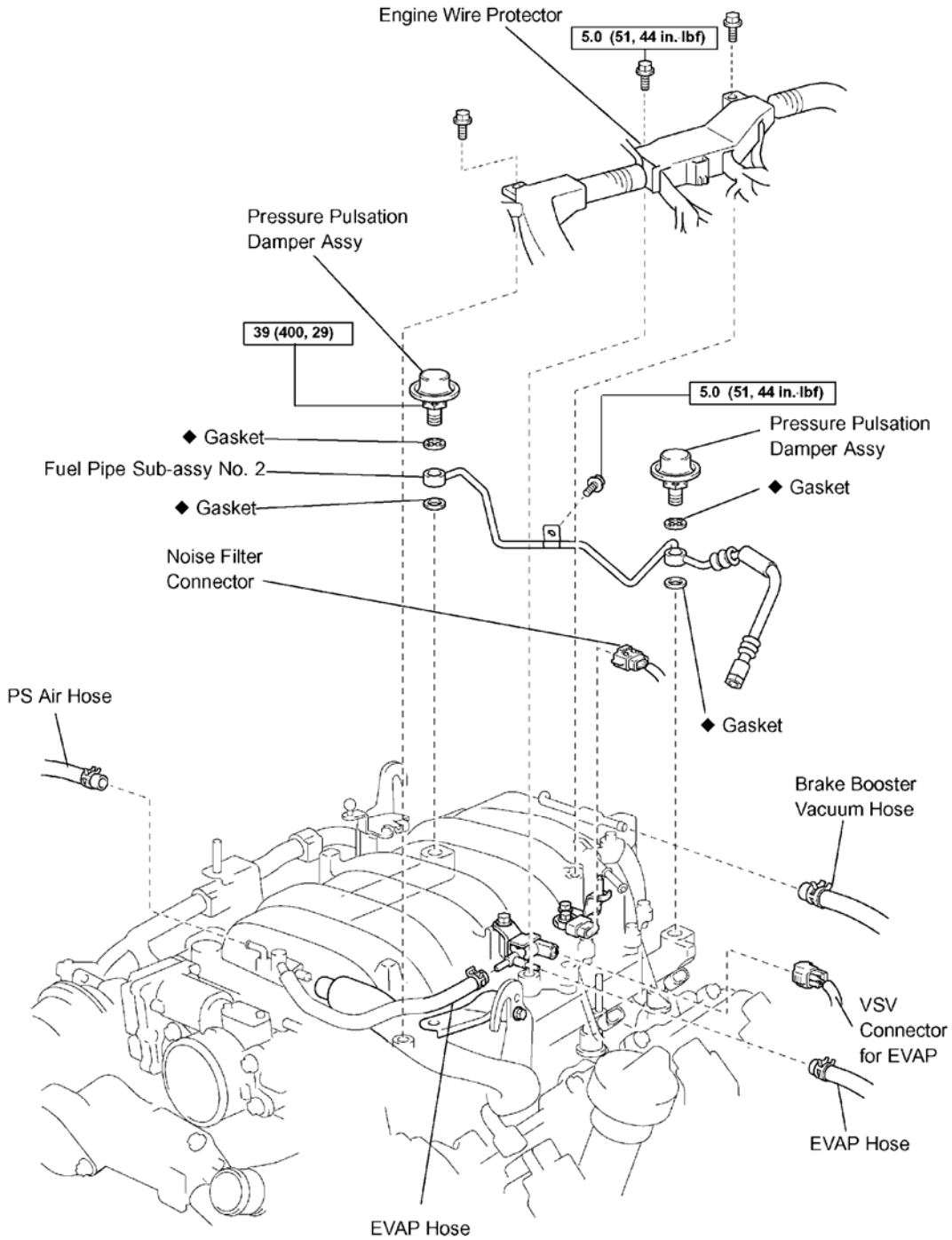
### COMPONENTS



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

G0298881

**Fig. 27: Exploded View Of Fuel Injector Assy Components (1 Of 3)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

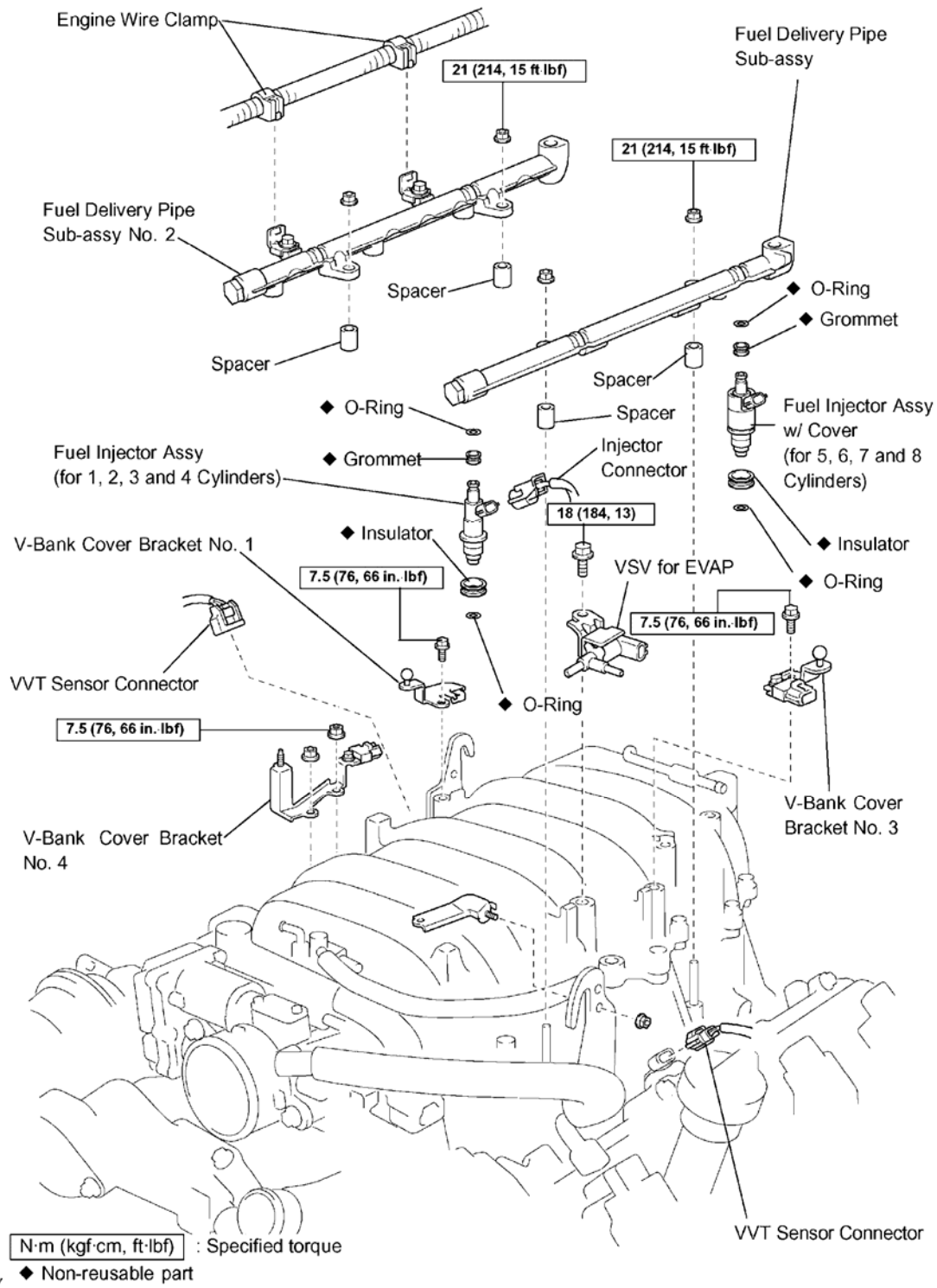


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

G02998982

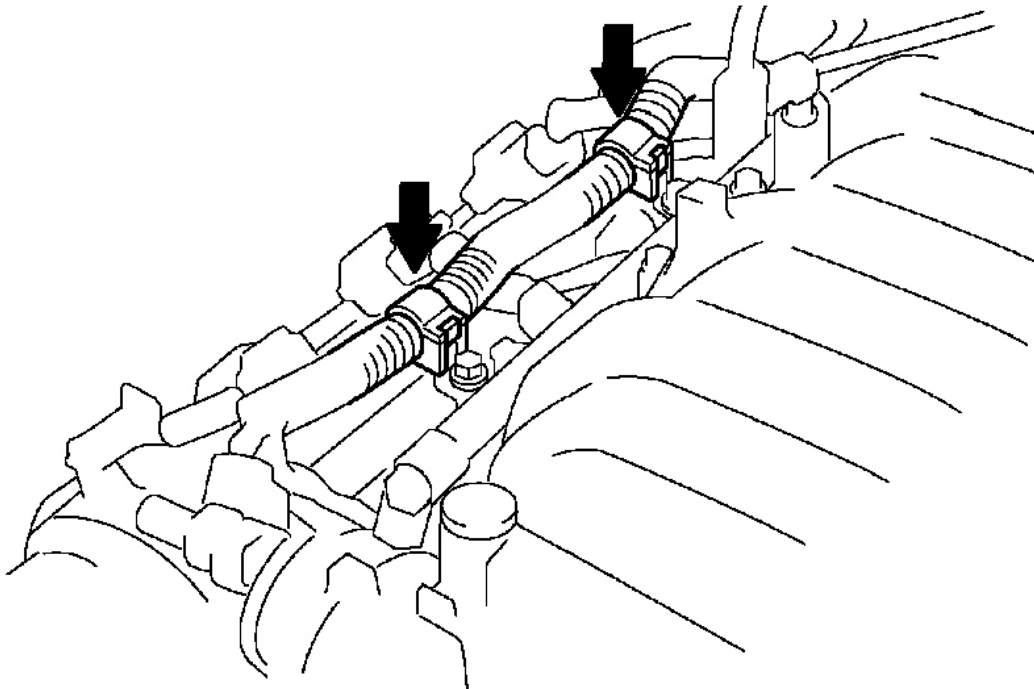
**Fig. 28: Exploded View Of Fuel Injector Assy Components (2 Of 3)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 29: Exploded View Of Fuel Injector Assy Components (3 Of 3)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REPLACEMENT

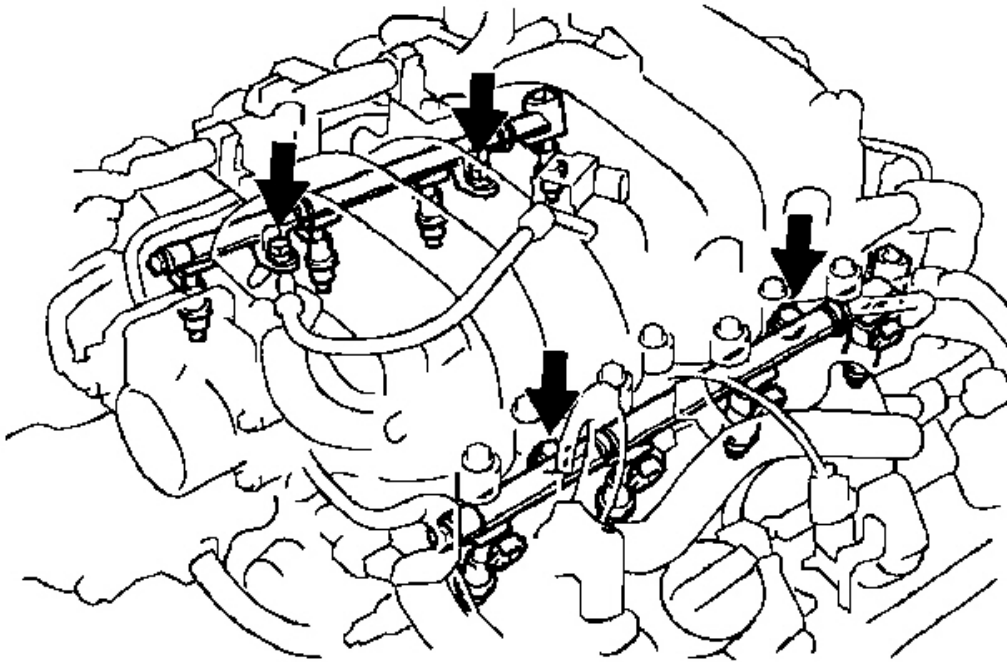
1. **WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See PRECAUTION )**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**
3. **REMOVE V-BANK COVER**
  - a. Remove the 2 nuts and V-bank cover.
4. **REMOVE AIR CLEANER INLET NO.1**
5. **REMOVE INTAKE AIR CONNECTOR PIPE**
  - a. Disconnect the air hose and ventilation hose No. 1.
  - b. Loosen the hose clamp.
  - c. Remove the bolt and intake air connector pipe.
6. **REMOVE V-BANK COVER BRACKET NO.1**
7. **REMOVE V-BANK COVER BRACKET NO.2**
8. **REMOVE V-BANK COVER BRACKET NO.3**
9. **REMOVE V-BANK COVER BRACKET NO.4**
10. **REMOVE VACUUM SWITCHING VALVE ASSY**
11. **DISCONNECT ENGINE WIRE**



G02998984

**Fig. 30: Disconnecting Wire Clamps From Wire Clamp Bracket On RH Delivery Pipe**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the 2 wire clamps from the wire clamp bracket on the RH delivery pipe.
12. **REMOVE FUEL PRESSURE PULSATION DAMPER ASSY**
- a. Disconnect the fuel delivery pipe and fuel pipe by removing both right and left pulsation dampers.
  - b. Remove the gasket.



**G02998985**

**Fig. 31: Identifying Fuel Delivery Pipe**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. **REMOVE FUEL DELIVERY PIPE SUB-ASSY**
- a. Remove the installation bolts of the water by-pass pipe No. 1 and No. 2.
  - b. Disconnect the connector.
  - c. Remove the 2 bolts.
  - d. Remove the fuel delivery pipe No. 1 by pulling it straight upward holding both the ends.
14. **REMOVE FUEL DELIVERY PIPE SUB-ASSY NO.2**
- a. Disconnect the connector.



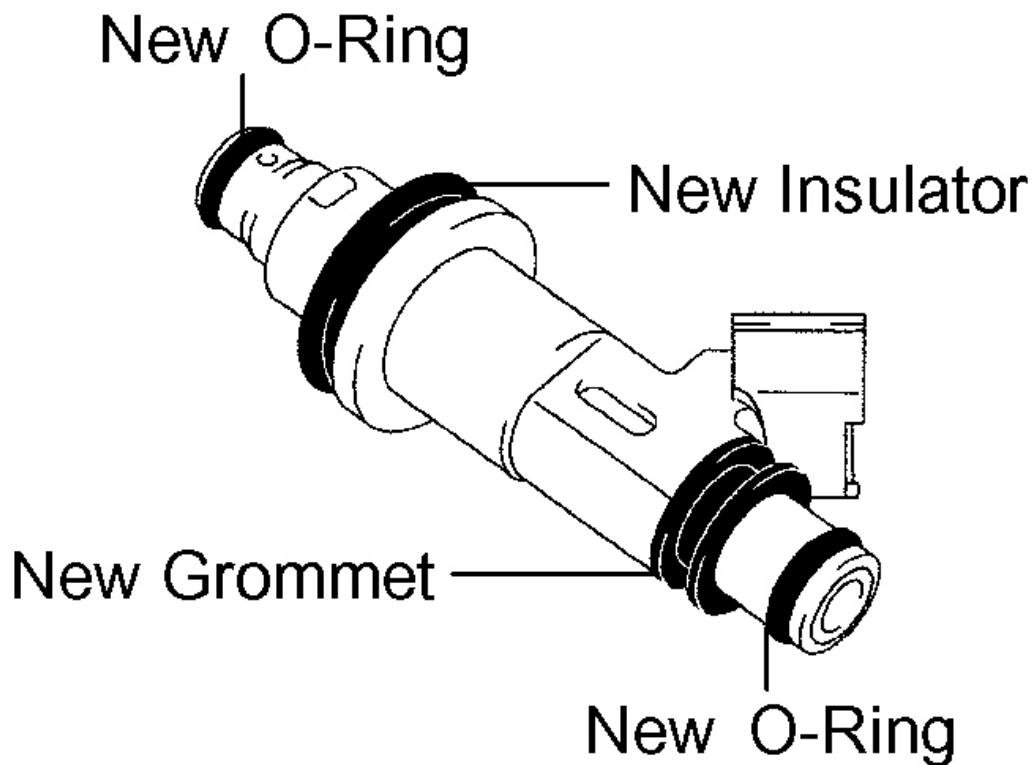
- b. Remove the 2 bolts.
- c. Remove the fuel delivery pipe No. 2 by pulling it straight upward holding both the ends.

15. **REMOVE FUEL INJECTOR ASSY**

- a. Remove the injector from the intake manifold.

**NOTE:** Pull upward on the injector, Adding force in the horizontal direction may cause the O-ring to become stuck.

- b. Remove the O-ring, grommet and vibration insulator from the injector.



**G02998986**

**Fig. 32: Installing O-Ring, Grommet And Vibration Insulator From Injector**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

16. **INSTALL FUEL INJECTOR ASSY**

- a. Install a new grommet and vibration insulator to the injector.
- b. Check the injector's grooves (where O-rings are installed) for foreign matter or damage. Apply

gasoline to 2 new O-rings and install them to the injector's grooves.

- c. To install the fuel injector into the fuel delivery pipe, push the fuel injector while twisting it back and forth. Install the 4 injectors.
- d. Check that the injector can rotate smoothly.

**NOTE:**        **When the injector cannot rotate smoothly, the O-ring may be caught on something. Remove the injector, remove the faulty O-ring, install a new O-ring and reinstall the injector.**

**17. INSTALL FUEL DELIVERY PIPE SUB-ASSY NO.2**

- a. Install the injector (with delivery pipe) to the intake manifold.
- b. Under the above condition, turn the injector both ways by approximately 45 degrees.
- c. Inserting a spacer in between, install the delivery pipe (with injector) with the 2 nuts.

**Torque: 21 N.m (214 kgf.cm, 15 ft.lbf)**

**18. INSTALL FUEL DELIVERY PIPE SUB-ASSY**

- a. Install the injector (with delivery pipe) to the intake manifold.
- b. Under the above condition, turn the injector both ways by approximately 45 degrees.
- c. Inserting a spacer in between, install the delivery pipe (with injector) with the 2 nuts.

**Torque: 21 N.m (214 kgf.cm, 15 ft.lbf)**

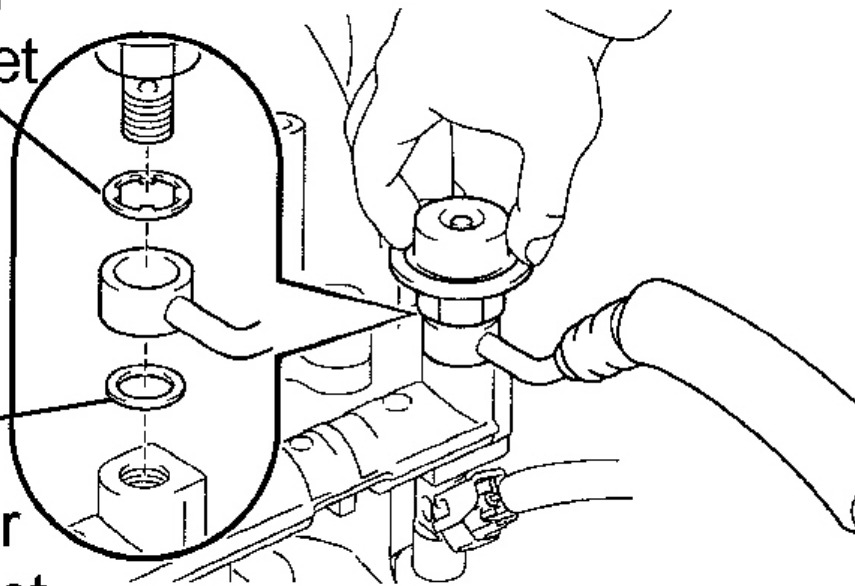
**19. INSTALL FUEL PRESSURE PULSATION DAMPER ASSY**

- a. Inserting 2 new gaskets in between, install the fuel main hose to the fuel pressure pulsation damper.

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

New  
Upper  
Gasket

New  
Lower  
Gasket



G02998987

**Fig. 33: Installing Gaskets**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**20. INSTALL ENGINE WIRE**

- a. Install the 2 wire clamps to the wire clamp bracket on the RH delivery pipe.

**21. INSTALL VACUUM SWITCHING VALVE ASSY**

**Torque: 18 N.m (184 kgf.cm, 13 ft.lbf)**

**22. INSTALL V-VANK COVER BRACKET NO.4**

**Torque: 7.5 N.m (76 kgf.cm, 66 in..lbf)**

**23. INSTALL V-BANK COVER BRACKET NO.3**

**Torque: 7.5 N.m (76 kgf.cm, 66 in..lbf)**

**24. INSTALL V-BANK COVER BRACKET NO.2**

**Torque: 7.5 N.m (76 kgf.cm, 66 in..lbf)**

**25. INSTALL V-BANK COVER BRACKET NO.1**

**Torque: 7.5 N.m (76 kgf.cm, 66 in..lbf)**

**26. INSTALL INTAKE AIR CONNECTOR PIPE**

- a. Install the intake air connector pipe with the bolt and hose clamp.

**Torque:**

**4.0 N.m (40 kgf.cm, 35 in..lbf) for hose clamp**

**5.0 N.m (50 kgf.cm, 44 in..lbf) for bolt**

- b. Connect the air hose and ventilation hose No. 1 together.

27. **INSTALL AIR CLEANER INLET NO.1**

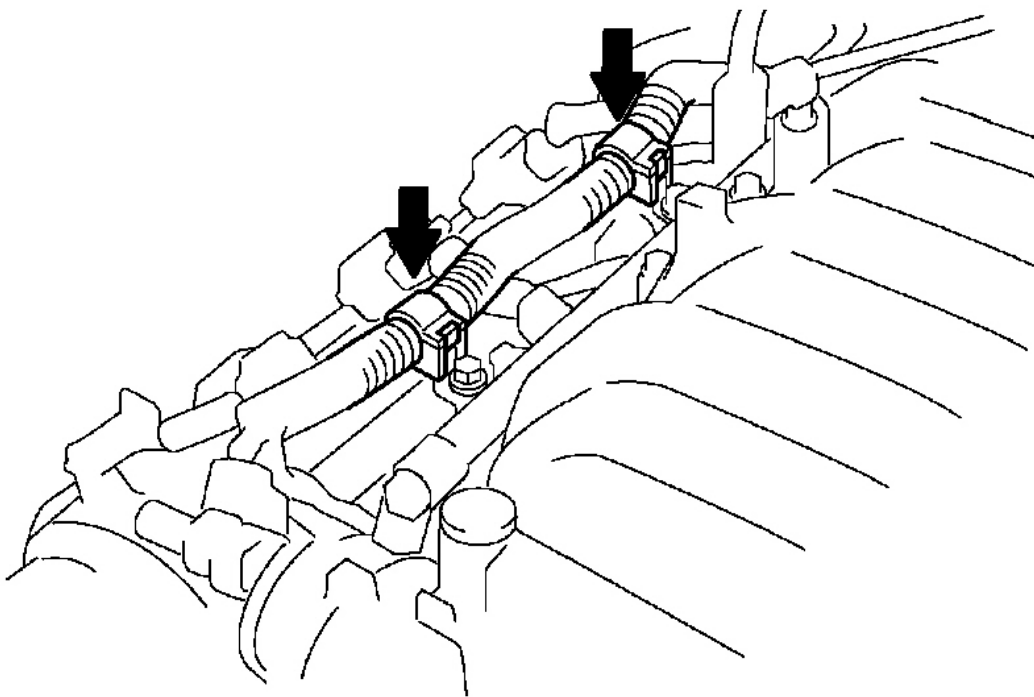
28. **INSPECT FOR FUEL LEAKS (See ON-VEHICLE INSPECTION )**

29. **INSTALL V-BANK COVER**

**Torque: 5.0 N.m (51 kgf.cm, 44 in..lbf)**

30. **CONNECT BATTERY NEGATIVE TERMINAL**

**NOTE:** When disconnecting the negative (-) battery terminal, initialize the following system(s) after the terminal is reconnected (see INITIALIZATION ).

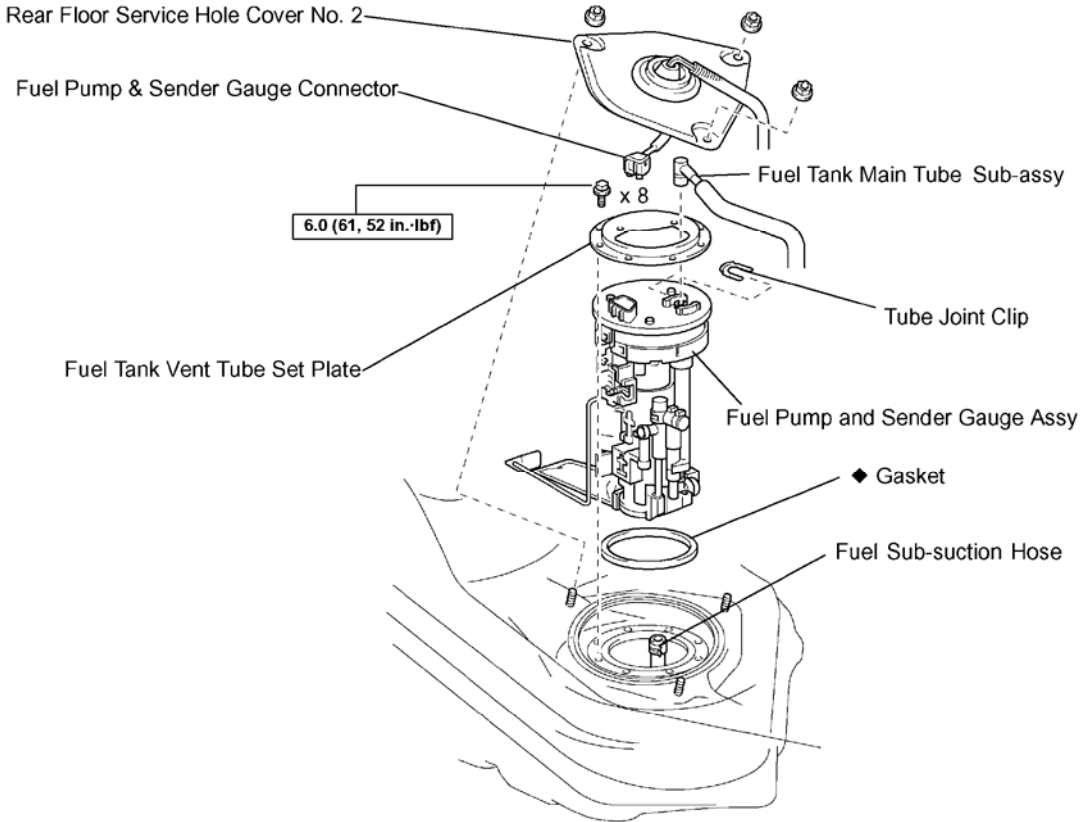
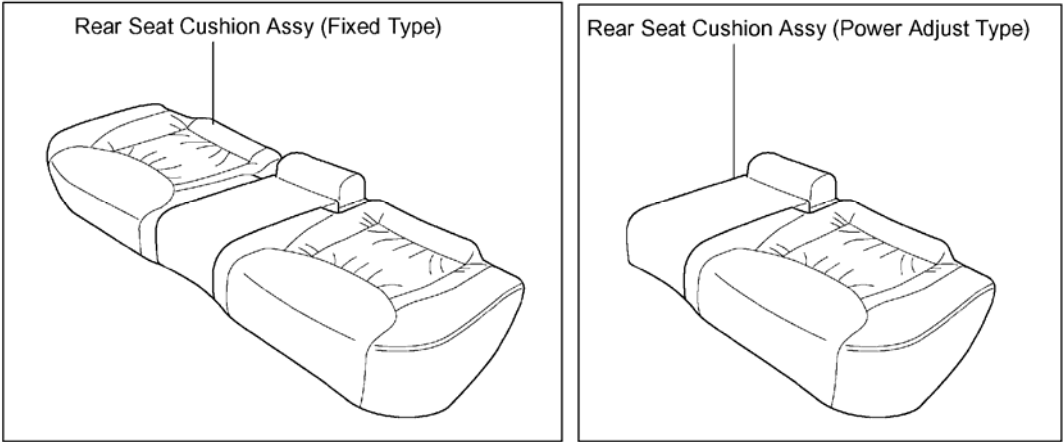


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**Fig. 34: Identifying Wire Clamp Bracket**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

# FUEL PUMP ASSY

## COMPONENTS

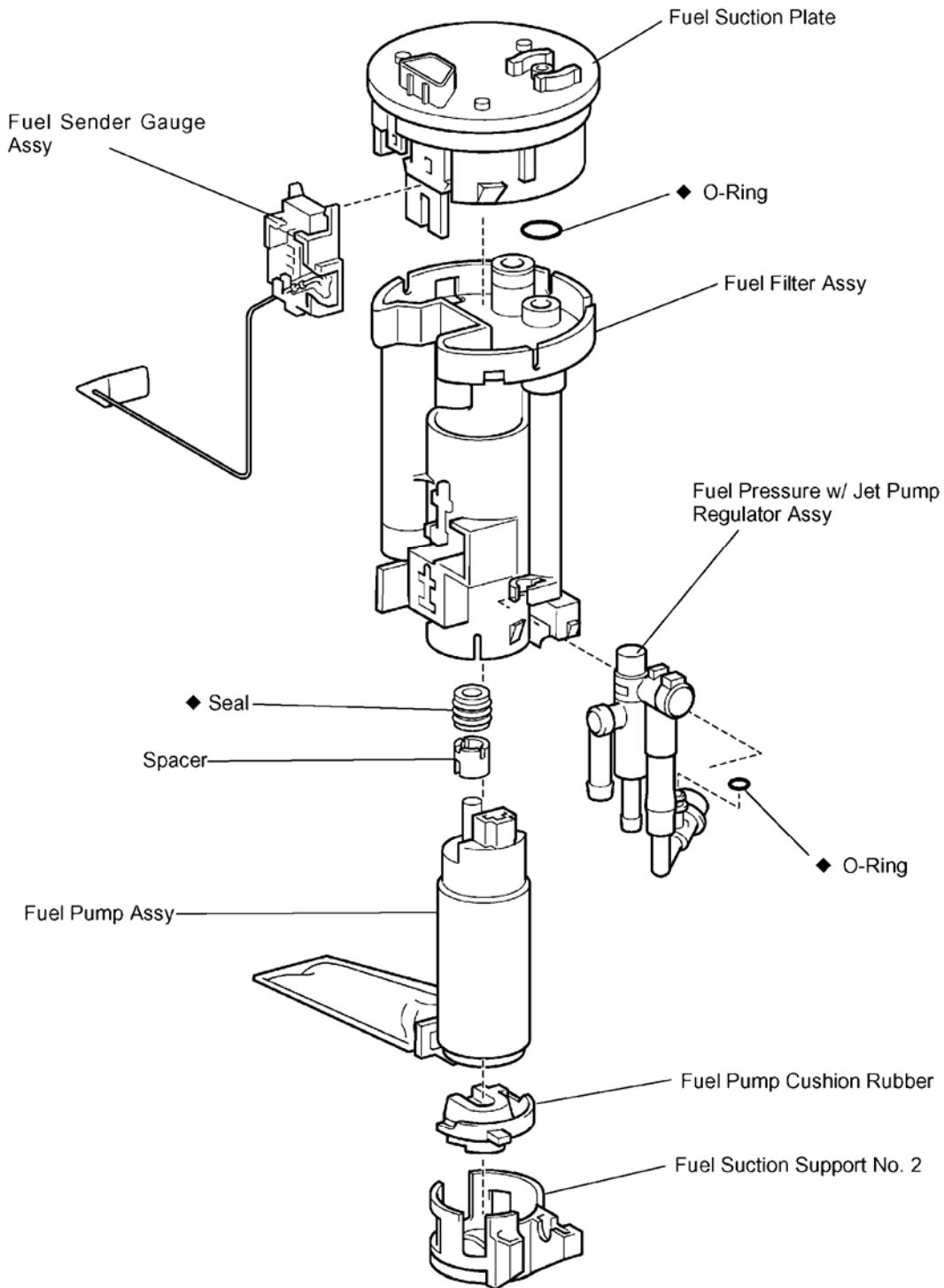


**N·m (kgf·cm, ft·lbf)** : Specified torque

◆ Non-reusable part

G0298989

**Fig. 35: Exploded View Of Fuel Pump Assy Components (1 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



◆ Non-reusable part

G02998990

**Fig. 36: Exploded View Of Fuel Pump Assy Components (1 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

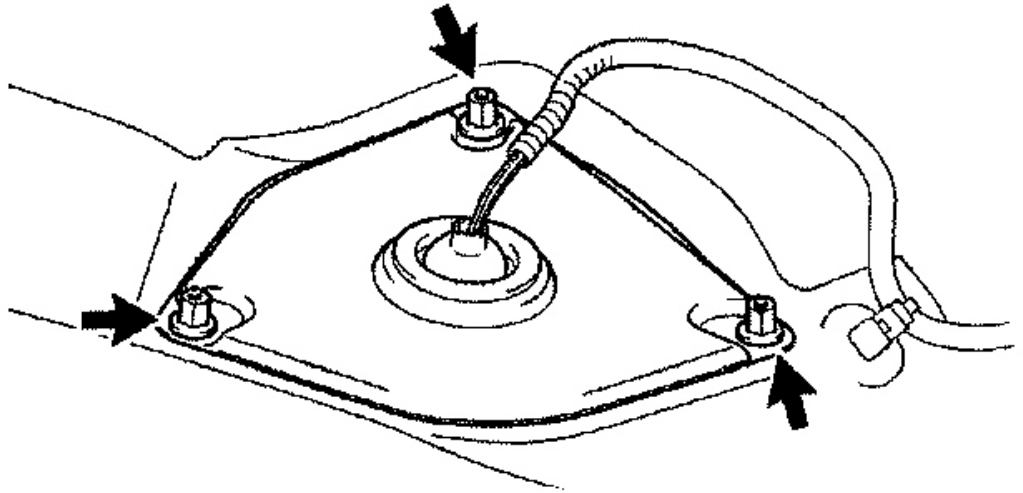
## REPLACEMENT

**CAUTION:** Do not smoke or work near an open flame when working on the fuel pump.

1. **WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See PRECAUTION )**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**
3. **DRAIN FUEL (See PRECAUTION )**
4. **REMOVE SEPARATE TYPE REAR SEAT CUSHION ASSY LH (SEPARATED TYPE REAR SEAT) (See OVERHAUL )**
5. **REMOVE BENCH TYPE REAR SEAT CUSHION ASSY (FIXED TYPE REAR SEAT) (See OVERHAUL )**
6. **REMOVE REAR FLOOR SERVICE HOLE COVER NO.2**
  - a. Remove the 3 cap nuts and service hole cover.
7. **REMOVE FUEL TANK MAIN TUBE SUB-ASSY**

**NOTE:**

- These procedures should be performed with the fuel tank less than 1/4 full.
- Check for dirt contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-ring or cause leaks in the seal between the pipe and connector.
- Do not use any tools in these procedures.
- Do not forcefully bend or twist the nylon tube.

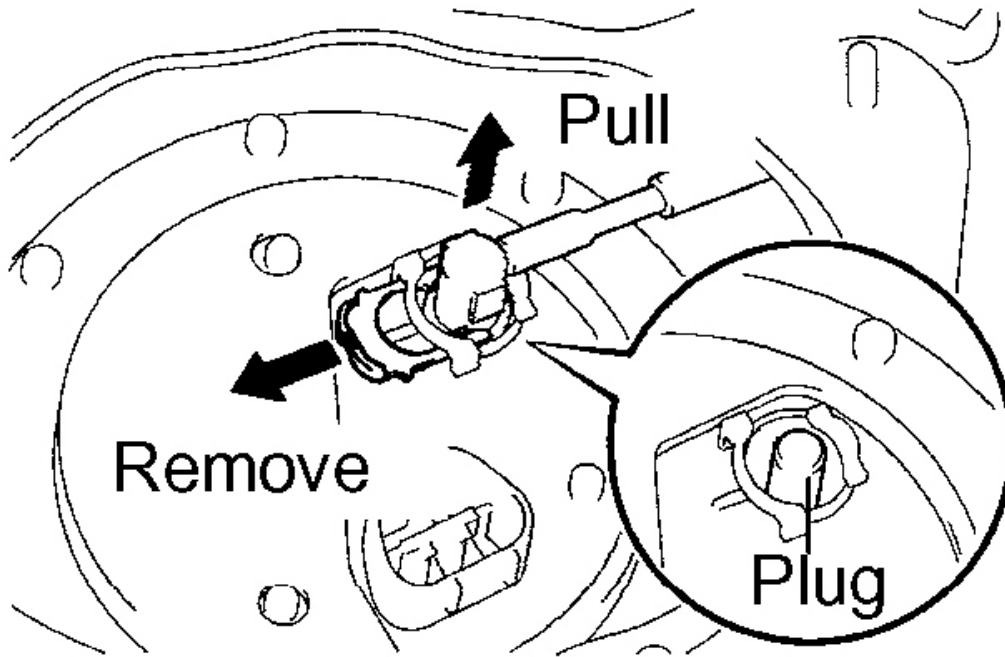


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**Fig. 37: Identifying Service Hole Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Check for dirt contamination on the pipe seal surface. Clean if necessary.
  - Put the pipe and connector ends in vinyl bags to prevent damage and dirt contamination.
  - If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the tube.
- a. Remove the tube joint clip.
  - b. Pull out the fuel main tube.
  - c. Plug the port of the fuel suction plate with a clean rubber cap.





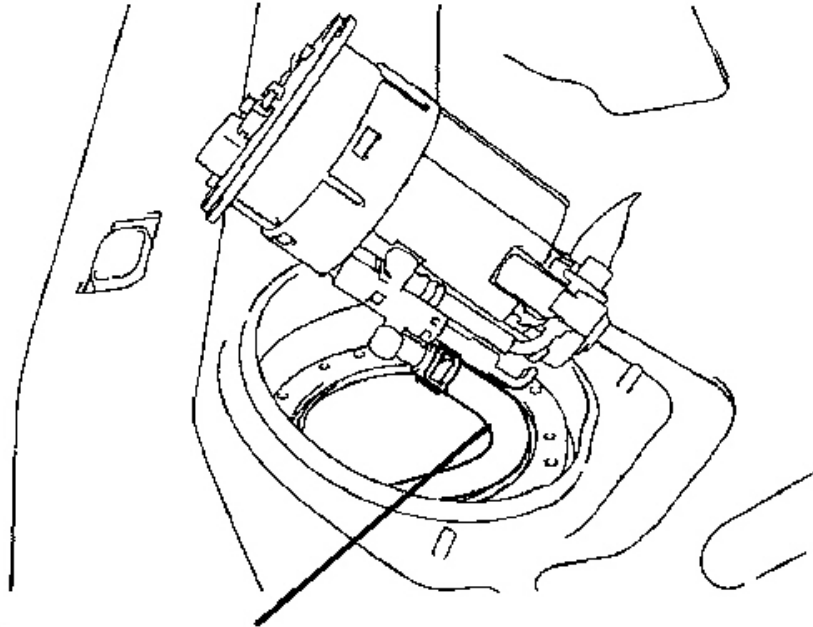
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**Fig. 38: Pulling Out Fuel Main Tube**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. **REMOVE FUEL TANK VENT TUBE SET PLATE**
  - a. Remove the 8 bolts and set plate.
9. **REMOVE FUEL PUMP AND SENDER GAUGE ASSEMBLY**
  - a. Lift up the fuel pump and sender gauge. Disconnect the fuel sub-suction hose from the fuel return jet tube and remove the fuel pump, sender gauge and gasket.

**CAUTION:**

- Do not damage the fuel pump filter.
- Be careful not to bend the arm of the sender gauge.



## Fuel Sub-suction Hose

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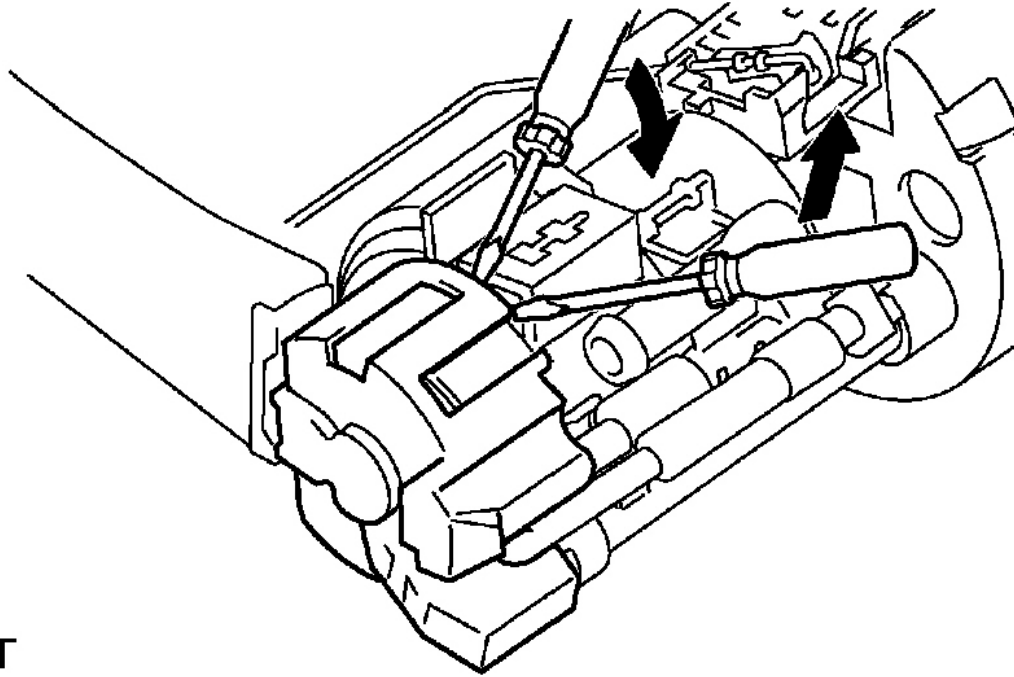
**Fig. 39: Disconnecting Fuel Sub-Suction Hose**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

- a. Using 2 screwdrivers, disconnect the 3 snap claws from the claw holes and remove the fuel suction support.

**NOTE:** Be careful not to damage the suction support and fuel filter.

### 11. REMOVE FUEL PUMP CUSHION RUBBER



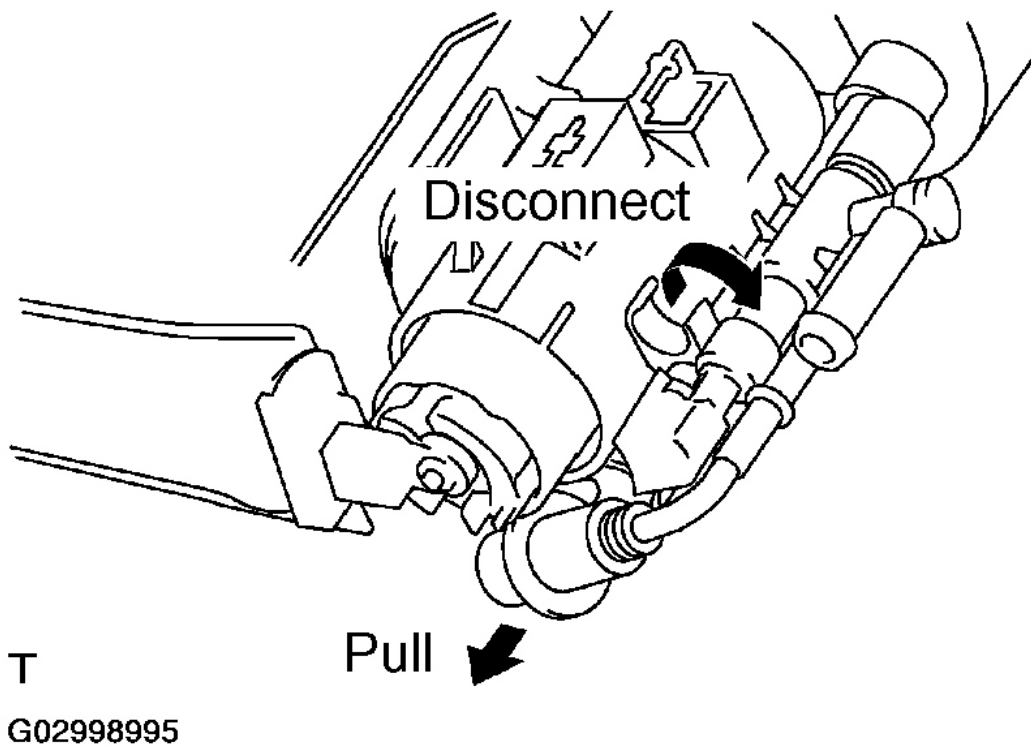
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**Fig. 40: Disconnecting Snap Claws From Claw Holes**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**12. REMOVE FUEL PRESSURE W/JET PUMP REGULATOR ASSY**

- a. Disconnect the fuel return jet tube from the clamp of the fuel filter.
- b. Pull out the fuel pressure regulator from the fuel filter, and remove the fuel pressure regulator and fuel return jet tube.
- c. Remove the O-ring from the fuel pressure regulator.

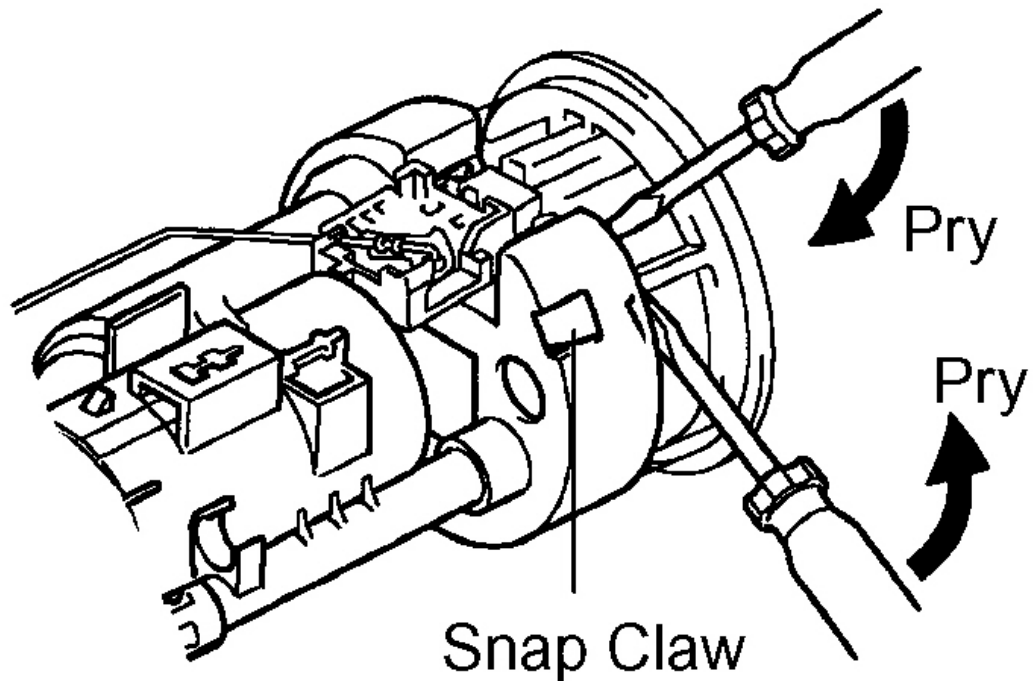


**Fig. 41: Disconnecting Fuel Return Jet Tube From Clamp Of Fuel Filter**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. **REMOVE FUEL SUCTION PLATE W/SENDER GAUGE**

- a. Using 2 screwdrivers, disconnect the 4 snap claws from the claw holes and remove the fuel filter.

**NOTE:** Be careful not to damage the filter assy and suction plate.

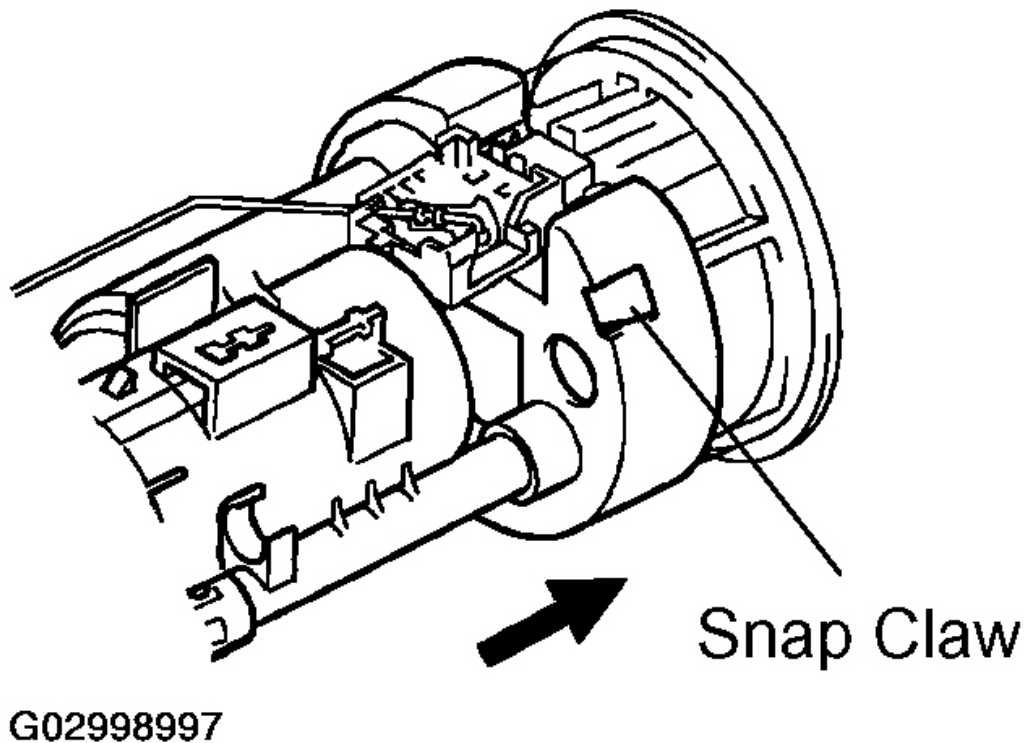


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**Fig. 42: Disconnecting Snap Claws From Claw Holes**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the fuel pump connector.
  - c. Remove the O-ring from the fuel port of the fuel suction plate.
14. **REMOVE FUEL PUMP FILTER**
- a. Remove the clip and filter.
15. **REMOVE FUEL PUMP ASSY**
- a. Pull out the fuel pump.
  - b. Remove the seal and spacer from the fuel pump.
16. **INSTALL FUEL PUMP ASSY**
- a. Apply some gasoline to a new seal.
  - b. Install the spacer and a new seal to the fuel pump.
  - c. Push in the fuel pump.
17. **INSTALL FUEL PUMP FILTER**
- a. Install the filter with a new clip.
18. **INSTALL FUEL SUCTION PLATE W/SENDER GAUGE**

- a. Apply a light coat of gasoline to a new O-ring, and install it to the fuel port of the fuel suction plate.
- b. Connect the fuel pump connector.
- c. Push the fuel filter, and attach the 4 snap claws to the claw holes.



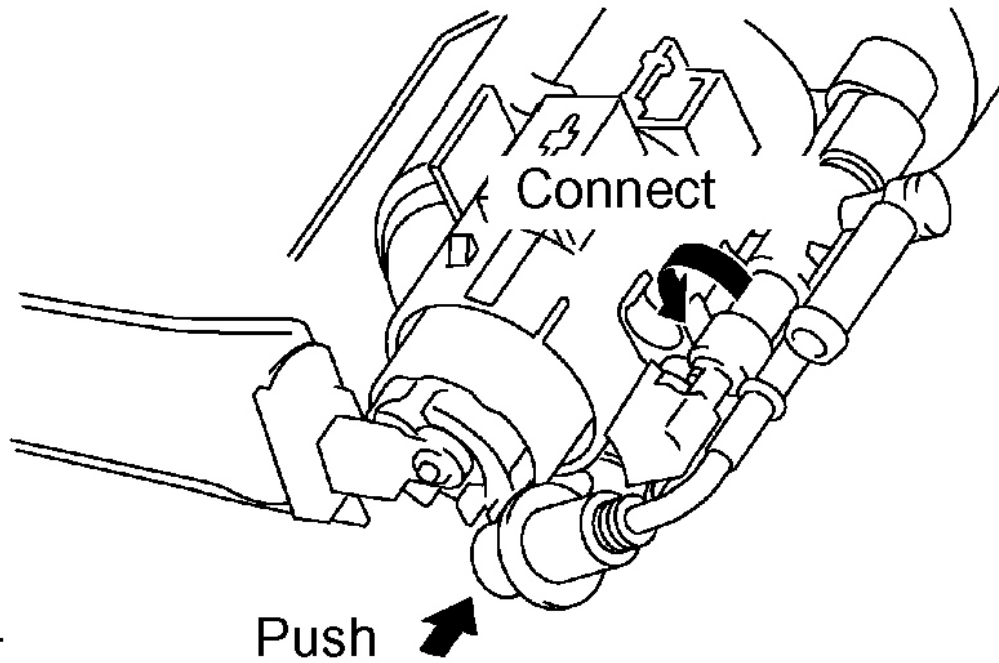
**Fig. 43: Installing Snap Claws To Claw Holes**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**19. INSTALL FUEL PRESSURE W/JET PUMP REGULATOR ASSY**

- a. Apply a light coat of gasoline to a new O-ring, and install it to the fuel pressure regulator.
- b. Push in the fuel pressure regulator to the fuel filter.
- c. Check that the fuel pressure regulator rotates smoothly.

If it does not rotate smoothly, the O-ring may be pinched. Remove the fuel pressure regulator and perform steps (b) and (c) above.

- d. Connect the fuel return jet tube to the clamp of the fuel filter.

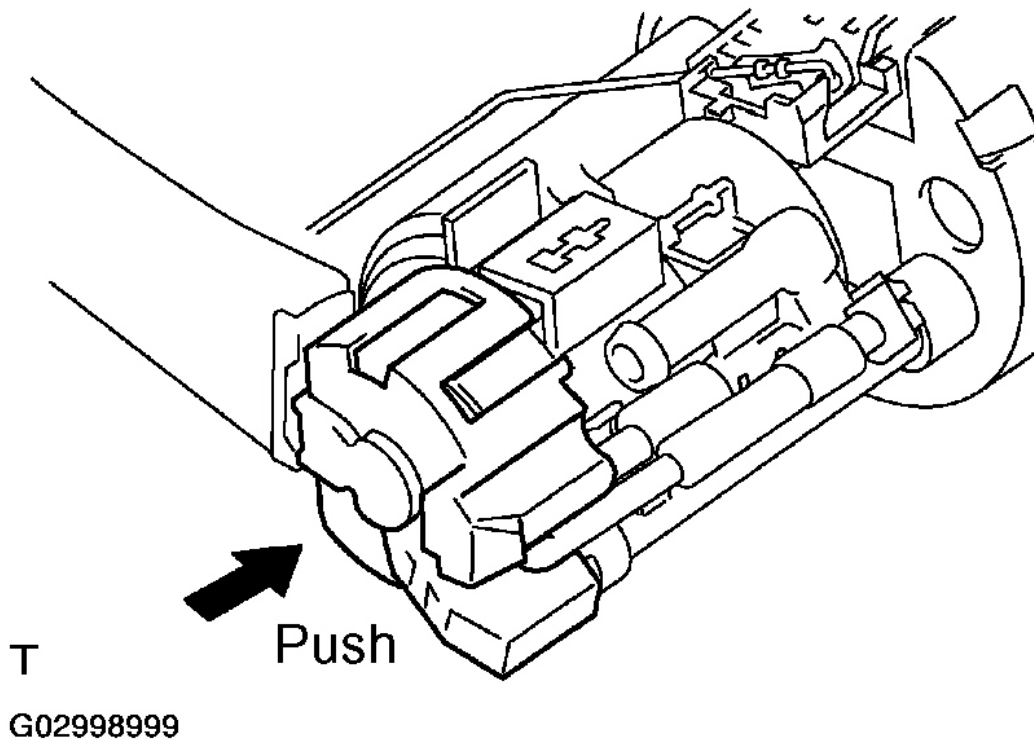


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**Fig. 44: Installing Fuel Pressure Regulator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

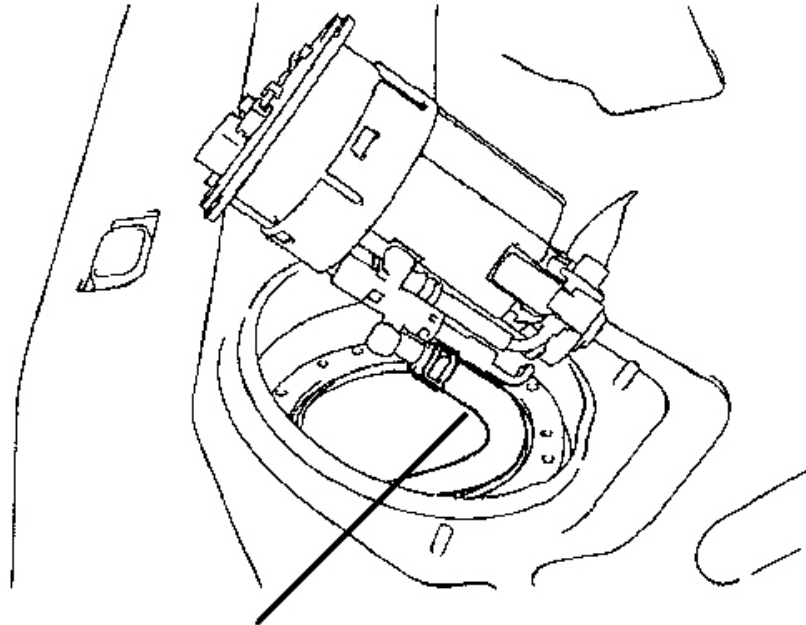
20. **INSTALL FUEL PUMP CUSHION RUBBER**
21. **INSTALL FUEL SUCTION SUPPORT NO.2**
  - a. Push the fuel suction support, and attach the 3 snap claws to the claw holes.



**Fig. 45: Pushing Fuel Suction Support**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

22. **INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY**
  - a. Install a new gasket to the fuel suction plate.
  - b. Connect the fuel sub-suction hose to the fuel return jet tube.
  - c. Attach the fuel pump and sender gauge to the fuel tank.



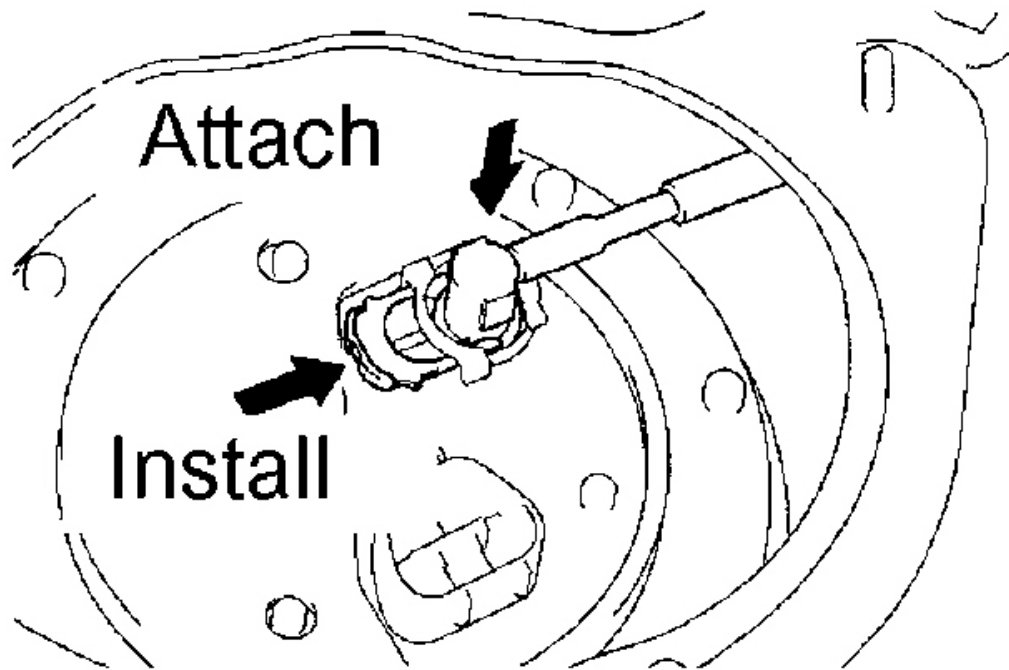


## Fuel Sub-suction Hose

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**Fig. 46: Installing Fuel Sub-Suction Hose**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

23. **INSTALL FUEL TANK VENT TUBE SET PLATE**
  - a. Install the set plate with the 8 bolts.  
**Torque: 6.0 N.m (61 kgf.cm, 52 in..lbf)**
24. **INSTALL FUEL TANK MAIN TUBE SUB-ASSY**
  - a. Attach the fuel tube connector to the port of the fuel suction plate.
  - b. Install the tube joint clip.

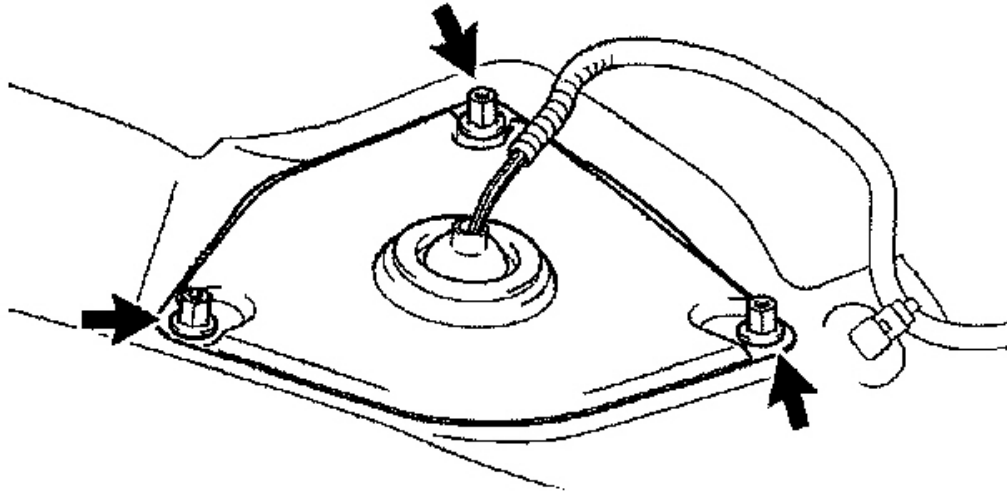


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**Fig. 47: Installing Fuel Tube Connector**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**25. INSTALL REAR FLOOR SERVICE HOLE COVER NO.2**

Install the service hole cover with the 3 cap nuts.



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**Fig. 48: Installing Service Hole Cover**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

26. **INSTALL BENCH TYPE REAR SEAT CUSHION ASSY (FIXED TYPE REAR SEAT) (See OVERHAUL )**
27. **INSTALL SEPARATE TYPE REAR SEAT CUSHION ASSY LH (SEPARATED TYPE REAR SEAT) (See OVERHAUL )**
28. **ADD FUEL (See PRECAUTION )**
29. **CONNECT BATTERY NEGATIVE TERMINAL**

**NOTE:** When disconnecting the negative (-) battery terminal, initialize the following system(s) after the terminal is reconnected (see INITIALIZATION ).

30. **INSPECT FUEL PUMP OPERATION AND CHECK FOR FUEL LEAKS (See ON-VEHICLE INSPECTION )**

## **FUEL TANK ASSY**

### **COMPONENTS**



- **Apply the proper torque.**

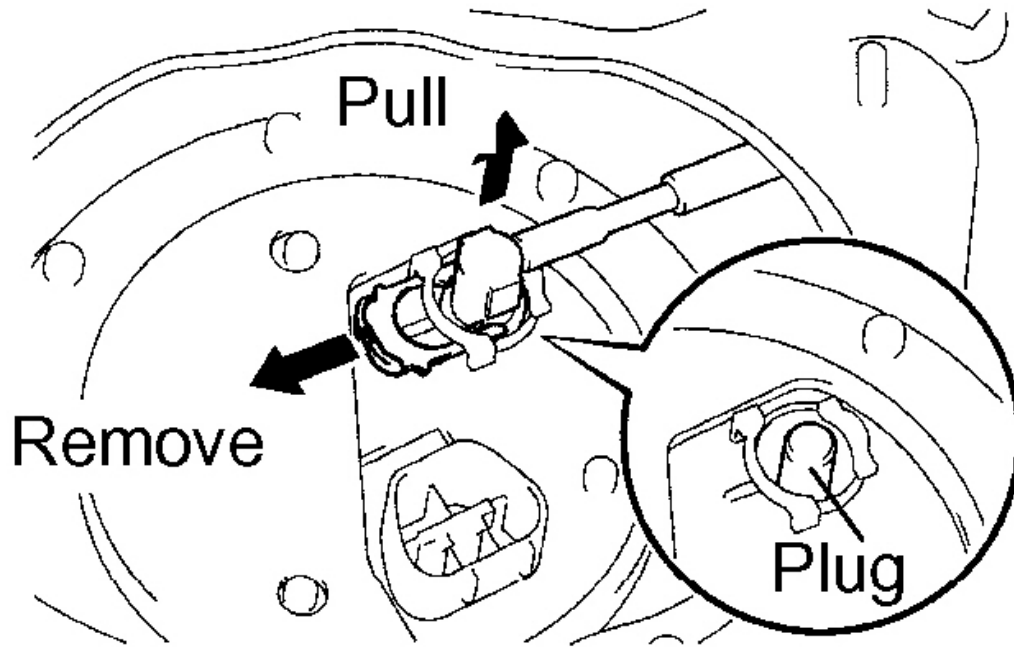
1. **WORK FOR PREVENTING GASOLINE FROM SPILLING OUT (See PRECAUTION )**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**
3. **DRAIN FUEL (See PRECAUTION )**
4. **REMOVE SEPARATE TYPE REAR SEAT CUSHION ASSY LH (SEPARATED TYPE REAR SEAT) (See OVERHAUL )**
5. **REMOVE BENCH TYPE REAR SEAT CUSHION ASSY (FIXED TYPE REAR SEAT) (See OVERHAUL )**
6. **REMOVE REAR FLOOR SERVICE HOLE COVER NO.2 (See REPLACEMENT )**
7. **REMOVE FUEL TANK MAIN TUBE SUB-ASSY**

**NOTE:**

- **These procedures should be performed with the fuel tank less than 1/4 full.**
- **Check for dirt contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-ring or cause leaks in the seal between the pipe and connector.**
- **Do not use any tools in these procedures.**
- **Do not forcefully bend or twist the nylon tube.**
- **Check for dirt contamination on the pipe seal surface. Clean if necessary.**
- **Put the pipe and connector ends in vinyl bags to prevent damage and dirt contamination.**
- **If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the tube.**

- a. **Disconnect the connector in the fuel tank side.**

1. **Remove the tube joint clip.**
2. **Pull out the fuel main tube.**
3. **Plug the port of the fuel suction plate with a clean rubber cap.**



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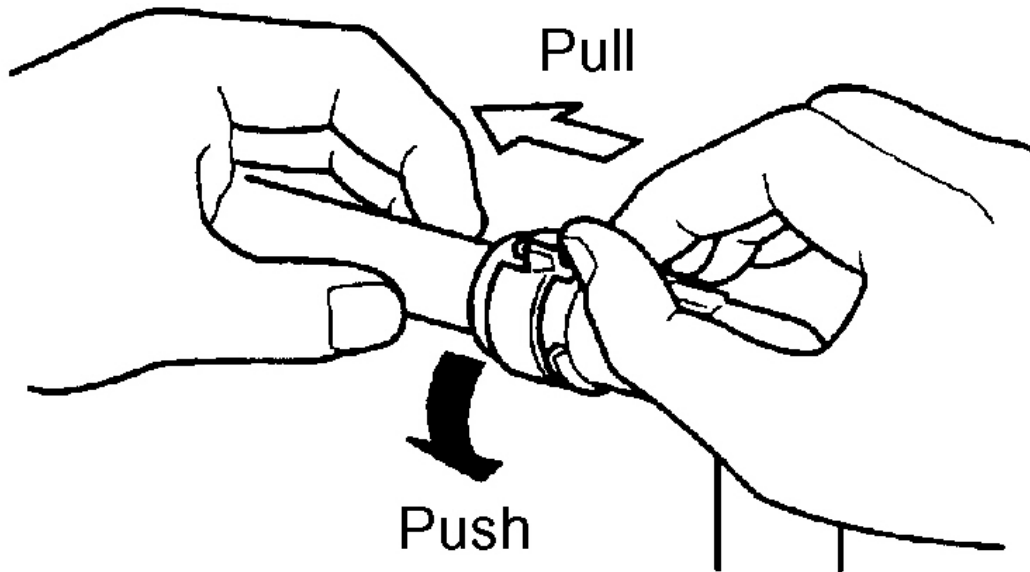
**Fig. 50: Disconnecting Connector In Fuel Tank Side**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the connector in the fuel pipe side.
  1. Clean the pipe before the operation.
  2. Pull out the connector, holding the claw of the retainer by thumb as shown in the illustration.

**NOTE:** If the connector and the pipe are stuck together, release them by pushing and pulling them by hand.

HINT:

Do not remove the retainer when it is reinstalled.



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**Fig. 51: Pulling Out Connector**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

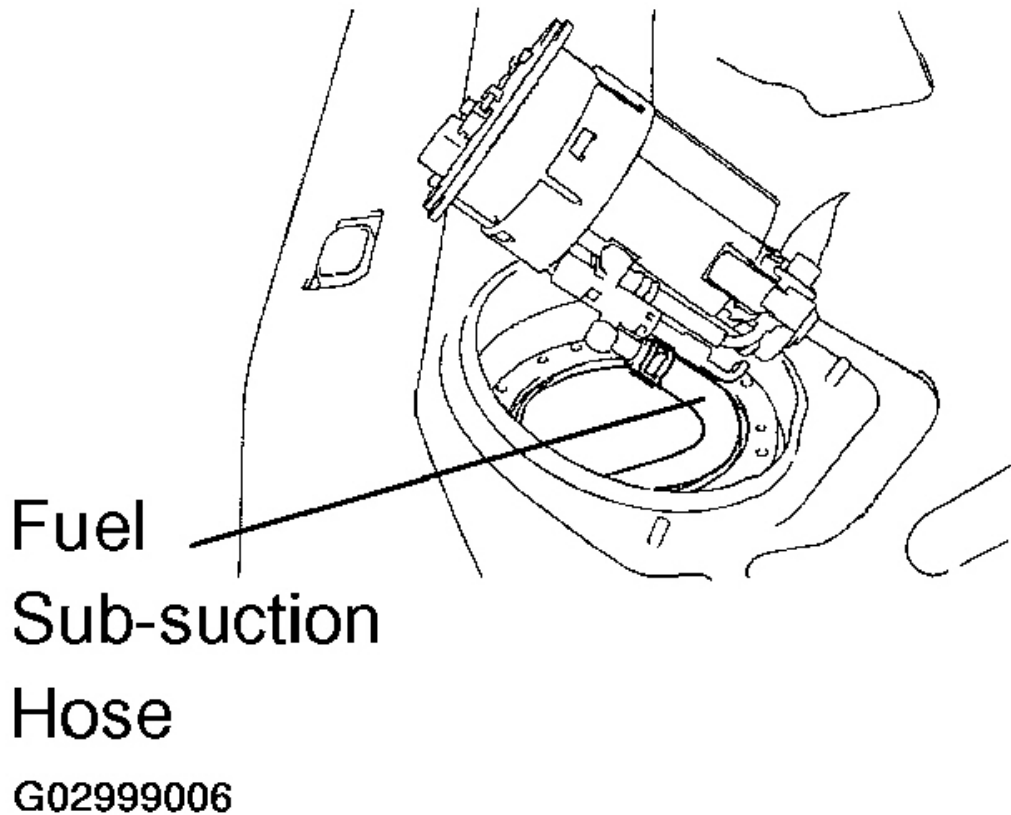
- c. Protect each connecting part from damage and contamination by covering it with a vinyl bag.
8. **REMOVE REAR FLOOR SERVICE HOLE COVER**
  - a. Remove the service hole cover and disconnect the fuel sender gauge connector.
9. **REMOVE FRONT FLOOR BRACE CENTER (See OVERHAUL )**
10. **REMOVE ENGINE UNDER COVER NO.2**
11. **REMOVE EXHAUST PIPE ASSY (See REPLACEMENT )**
12. **REMOVE PROPELLER SHAFT HEAT INSULATOR**
13. **REMOVE FRONT FLOOR HEAT INSULATOR NO.1**
  - a. Remove the 2 bolts and propeller shaft heat insulator.
14. **REMOVE DIFFERENTIAL SUPPORT PROTECTOR NO.1**
15. **REMOVE DIFFERENTIAL SUPPORT PROTECTOR NO.2**
16. **REMOVE PROPELLER SHAFT ASSY (See OVERHAUL )**
17. **REMOVE PARKING BRAKE CABLE ASSY NO.2 (See REPLACEMENT )**
18. **REMOVE PARKING BRAKE CABLE ASSY NO.3 (See REPLACEMENT )**
19. **REMOVE FUEL TANK TO FILLER PIPE HOSE**
20. **REMOVE FUEL TANK EVAPORATION VENT TUBE**
21. **REMOVE FUEL TANK BREATHER HOSE**

22. **REMOVE FUEL TANK ASSY**

- a. Using a mission jack, support the fuel tank.
- b. Disconnect the fuel tank band No.1 and remove the fuel tank.

23. **REMOVE FUEL TANK VENT TUBE SET PLATE**

- a. Remove the 8 bolts and set plate.



**Fig. 52: Disconnecting Fuel Sub-Suction Hose**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

24. **REMOVE FUEL PUMP AND SENDER GAUGE ASSEMBLY**

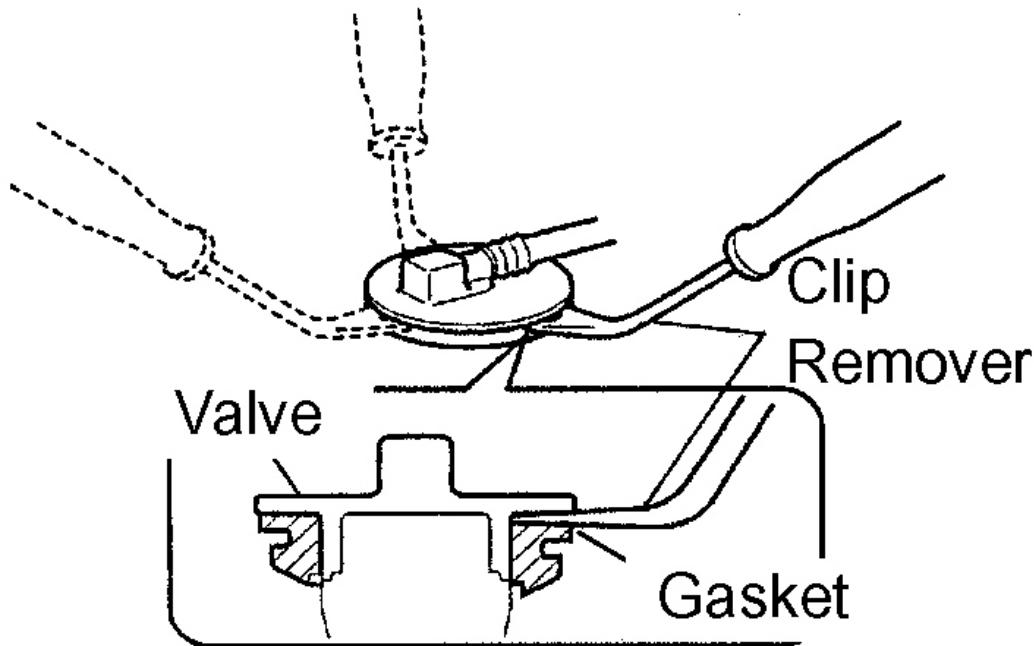
- a. Lift up the fuel pump and sender gauge. Disconnect the fuel sub-suction hose from the fuel return jet tube, and remove the fuel pump, sender gauge and gasket.

**CAUTION:**

- Do not damage the fuel pump filter.
- Be careful not to bend the arm of the sender gauge.



25. REMOVE FUEL SENDER GAGE ASSY
26. REMOVE FUEL TANK PROTECTOR SUB-ASSY NO.1
27. REMOVE FUEL TANK BREATHER TUBE SUB-ASSY
28. REMOVE CHECK VALVE PROTECTOR
29. REMOVE FUEL TANK OVER FILL CHECK VALVE ASSY



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**Fig. 53: Removing Fuel Tank Over Fill**

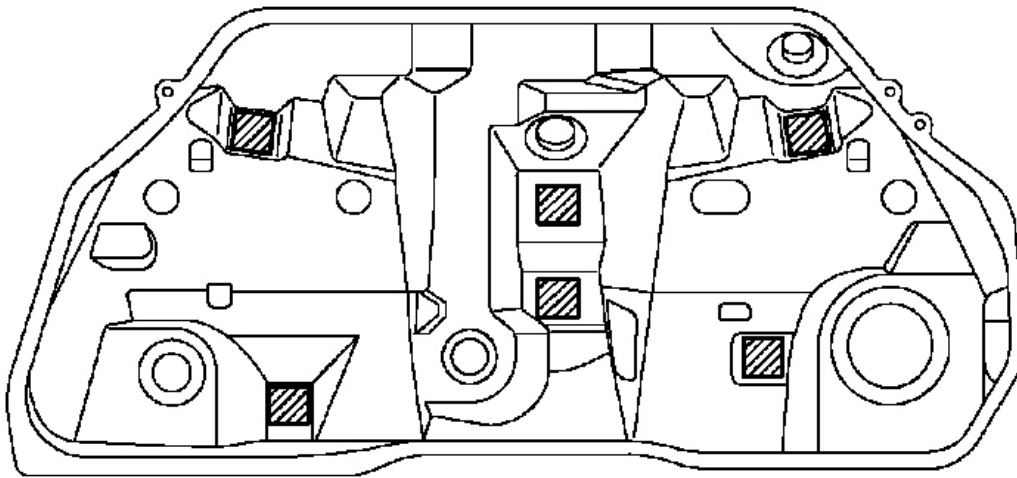
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:**

- When installing or removing the check valve, do not use force. The check valve is made of resin and damages easily. Following these procedures carefully ensures that the check valve stays in good condition and maintains its sealing properties.
- Check valves and gaskets must be replaced with new ones.

- a. Insert a clip remover between the check valve and gasket, and remove the check valve pulling up the valve little by little.
30. **INSTALL FUEL TANK OVER FILL CHECK VALVE ASSY**
  - a. Install a new gasket to the fuel tank.

- b. Apply some gasoline to the entire circumference of a new over fill check valve, and insert it into the fuel tank without using excessive force. Take care not to drop the gasket into the tank.
  - c. Confirm that the over fill check valve is inserted without any clearance between the gasket and the lower surface of the valve.
31. **INSTALL CHECK VALVE PROTECTOR**
  32. **INSTALL FUEL TANK CUSHION NO.1**
    - a. Attach the fuel tank cushions to the areas marked with diagonal lines in the illustration.

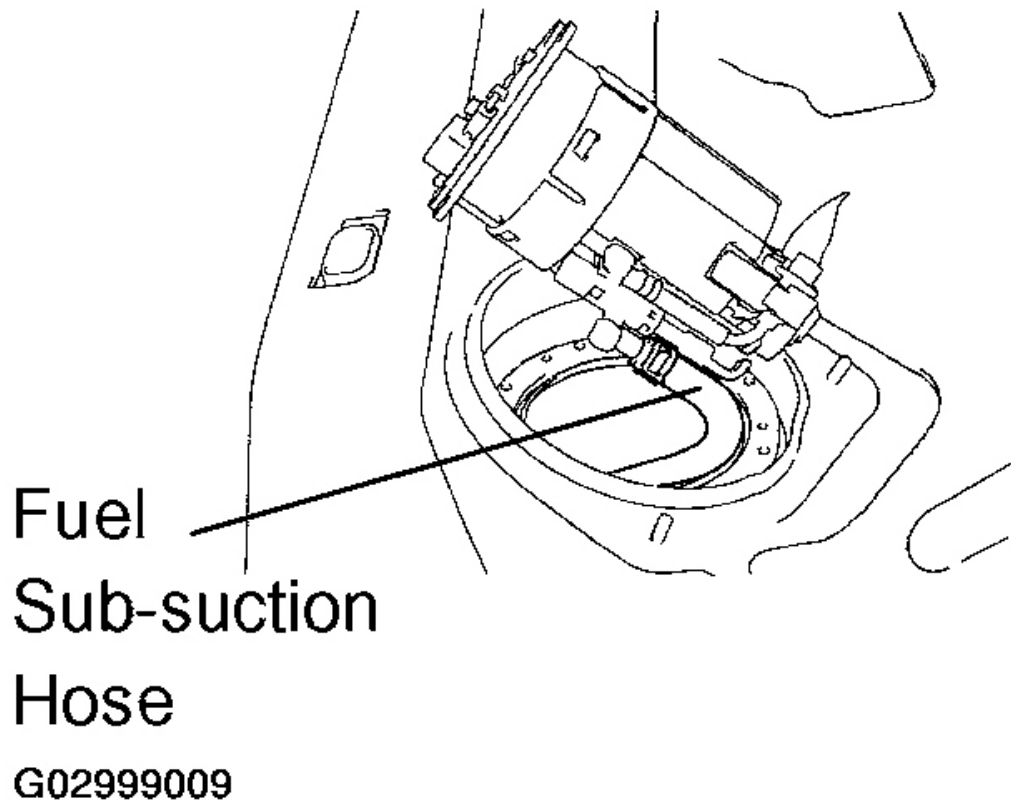


**G02999008**

**Fig. 54: Identifying Fuel Tank Cushion**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

33. **INSTALL FUEL TANK BREATHER TUBE SUB-ASSY**
34. **INSTALL FUEL TANK PROTECTOR SUB-ASSY NO.1**
35. **INSTALL FUEL SENDER GAGE ASSY**
  - a. Inserting a new gasket in between, install the fuel sender gauge.  
**Torque: 1.5 N.m (15 kgf.cm, 13 in..lbf)**
36. **INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY**
  - a. Install a new gasket to the fuel suction plate.
  - b. Connect the fuel sub-suction hose to the fuel return jet tube.
  - c. Attach the fuel pump and sender gauge to the fuel tank.



**Fig. 55: Installing Fuel Sub-Suction Hose**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

37. **INSTALL FUEL TANK VENT TUBE SET PLATE**
  - a. Install the set plate with the 8 bolts.  
**Torque: 6.0 N.m (61 kgf.cm, 52 in..lbf)**
38. **INSTALL FUEL TANK ASSY**
  - a. Install the fuel tank with the fuel tank band.  
**Torque: 39 N.m (400 kgf.cm, 29 ft.lbf)**
39. **INSTALL FUEL TANK BREATHER HOSE**
40. **INSTALL FUEL TANK EVAPORATION VENT TUBE**
41. **INSTALL FUEL TANK TO FILLER PIPE HOSE**
42. **INSTALL PARKING BRAKE CABLE ASSY NO.3 (See REPLACEMENT )**
43. **INSTALL PARKING BRAKE CABLE ASSY NO.2 (See REPLACEMENT )**
44. **INSTALL PROPELLER SHAFT ASSY (See OVERHAUL )**

45. **INSTALL DIFFERENTIAL SUPPORT PROTECTOR NO.2**

46. **INSTALL DIFFERENTIAL SUPPORT PROTECTOR NO.1**

47. **INSTALL FRONT FLOOR HEAT INSULATOR NO.1**

- a. Install the front floor heat insulator with the 4 bolts.

**Torque: 5.4 N.m (55 kgf.cm, 47 in..lbf)**

48. **INSTALL PROPELLER SHAFT HEAT INSULATOR**

49. **INSTALL EXHAUST PIPE ASSY (See REPLACEMENT )**

50. **INSTALL ENGINE UNDER COVER NO.2**

51. **INSTALL FRONT FLOOR BRACE CENTER (See OVERHAUL )**

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

53. **INSTALL FUEL TANK MAIN TUBE SUB-ASSY**

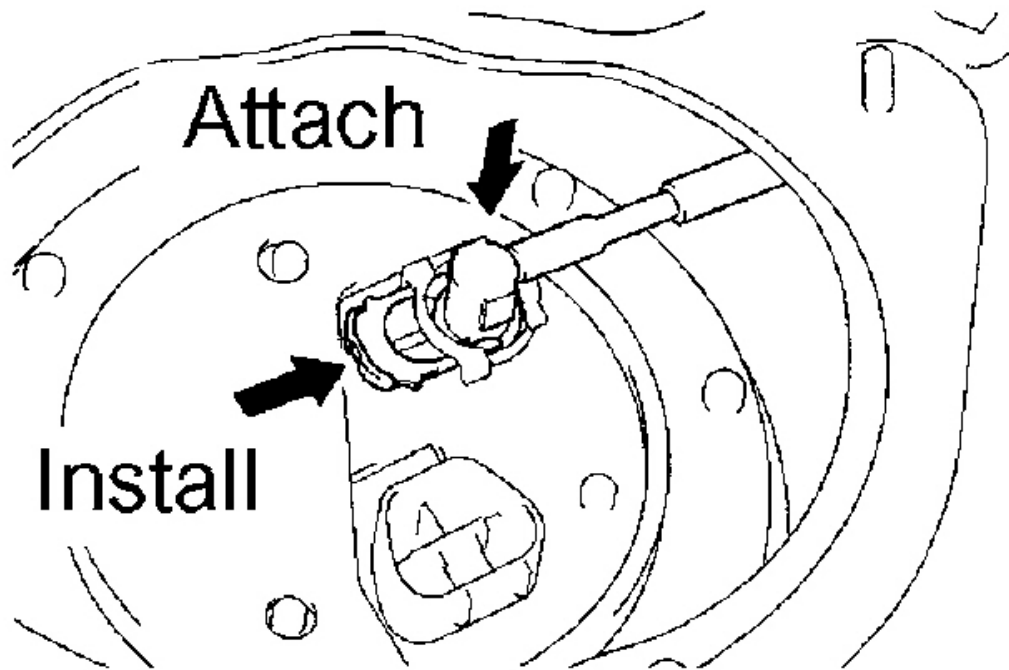
- a. Connect the connector on the fuel tank side.

1. Attach the fuel tube connector to the port of the fuel suction plate.

2. Install the tube joint clip.

- b. Connect the connector on the fuel pipe side.

1. Insert the connector by aligning the axes of the pipe and the connector until the retainer makes a click sound.



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**Fig. 56: Connecting Connector**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NOTE:**

- Check for damage and dirt contamination in the pipe and around the connector.
- After having finished the connection, check if the pipe and the connector are securely connected by trying to pull them apart.

54. **INSTALL REAR FLOOR SERVICE HOLE COVER NO.2 (See REPLACEMENT )**
55. **INSTALL BENCH TYPE REAR SEAT CUSHION ASSY (FIXED TYPE REAR SEAT) (See OVERHAUL )**
56. **INSTALL SEPARATE TYPE REAR SEAT CUSHION ASSY LH (SEPARATED TYPE REAR SEAT) (See OVERHAUL )**
57. **ADD FUEL (See PRECAUTION )**
58. **CONNECT BATTERY NEGATIVE TERMINAL**

**NOTE:**

When disconnecting the negative (-) battery terminal, initialize the following system(s) after the terminal is reconnected (see

**INITIALIZATION ).**

59. **INSPECT FUEL PUMP OPERATION AND CHECK FOR FUEL LEAKS (See ON-VEHICLE INSPECTION )**
60. **CHECK FOR EXHAUST GAS LEAKS (See REPLACEMENT )**