

# FUEL SYSTEM

## PRECAUTION

### 1. BEFORE WORKING ON FUEL SYSTEM

- (a) Before working on the fuel system, disconnect the cable from the negative battery terminal.
- (b) Do not work on the fuel system near naked flames. Never smoke during the work.
- (c) Keep rubber and leather parts away from gasoline.

### 2. DISCHARGE FUEL SYSTEM PRESSURE

#### CAUTION:

- **DISCHARGE FUEL SYSTEM PRESSURE** procedures must be performed before disconnecting any part of the fuel system.
- **As some pressure remains in the fuel line even after taking precautions to prevent gasoline spillage, use a shop rag or piece of cloth to prevent gasoline splashes when disconnecting the fuel line.**

- (a) Disconnect the cable from the negative battery terminal.
- (b) Remove the circuit opening relay (see page [ES-443](#)).
- (c) Connect the cable to the battery negative terminal.  
**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**
- (d) Start the engine.
- (e) Turn the ignition switch to ON after the engine stops.  
HINT:  
DTC P0171 (system too lean (Bank 1)) or DTC P0174 (system too lean (Bank 2)) may be set.
- (f) Crank the engine again and check that the engine stops.
- (g) Remove the fuel tank cap and discharge the pressure in the fuel tank completely.
- (h) Install the circuit opening relay (see page [ES-443](#)).

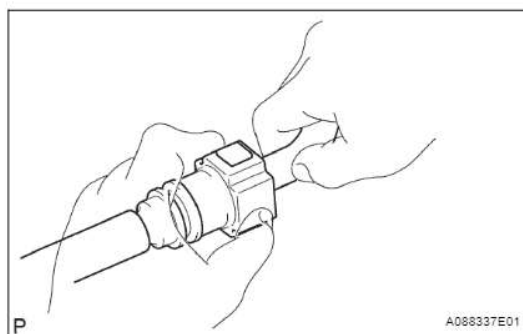
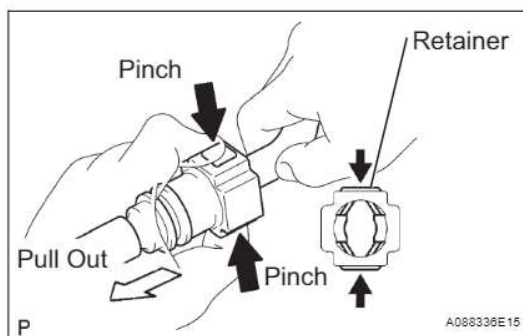
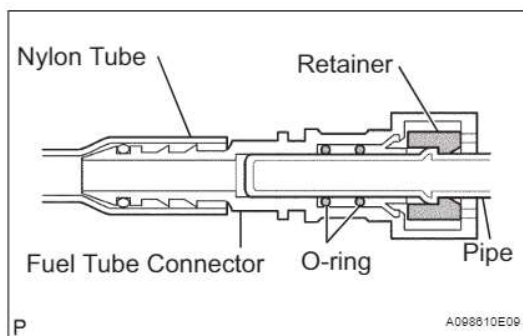
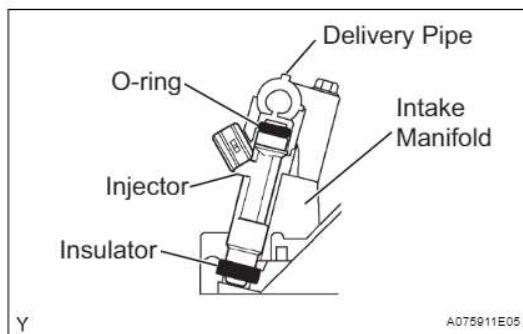
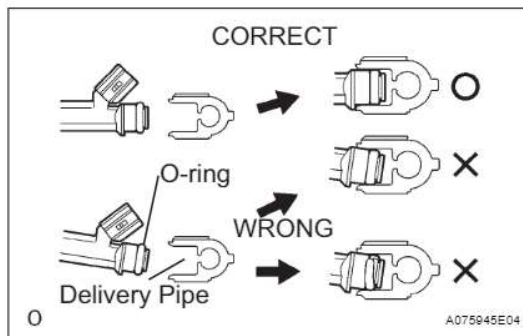
### 3. FUEL SYSTEM

- (a) When disconnecting the high-pressure fuel line, a large amount of gasoline will splash. So take the following precautions.
  - (1) Discharge the fuel system pressure.
  - (2) Disconnect the fuel tank main tube (see page [FU-42](#)).
  - (3) Drain the fuel remaining in the fuel tank main tube.
  - (4) Cover the disconnected fuel tank main tube (fuel tube joint and fuel tube connector) with a vinyl bag to prevent damage and the intrusion of foreign objects.

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## 1GR-FE FUEL – FUEL SYSTEM



(b) Take the following precautions when installing the fuel injector.

- (1) Do not reuse the O-ring.
- (2) Do not damage a new O-ring when installing it into the fuel injector.
- (3) Before installing a new O-ring, apply gasoline or spindle oil.

**NOTICE:**

**Do not use engine oil, gear oil or brake oil.**

- (4) Install the fuel injector into the fuel delivery pipe and cylinder head as illustrated.

**NOTICE:**

**Apply gasoline or spindle oil to the contact surface of the fuel delivery pipe and fuel injector before installing the fuel injector.**

(c) Take the following precautions when disconnecting the fuel tube connector.

**HINT:**

The structure of the fuel tube connector is as shown in the illustration.

- (1) Check the fuel tube connector and pipe for dirt and mud before removing the fuel tube connector.

If dirty, wipe it with a shop rag or piece of cloth.

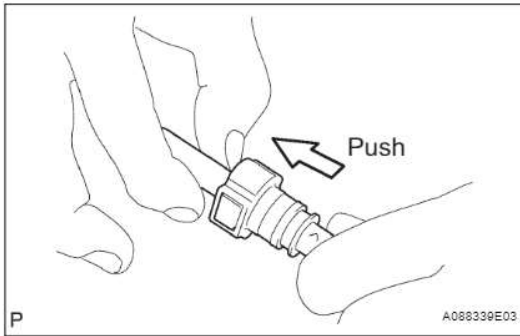
- (2) Pinch the retainer as illustrated, and pull the fuel tube connector out of the pipe.

- (3) If the fuel tube connector and pipe are stuck, pinch the pipe, then push and pull the fuel tube connector to release and disconnect it.

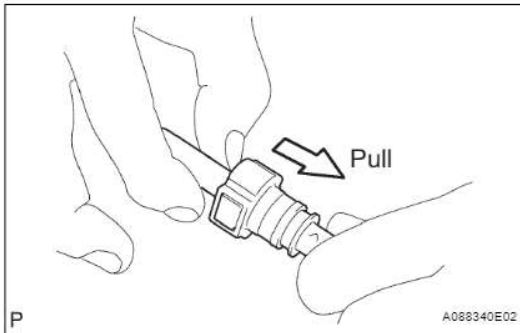
**NOTICE:**

**Never use any tools.**

- (4) After removing the fuel tube, check the sealing surface of the pipe for dirt and mud. If dirty, wipe it with a shop rag or piece of cloth.
- (5) Cover the disconnected fuel tube connector and pipe with a vinyl bag to prevent damage and the intrusion of foreign objects.

**1GR-FE FUEL – FUEL SYSTEM****FU-3**

- (d) Take the following precautions when installing the fuel tube connector.
- (1) Align the fuel tube connector with the pipe, then push in the fuel tube connector until the retainer makes a "click" sound.



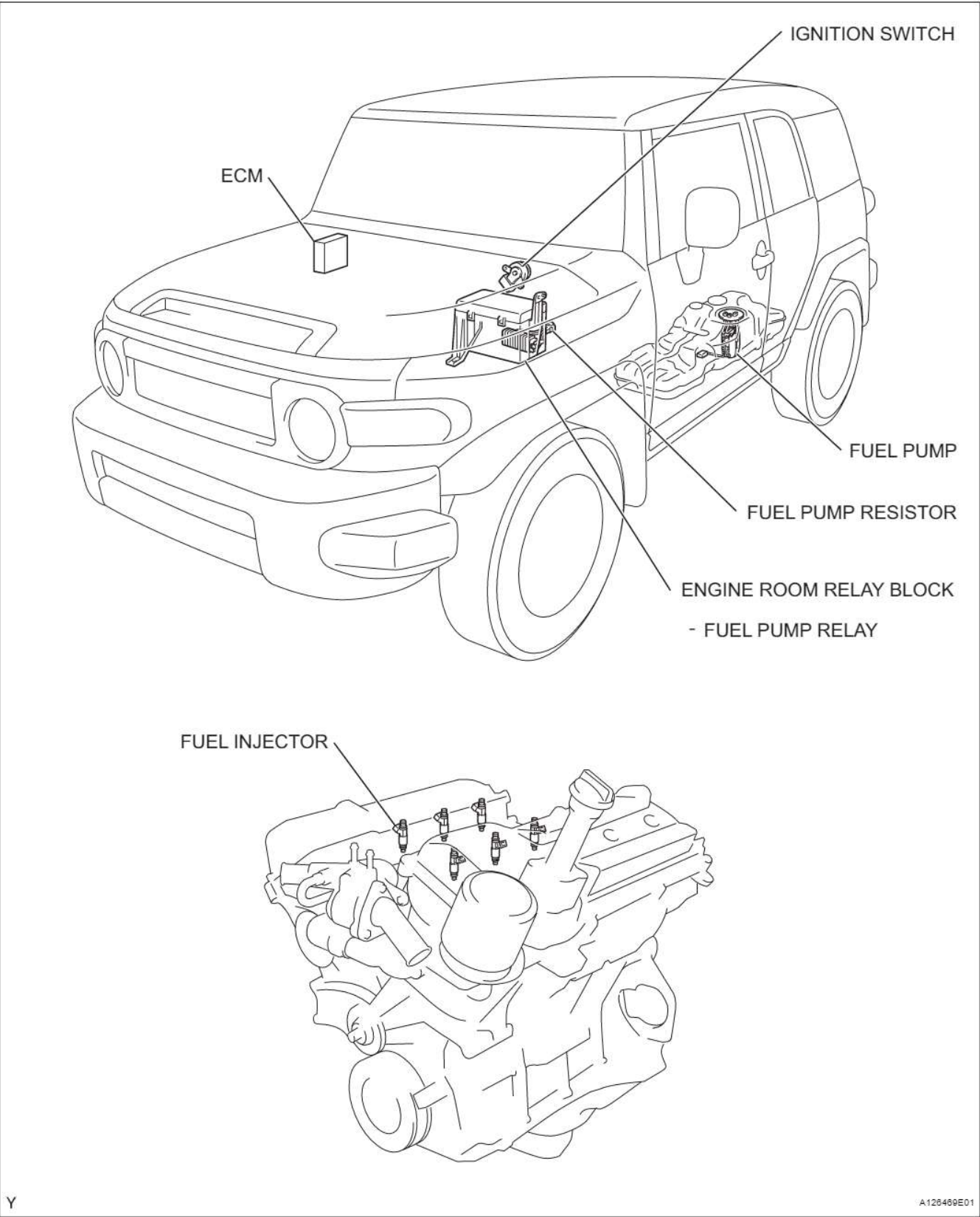
- (2) After connecting the fuel tube connector, check that the fuel tube connector and pipe are securely connected by pulling them.

**FU**

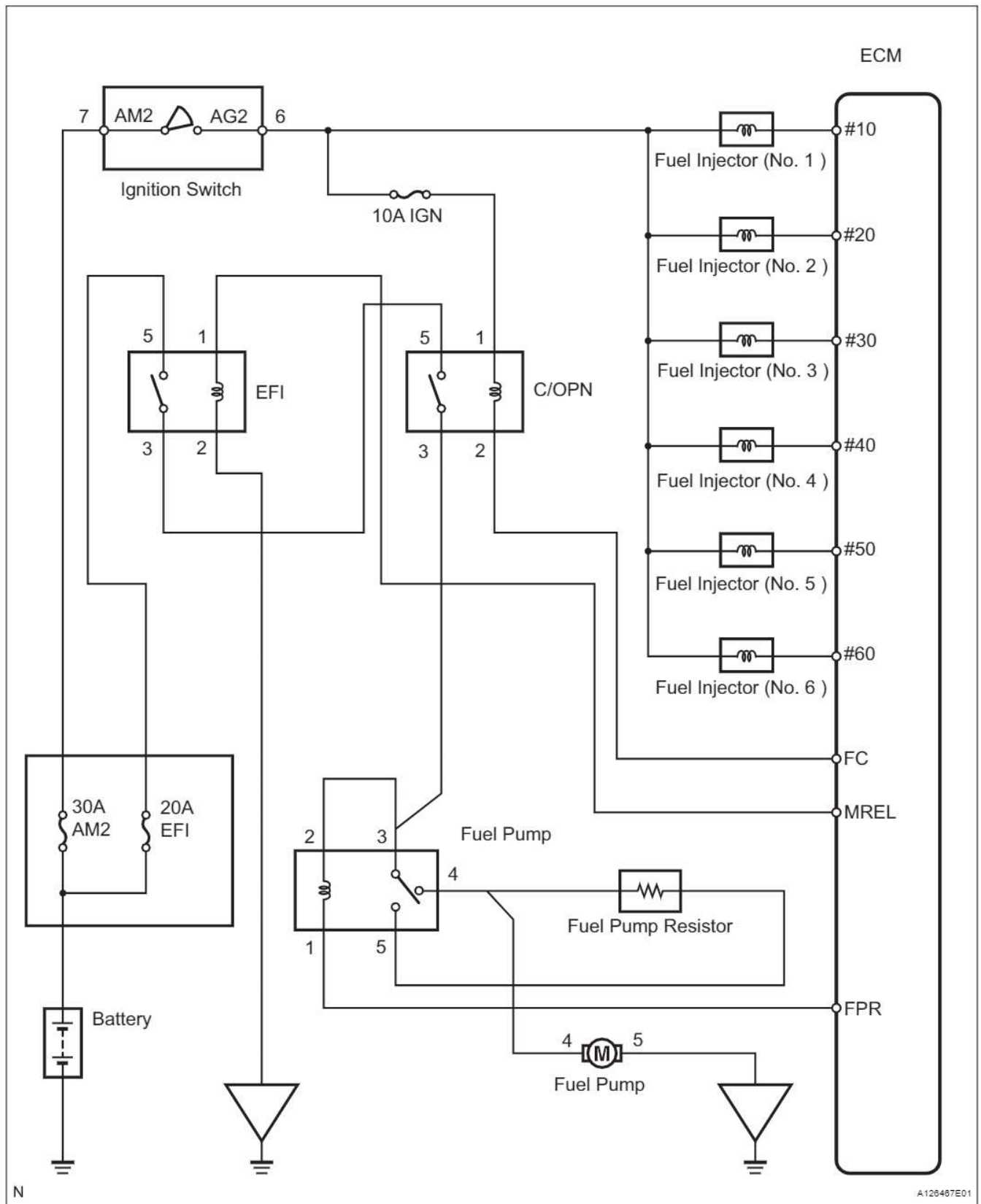
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1GR-FE FUEL – FUEL SYSTEM

PARTS LOCATION

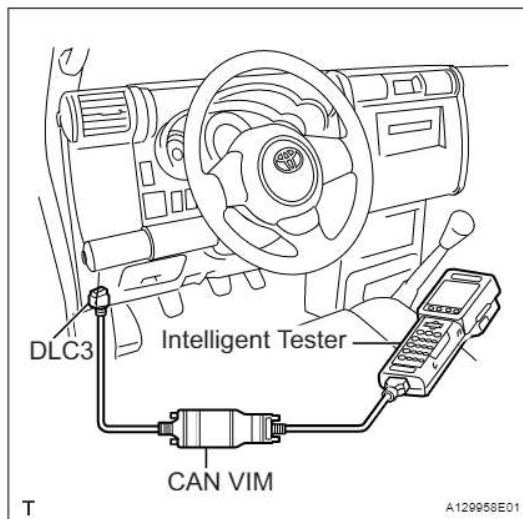


## SYSTEM DIAGRAM



## FU-6

## 1GR-FE FUEL – FUEL SYSTEM



## ON-VEHICLE INSPECTION

## 1. CHECK FUEL PUMP

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON.

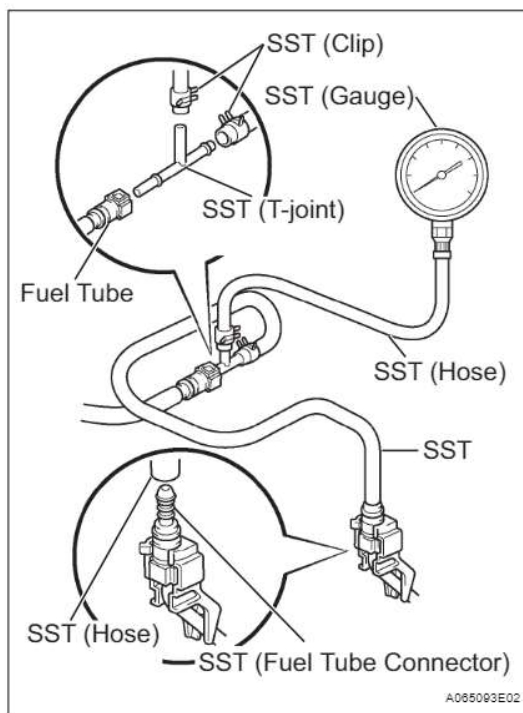
**NOTICE:**

**Do not start the engine.**

- (c) Turn the intelligent tester ON.
  - (d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD.
  - (e) Check the fuel operation by operating it with the intelligent tester.
- If the fuel pump does not operate, replace the fuel pump.

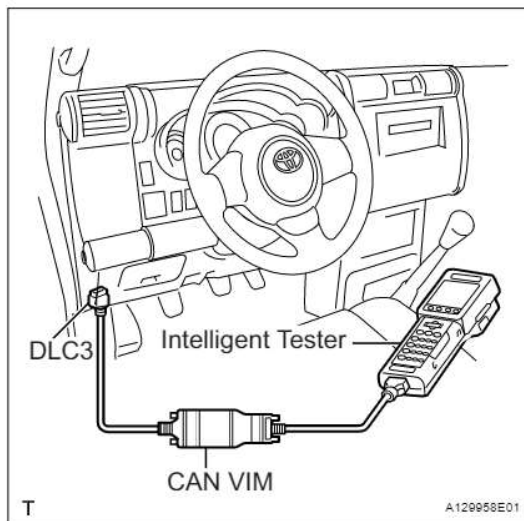
## 2. CHECK FUEL PRESSURE

- (a) Discharge the fuel pressure system (see page [FU-1](#)).
  - (b) Using a voltmeter, measure the battery voltage.
- Standard voltage:**  
**11 to 14 V**
- (c) Disconnect the negative battery terminal.
  - (d) Disengage the fuel pipe clamp.
  - (e) Disconnect the fuel pipe No. 1.
  - (f) Install SST and the fuel tube connector onto the vehicle.
  - (g) Wipe off any spilt gasoline.
  - (h) Connect the cable to the negative battery terminal.
- Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**



## 1GR-FE FUEL – FUEL SYSTEM

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- (i) Connect the intelligent tester to the DLC3.
- (j) Turn the ignition switch ON.
- (k) Turn the intelligent tester ON.
- (l) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD / ON.
- (m) Measure the fuel pressure.

**Standard:**

**281 to 287 kPa (2.87 to 2.93 kgf/cm<sup>2</sup>, 40.8 to 41.7 psi)**

- If the fuel pressure is greater than the standard value, replace the fuel pump.
- If the fuel pressure is less than the standard value, check the connection between the fuel hose and fuel pump.

- (n) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / PRIMARY / FUEL PUMP / SPD / OFF.

- (o) Check that the fuel pressure does not change for 5 minutes.

**Standard:**

**147 kPa (1.5 kgf/cm<sup>2</sup>, 21 psi)**

If the result is not as specified, check the fuel pump and fuel injector.

- (p) Disconnect the intelligent tester from the DLC3.
- (q) Disconnect the cable from the battery negative terminal.
- (r) Remove SST and the fuel tube connector while being careful to prevent gasoline splashes.
- (s) Connect the fuel tube.

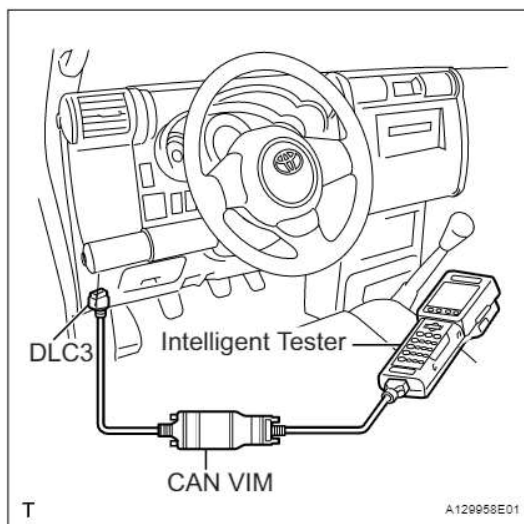
**3. CHECK FOR FUEL LEAKAGE**

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON.

**NOTICE:**

**Do not start the engine.**

- (c) Turn the intelligent tester ON.
- (d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD / ON.
- (e) Check that there is no leakage from the fuel system.

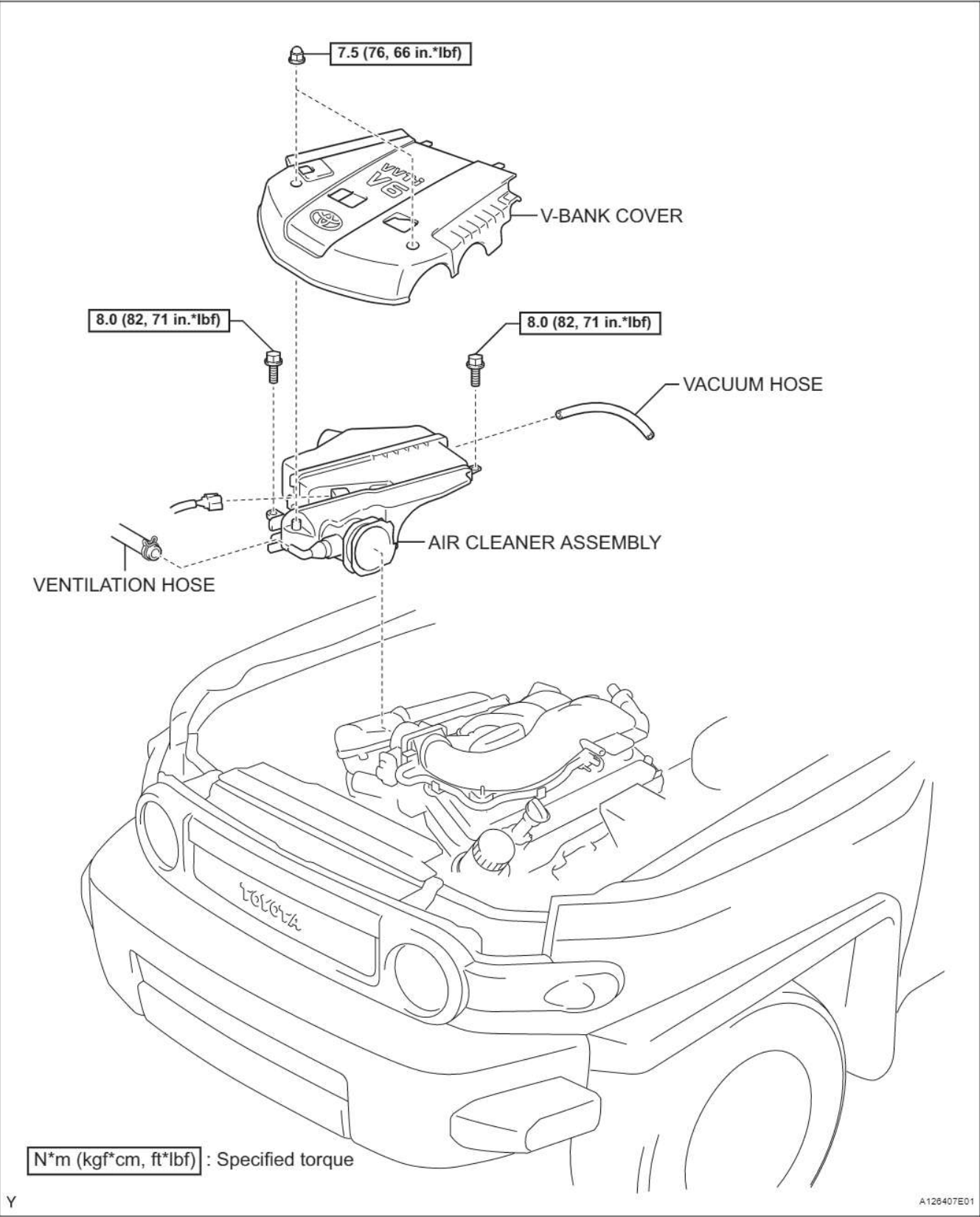


FU

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1GR-FE FUEL – FUEL INJECTOR

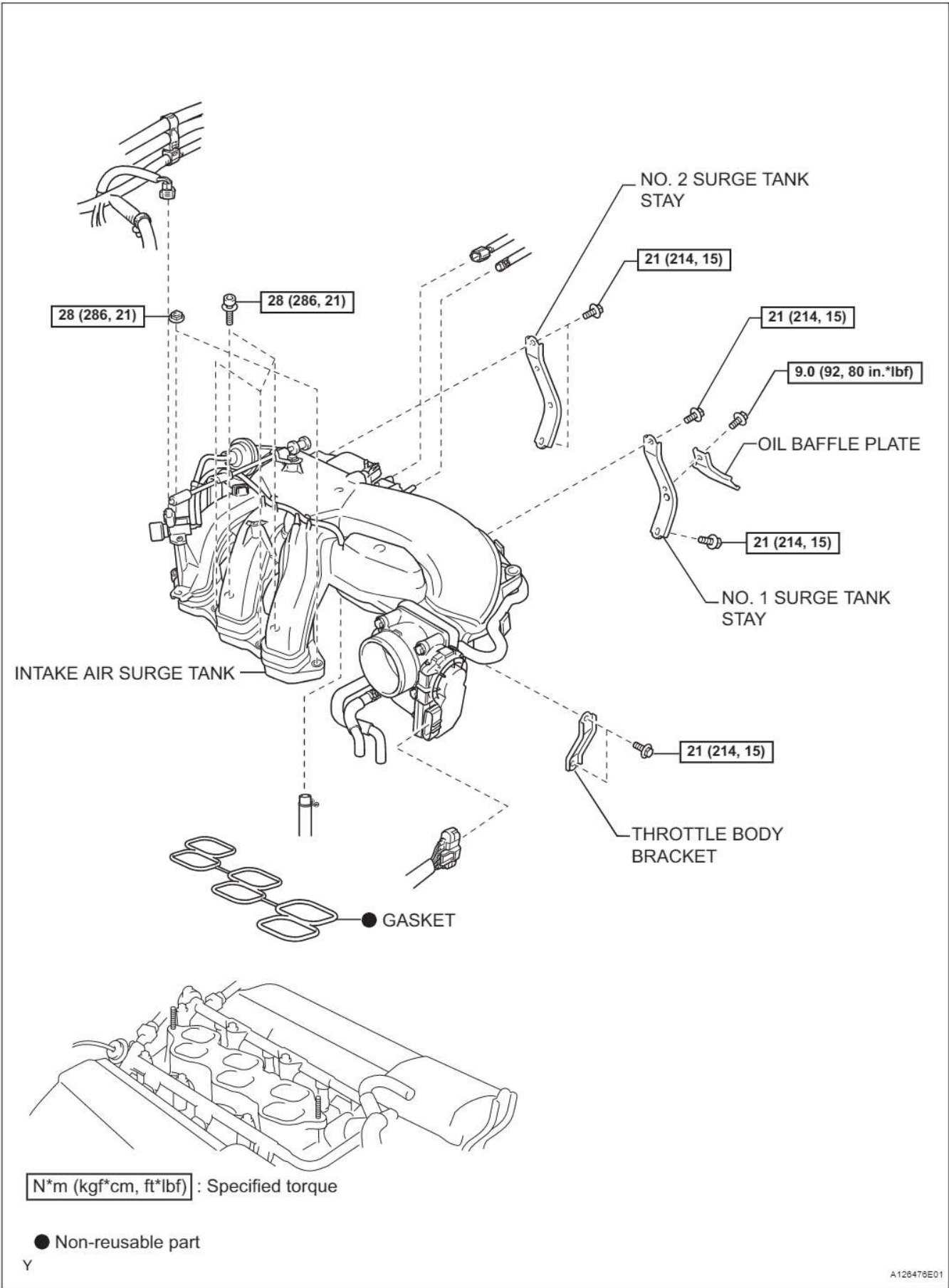
FUEL INJECTOR  
COMPONENTS



1GR-FE FUEL – FUEL INJECTOR

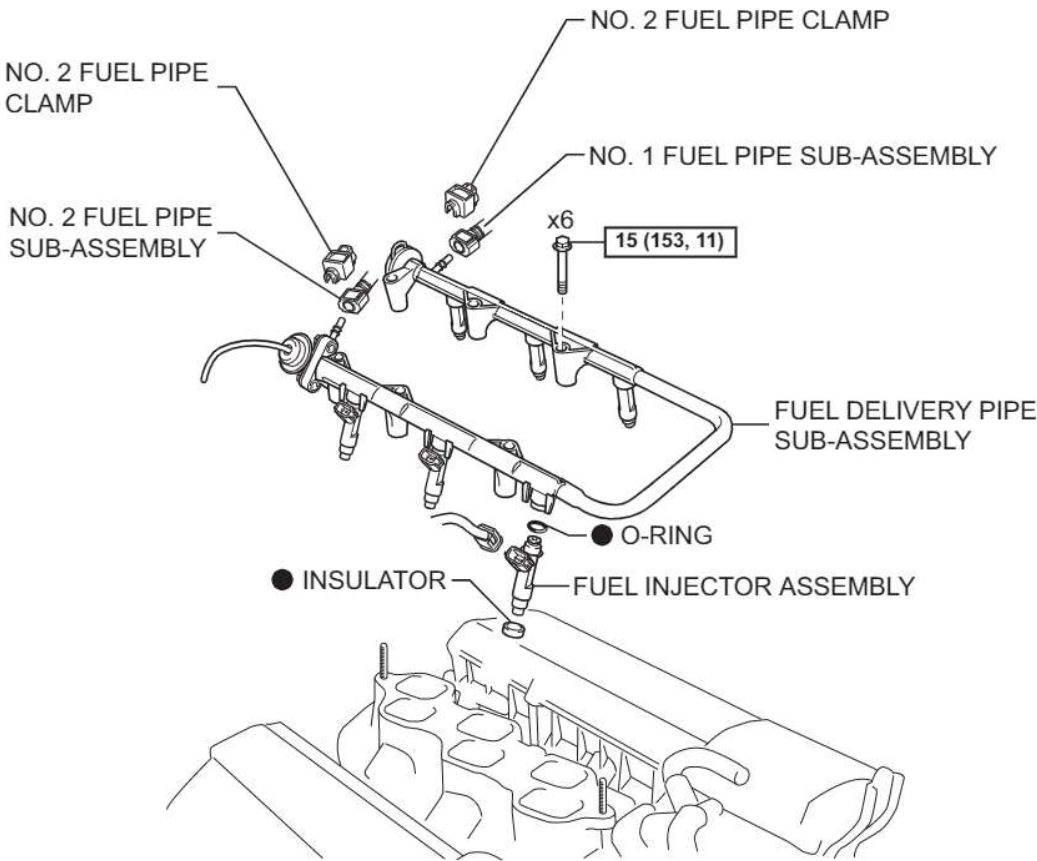
FU-9

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1GR-FE FUEL – FUEL INJECTOR



**N\*m (kgf\*cm, ft\*lb)** : Specified torque

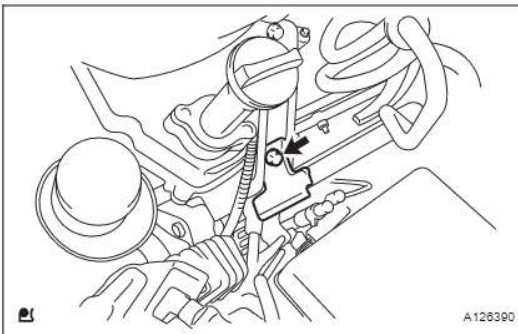
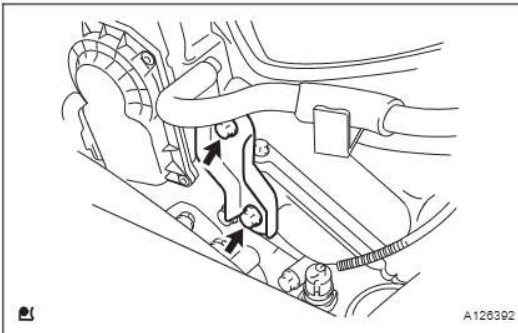
● Non-reusable part

Y

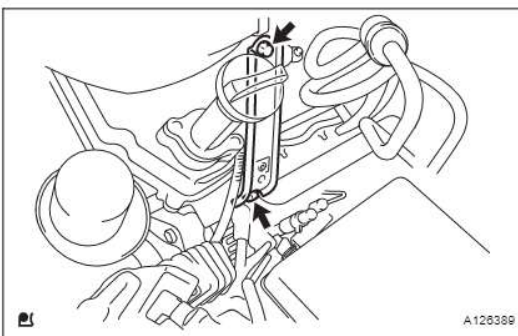
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## REMOVAL

1. **DISCHARGE FUEL SYSTEM PRESSURE**  
(See page [FU-1](#))
2. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
3. **DRAIN ENGINE COOLANT** (See page [CO-3](#))
4. **REMOVE V-BANK COVER** (See page [ES-428](#))
5. **REMOVE AIR CLEANER ASSEMBLY** (See page [ES-429](#))
6. **REMOVE THROTTLE BODY BRACKET**  
(a) Remove the 2 bolts and the throttle body bracket.



7. **REMOVE OIL BAFFLE PLATE**  
(a) Remove the bolt and the oil baffle plate.

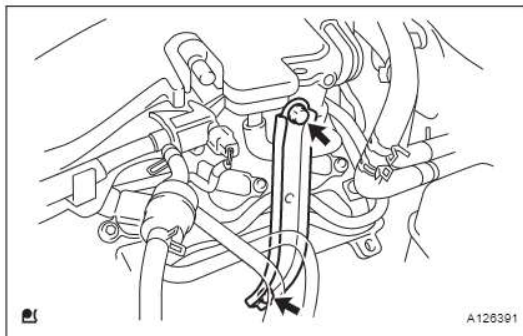


8. **REMOVE NO. 1 SURGE TANK STAY**  
(a) Remove the 2 bolts and the No. 1 surge tank stay.

**FU**

## FU-12

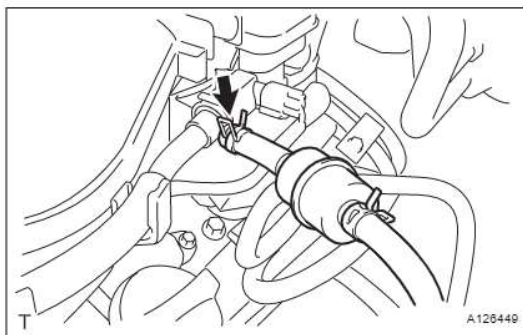
## 1GR-FE FUEL – FUEL INJECTOR

**9. REMOVE NO. 2 SURGE TANK STAY**

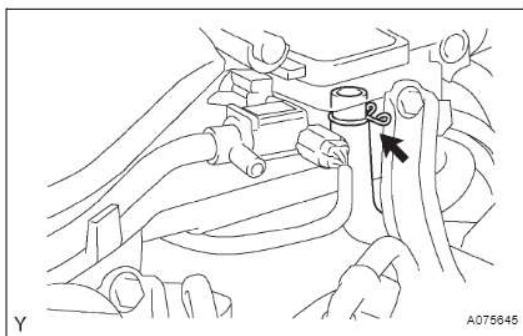
- (a) Remove the 2 bolts and the No. 2 surge tank stay.

**10. REMOVE INTAKE AIR SURGE TANK**

- (a) Disconnect the 2 water by-pass hoses.



- (b) Disconnect the fuel vapor feed hose.

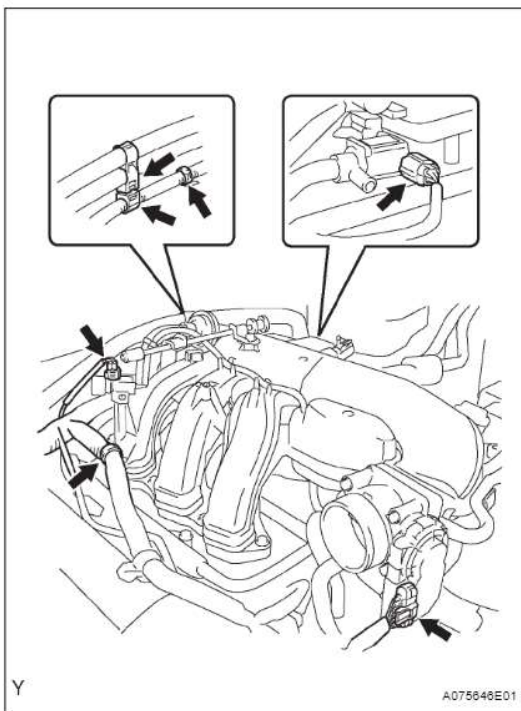


- (c) Disconnect the ventilation hose.

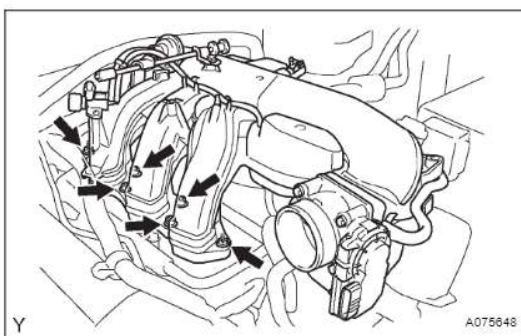
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## 1GR-FE FUEL – FUEL INJECTOR

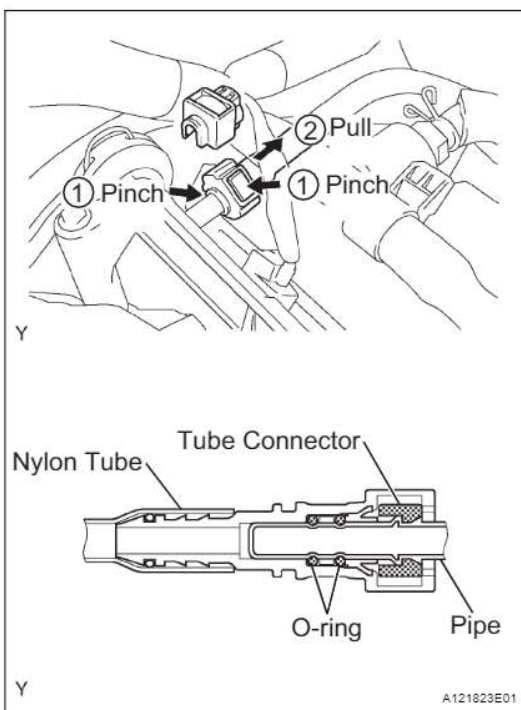
FU-13



- (d) Disconnect the 2 VSV connectors.
- (e) Disconnect the throttle body with motor connector.
- (f) Separate the 3 wire harness clamps and the hose clamp.



- (g) Remove the 2 nuts.
- (h) Using a socket hexagon wrench 8, remove the 4 bolts, intake air surge tank and the gasket.



## 11. DISCONNECT NO. 1 FUEL PIPE SUB-ASSEMBLY

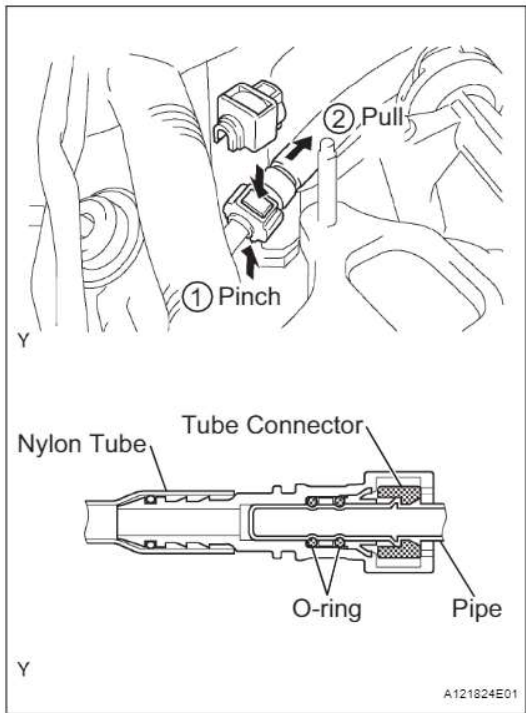
- (a) Remove the No. 2 fuel pipe clamp.
- (b) Pinch the tube connector, and then pull the fuel pipe out of the delivery pipe as shown in the illustration.

**NOTICE:**

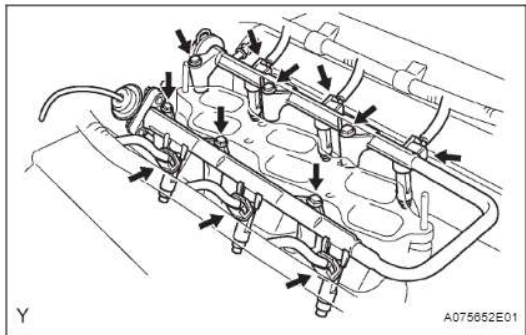
- Remove any dirt and foreign objects from the fuel tube connector before performing this work.
- Do not allow any scratches or foreign objects on the parts when disconnecting, as the fuel tube connector has the O-ring that seals the pipe.
- Perform this work by hand. Do not use any tools.
- Do not forcibly bend, twist or turn the nylon tube.
- Protect the disconnected part by covering it with a vinyl bag after disconnecting the fuel tube.
- If the fuel tube connector and pipe are stuck, push and pull to release them.

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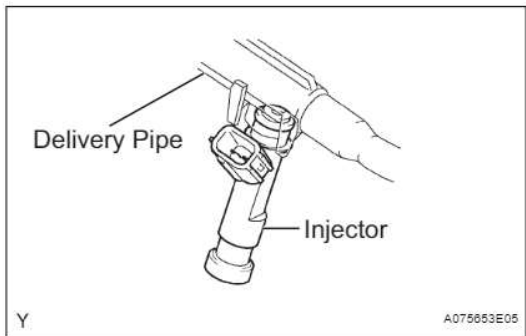
1GR-FE FUEL – FUEL INJECTOR



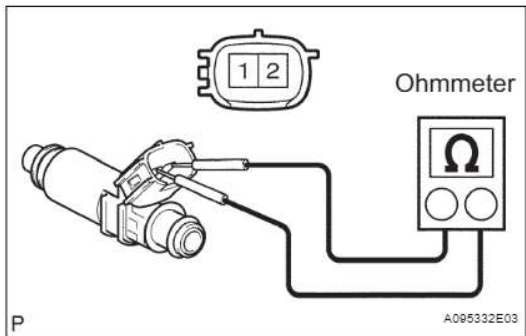
- 12. DISCONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY**
- (a) Remove the No. 2 fuel pipe clamp.
  - (b) Pinch the tube connector, and then pull the fuel pipe out of the delivery pipe as shown in the illustration.
- NOTICE:**
- Remove any dirt and foreign objects from the fuel tube connector before performing this work.
  - Do not allow any scratches or foreign objects on the parts when disconnecting, as the fuel tube connector has the O-ring that seals the pipe.
  - Perform this work by hand. Do not use any tools.
  - Do not forcibly bend, twist or turn the nylon tube.
  - Protect the disconnected part by covering it with a vinyl bag after disconnecting the fuel tube.
  - If the fuel tube connector and pipe are stuck, push and pull to release them.



- 13. REMOVE FUEL DELIVERY PIPE SUB-ASSEMBLY**
- (a) Disconnect the 6 fuel injector connectors.
  - (b) Remove the 6 bolts and remove the fuel delivery pipe together with the 6 fuel injectors.
- NOTICE:**
- Do not drop the injectors when removing the fuel delivery pipe.



- 14. REMOVE FUEL INJECTOR**
- (a) Pull the 6 injectors out of the delivery pipe.



- INSPECTION**
- 1. INSPECT FUEL INJECTOR ASSEMBLY**
- (a) Check the resistance.
    - (1) Using an ohmmeter, measure the resistance between the terminals.
- Standard resistance**

| Tester Connection | Specified Condition                  |
|-------------------|--------------------------------------|
| 1 -2              | 11.6 to 12.4 $\Omega$ at 20°C (68°F) |

## 1GR-FE FUEL – FUEL INJECTOR

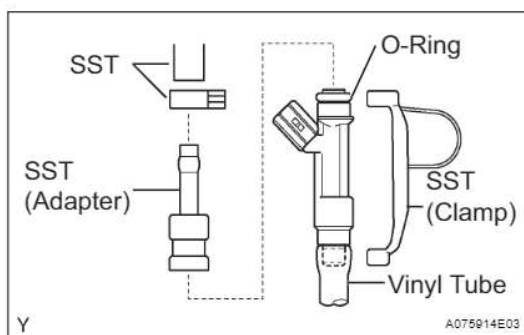
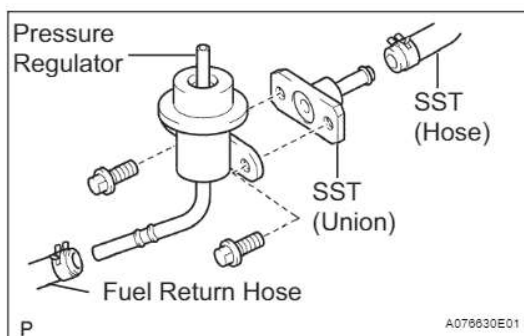
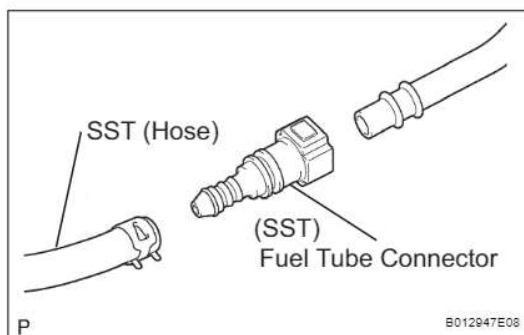
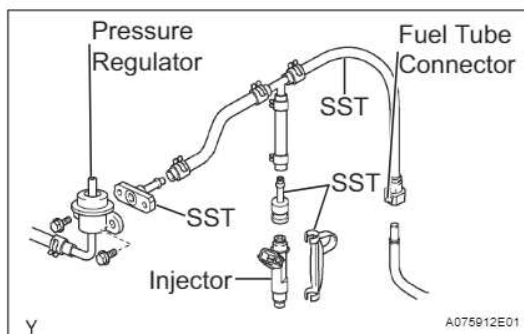
FU-15

If the result is not as specified, replace the fuel injector.

- (b) Check the injection volume.

**NOTICE:**

- Perform the test in a well-ventilated area away from naked flames.
- Handle the fuel tube connector carefully.



- (1) Install the fuel tube connector into SST (hose), then connect the tube connector to the fuel pipe.

**SST 09268-31011 (95336-08070, 09268-41500)**

**CAUTION:**

**Connect the fuel tube connector (quick type) after observing the precautions.**

- (2) Remove the fuel pressure regulator (See page [FU-22](#)).
- (3) Install the O-ring onto the fuel inlet of the pressure regulator.
- (4) Connect SST (hose) to the fuel inlet of the pressure regulator with another SST (union) and the 2 bolts.

**SST 09268-31011 (09268-41091, 95336-08070)**

**Torque: 9.0 N\*m (92 kgf\*cm, 80 in.\*lbf)**

- (5) Connect the fuel return hose to the fuel outlet of the pressure regulator.

- (6) Install a new O-ring onto the injector.
- (7) Connect SST (adaptor and hose) to the injector and hold the injector and union with SST (clamp).

**SST 09268-31011 (95336-08070, 09268-41100), 09268-41140**

- (8) Set the injector in a graduated cylinder.

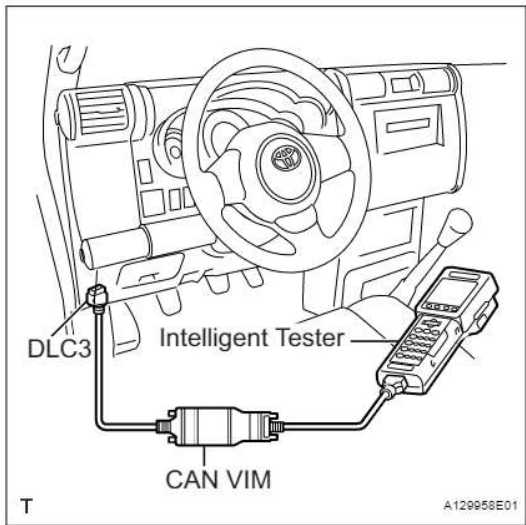
**CAUTION:**

**Install a suitable vinyl tube onto the injector to prevent gasoline splashes.**

FU

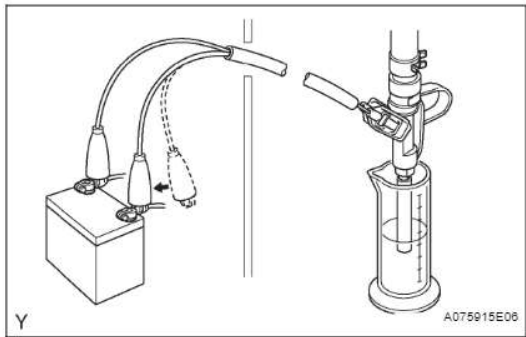
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1GR-FE FUEL – FUEL INJECTOR



- (9) Connect the intelligent tester to the DLC3.
- (10) Turn the ignition switch ON.
- (11) Turn the intelligent tester ON.
- (12) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD / ON.
- (13) Install SST onto the fuel injector.

FU



- (14) Connect SST to the battery, then measure the injection volume for 15 seconds. Perform the inspection 2 or 3 times, then calculate the average.

**Standard:**

| Injection Volume                                            | Difference Between Each Fuel Injector   |
|-------------------------------------------------------------|-----------------------------------------|
| 76 to 91 cm <sup>3</sup> (4.6 to 5.5 cu in.) per 15 seconds | 15 cm <sup>3</sup> (0.9 cu in.) or less |

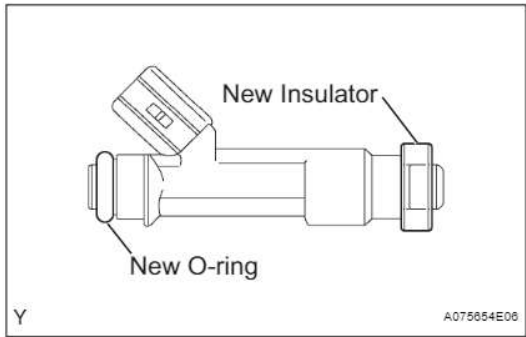
**NOTICE:**  
**Always do the switching at the battery side.**  
If the result is not as specified, replace the fuel injector.

- (c) Check for fuel leakage.
  - (1) When checking the injection volume, remove SST from the battery. Inspect the fuel leakage from the fuel injector.

**Standard:**  
**1 drop or less every 12 minutes.**  
If the result is not as specified, replace the fuel injector.

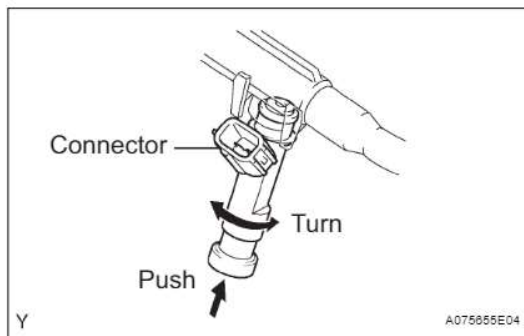
**INSTALLATION**

- 1. INSTALL FUEL INJECTOR**
  - (a) Install a new insulator onto each fuel injector.
  - (b) Apply a light coat of spindle oil or gasoline to a new O-ring and install it onto each fuel injector.

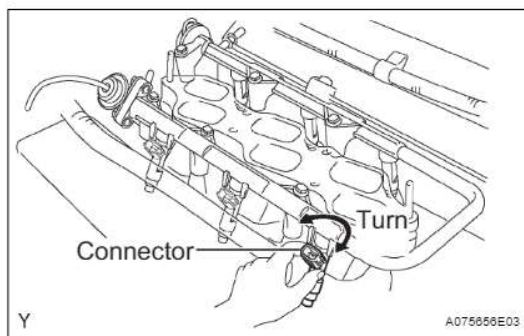


## 1GR-FE FUEL – FUEL INJECTOR

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- (c) While turning the fuel injector left and right, install it onto the fuel delivery pipe.
- (d) Position the fuel injector connector facing outward.



## 2. INSTALL FUEL DELIVERY PIPE SUB-ASSEMBLY

- (a) Place the fuel delivery pipe together with the 6 fuel injectors on the intake manifold.
- (b) Provisionally install the 6 bolts, which are used to hold the fuel delivery pipe, onto the intake manifold.
- (c) Check that the fuel injectors rotate smoothly.

## HINT:

If the fuel injectors do not rotate smoothly, replace the O-ring.

- (d) Position each fuel injector connector facing outward.
- (e) Tighten the 6 bolts, which are used to hold the fuel delivery pipe, to the intake manifold.

**Torque: 15 N\*m (153 kgf\*cm, 11 ft.\*lbf)**

- (f) Connect the 6 fuel injector connectors.

## 3. CONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY

- (a) Push the tube connector into the pipe until the tube connector makes a "click" sound.

## NOTICE:

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

- (b) Install the fuel pipe clamp.

## 4. CONNECT NO. 1 FUEL PIPE SUB-ASSEMBLY

- (a) Push the tube connector into the pipe until the tube connector makes a "click" sound.

## NOTICE:

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

- (b) Install the fuel pipe clamp.

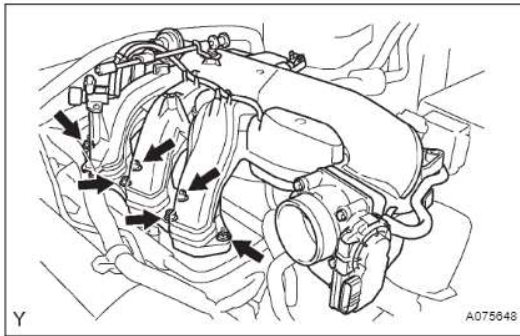
## 5. INSTALL INTAKE AIR SURGE TANK

- (a) Install a new gasket onto the intake air surge tank.

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## FU-18

## 1GR-FE FUEL – FUEL INJECTOR

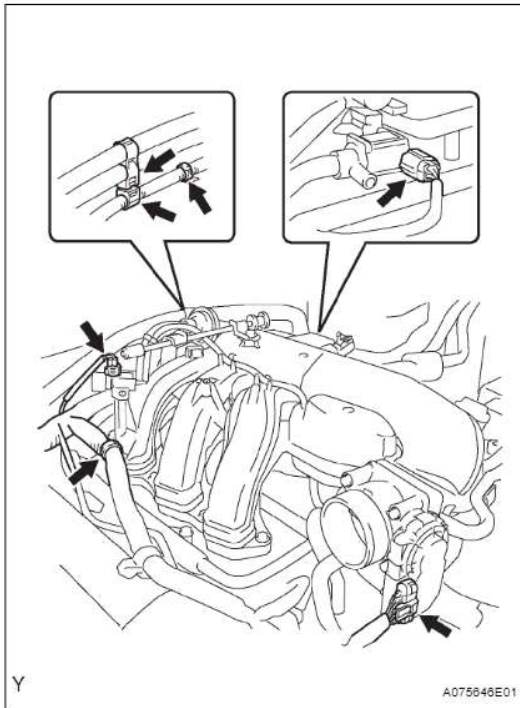


- (b) Using a socket hexagon wrench 8, install the intake air surge tank with the 4 bolts.

**Torque: 28 N\*m (286 kgf\*cm, 21 ft.\*lbf)**

- (c) Install the 2 nuts.

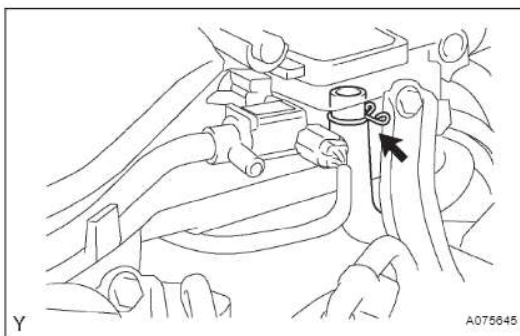
**Torque: 28 N\*m (286 kgf\*cm, 21 ft.\*lbf)**



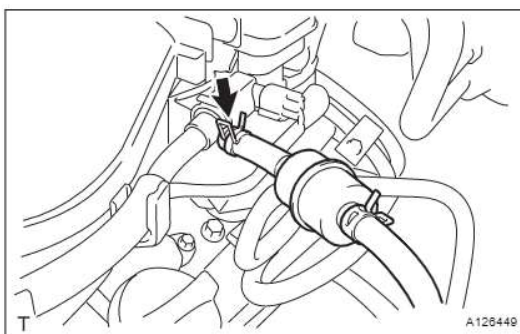
- (d) Install the 3 wire harness clamps and hose clamp.

- (e) Connect the throttle body with motor connector.

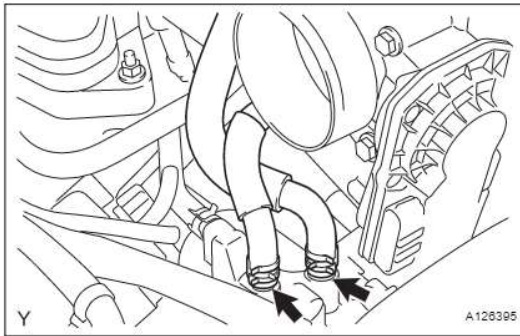
- (f) Connect the 2 VSV connectors.



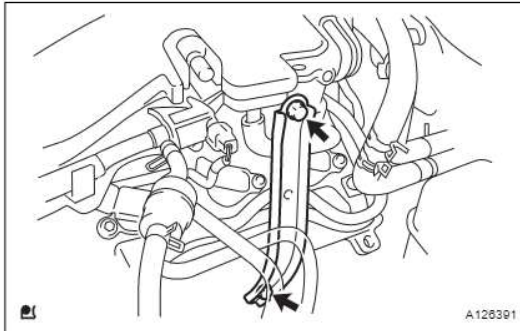
- (g) Connect the ventilation hose.



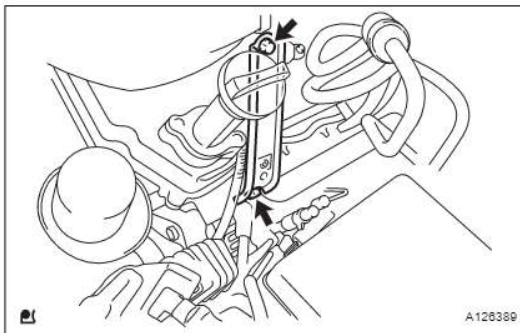
- (h) Connect the fuel vapor feed hose.

**1GR-FE FUEL – FUEL INJECTOR****FU-19**

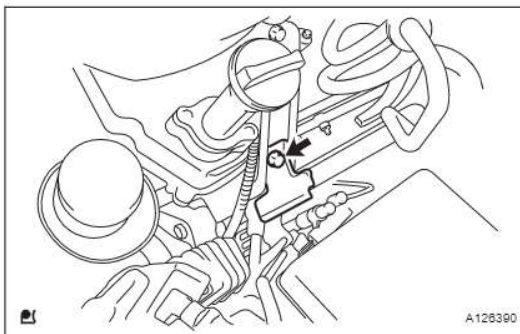
- (i) Connect the 2 water by-pass hoses.

**6. INSTALL NO. 2 SURGE TANK STAY**

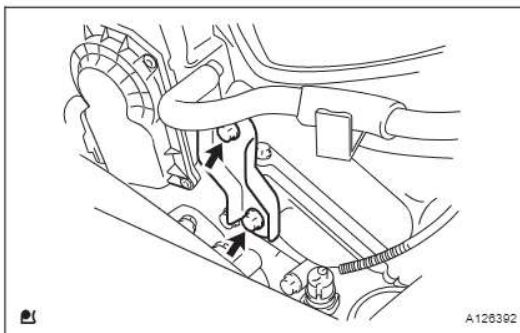
- (a) Install the No. 2 surge tank stay with the 2 bolts.  
Torque: 21 N\*m (214 kgf\*cm, 15 ft.\*lbf)

**7. INSTALL NO. 1 SURGE TANK STAY**

- (a) Install the No. 1 surge tank stay with the 2 bolts.  
Torque: 21 N\*m (214 kgf\*cm, 15 ft.\*lbf)

**8. INSTALL OIL BAFFLE PLATE**

- (a) Install the oil baffle plate with the bolt.  
Torque: 9.0 N\*m (92 kgf\*cm, 80 in.\*lbf)

**9. INSTALL THROTTLE BODY BRACKET**

- (a) Install the throttle body bracket with the 2 bolts.  
Torque: 21 N\*m (214 kgf\*cm, 15 ft.\*lbf)

**10. INSTALL AIR CLEANER ASSEMBLY (See page [ES-431](#))****11. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

- Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)

**12. ADD ENGINE COOLANT (See page [CO-3](#))****FU**

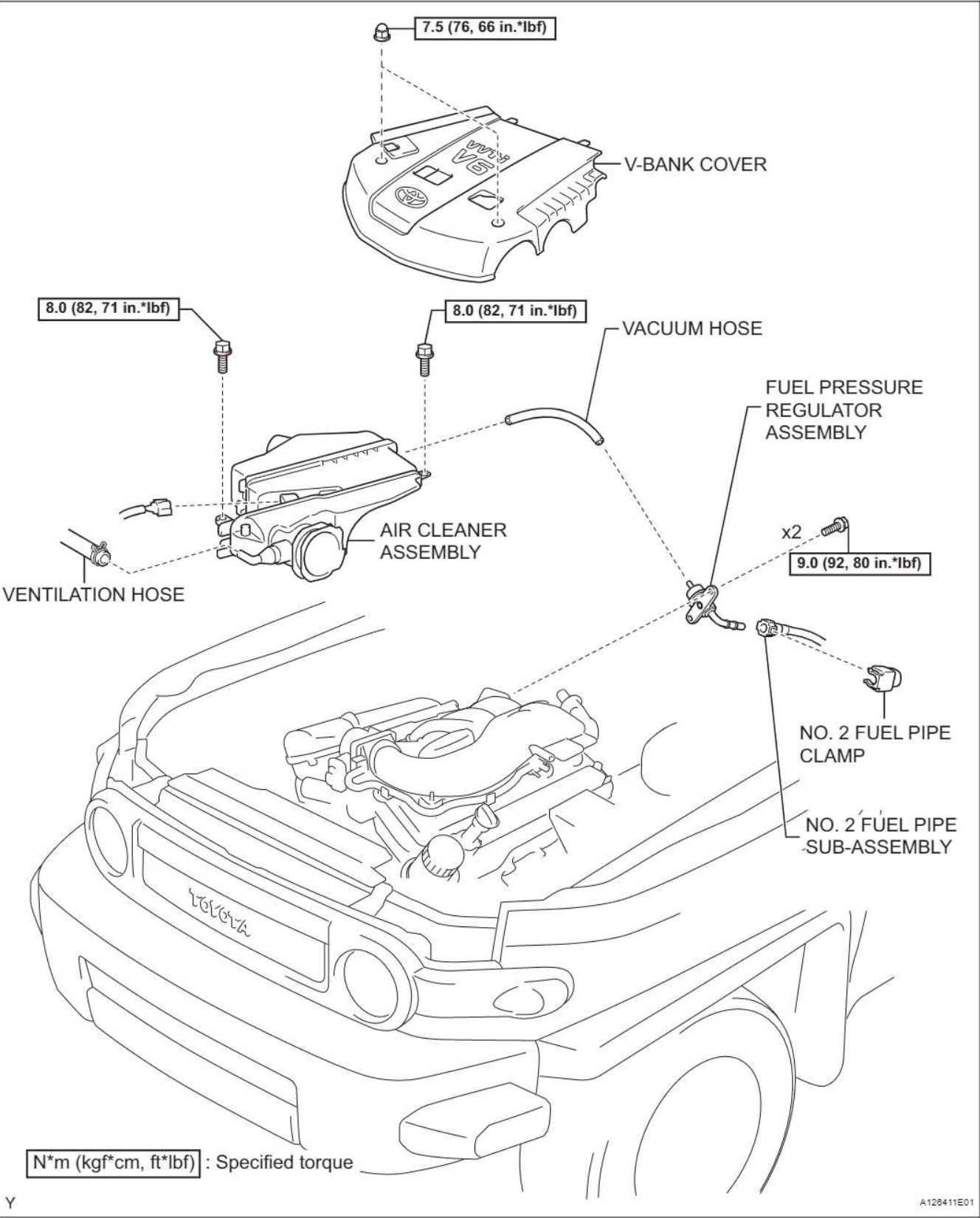
**FU-20****1GR-FE FUEL – FUEL INJECTOR**

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13. CHECK FOR ENGINE COOLANT LEAKAGE (See page [CO-4](#))
14. CHECK FOR FUEL LEAKAGE
15. INSTALL V-BANK COVER (See page [ES-431](#))

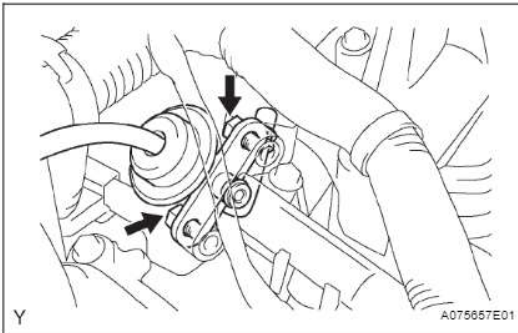
**FU**

FUEL PRESSURE REGULATOR  
COMPONENTS



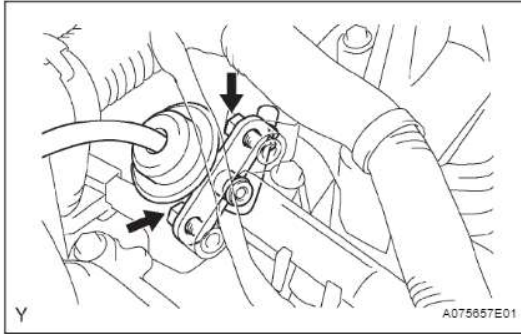
**FU-22****1GR-FE FUEL – FUEL PRESSURE REGULATOR****REMOVAL**

1. **DISCHARGE FUEL SYSTEM PRESSURE**  
(See page [FU-1](#))
2. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
3. **REMOVE V-BANK COVER** (See page [ES-428](#))
4. **REMOVE AIR CLEANER ASSEMBLY** (See page [ES-429](#))
5. **DISCONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY**  
(See page [FU-14](#))
6. **REMOVE FUEL PRESSURE REGULATOR ASSEMBLY**
  - (a) Remove the vacuum hose.
  - (b) Remove the 2 bolts, then remove the fuel pressure regulator.

**FU**

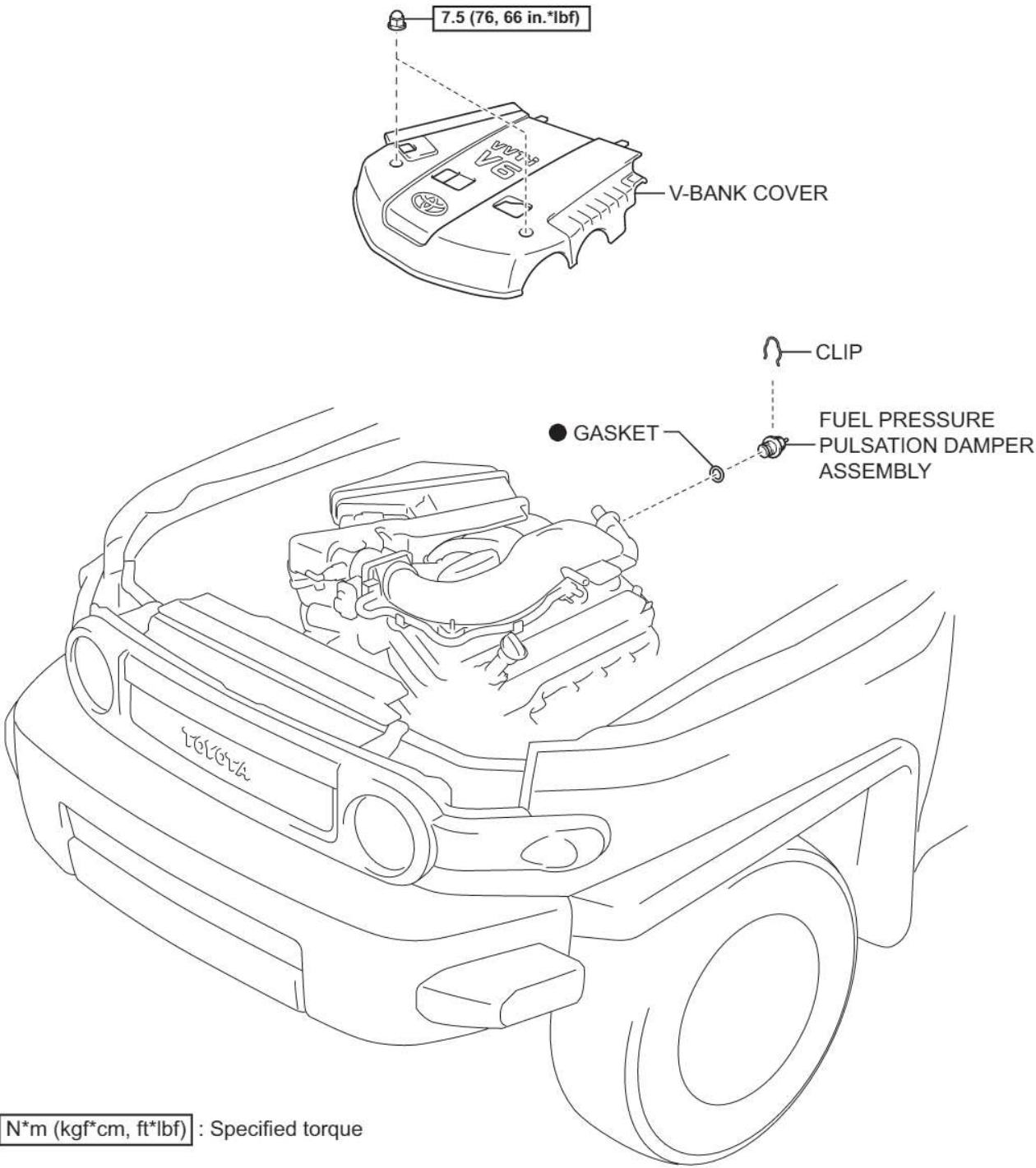
## INSTALLATION

1. **INSTALL FUEL PRESSURE REGULATOR ASSEMBLY**
  - (a) Install the vacuum hose.
  - (b) Apply a light coat of spindle oil or gasoline to a new O-ring and install it onto the fuel pressure regulator.
  - (c) Install the fuel pressure regulator with the 2 bolts.  
**Torque: 9.0 N\*m (92 kgf\*cm, 80 in.\*lbf)**
2. **CONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY** (See page [FU-17](#))
3. **INSTALL AIR CLEANER ASSEMBLY** (See page [ES-431](#))
4. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**  
**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**
5. **CHECK FOR FUEL LEAKAGE**
6. **INSTALL V-BANK COVER** (See page [ES-431](#))

**FU**

FUEL PRESSURE PULSATION DAMPER  
COMPONENTS

FU

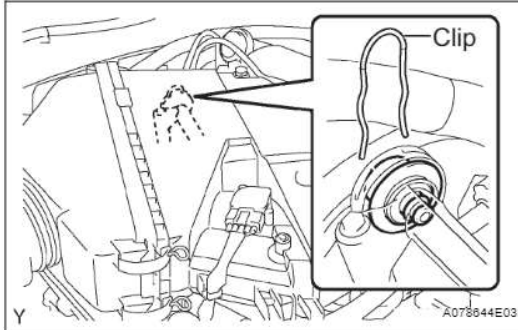
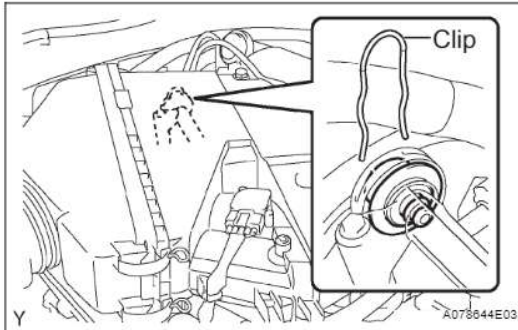


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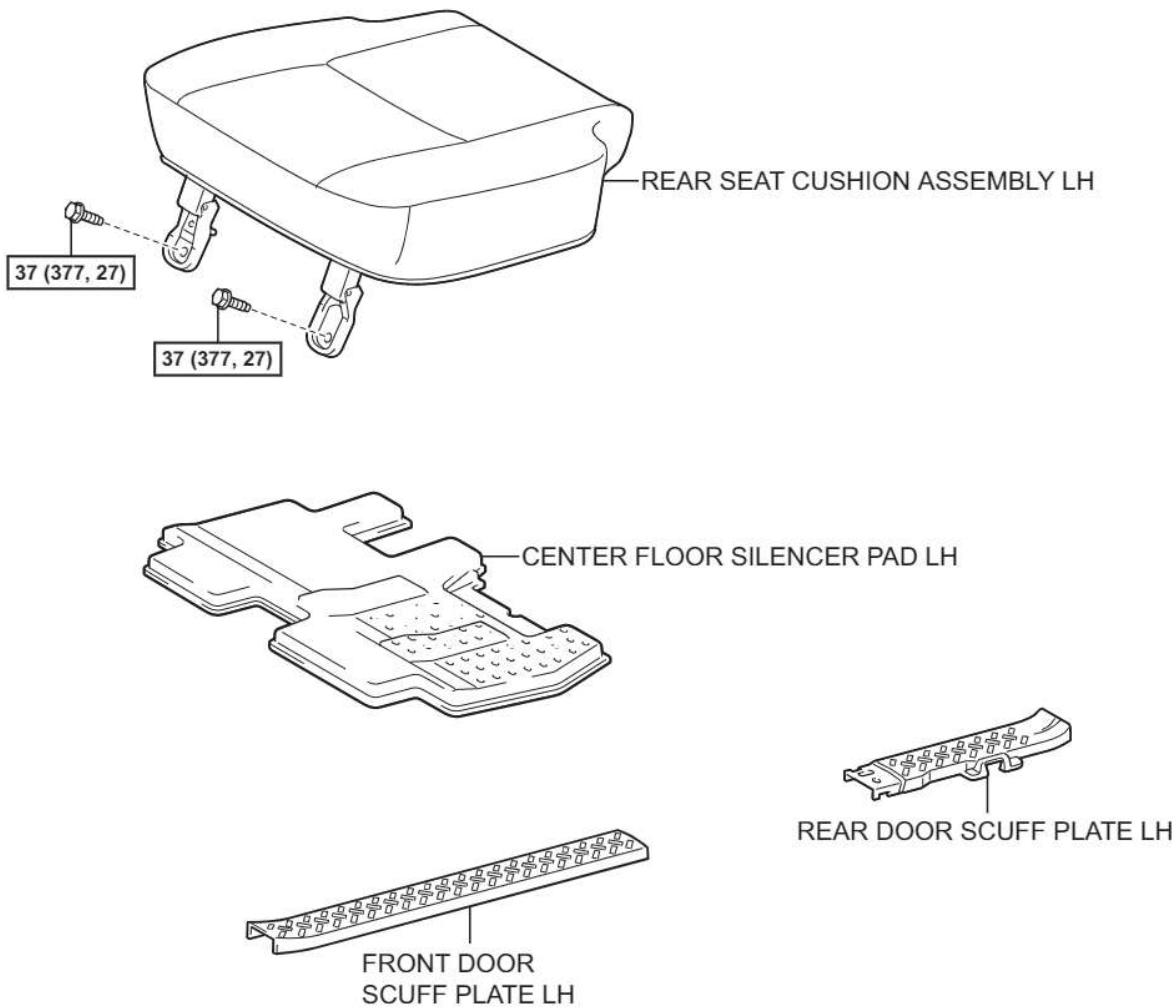
**FU-24****1GR-FE FUEL – FUEL PRESSURE PULSATION DAMPER****REMOVAL**

1. **DISCHARGE FUEL SYSTEM PRESSURE**  
(See page [FU-1](#))
2. **REMOVE V-BANK COVER** (See page [ES-428](#))
3. **REMOVE FUEL PRESSURE PULSATION DAMPER ASSEMBLY**
  - (a) Remove the clip.
  - (b) Pull the fuel pressure pulsation damper out of the fuel delivery pipe.

**FU****INSTALLATION**

1. **INSTALL FUEL PRESSURE PULSATION DAMPER ASSEMBLY**
  - (a) Apply a light coat of spindle oil or gasoline to a new O-ring and install it onto the fuel pressure pulsation damper.
  - (b) Install the fuel pressure pulsation damper onto the fuel delivery pipe.
  - (c) Install the clip.
2. **CHECK FOR FUEL LEAKAGE**
3. **INSTALL V-BANK COVER** (See page [ES-431](#))

FUEL PUMP  
COMPONENTS

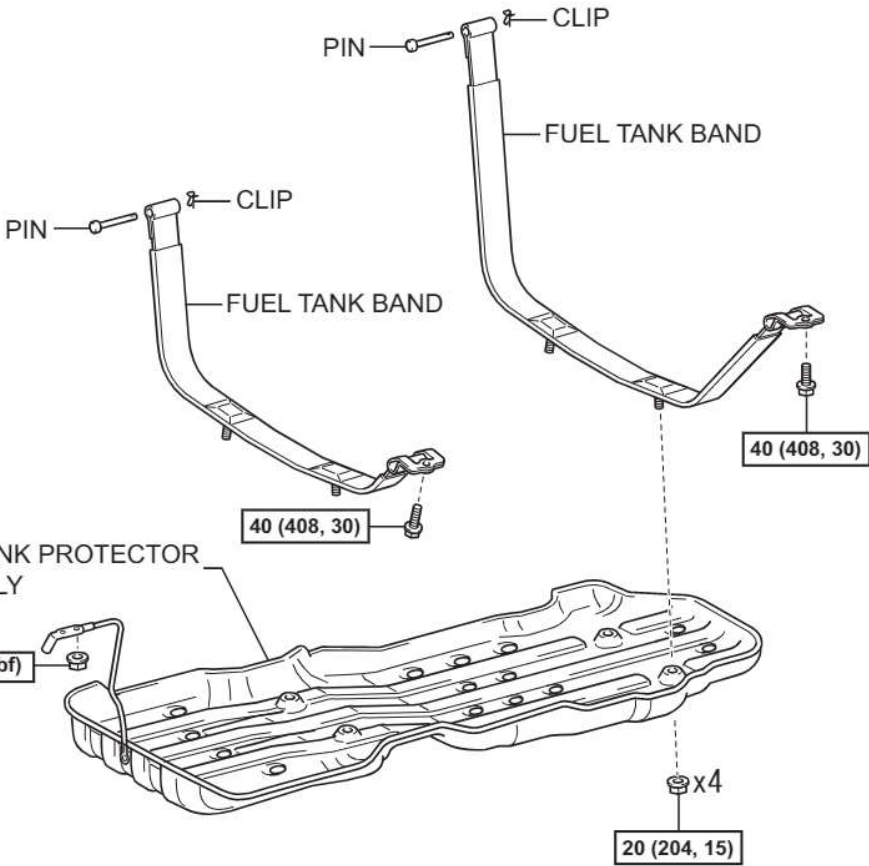
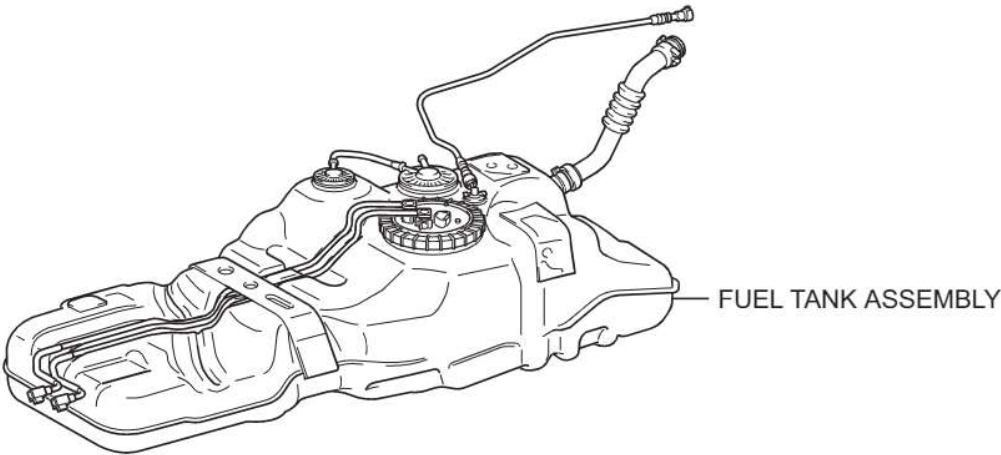


N\*m (kgf\*cm, ft\*lb) : Specified torque

FU-26

1GR-FE FUEL – FUEL PUMP

FU



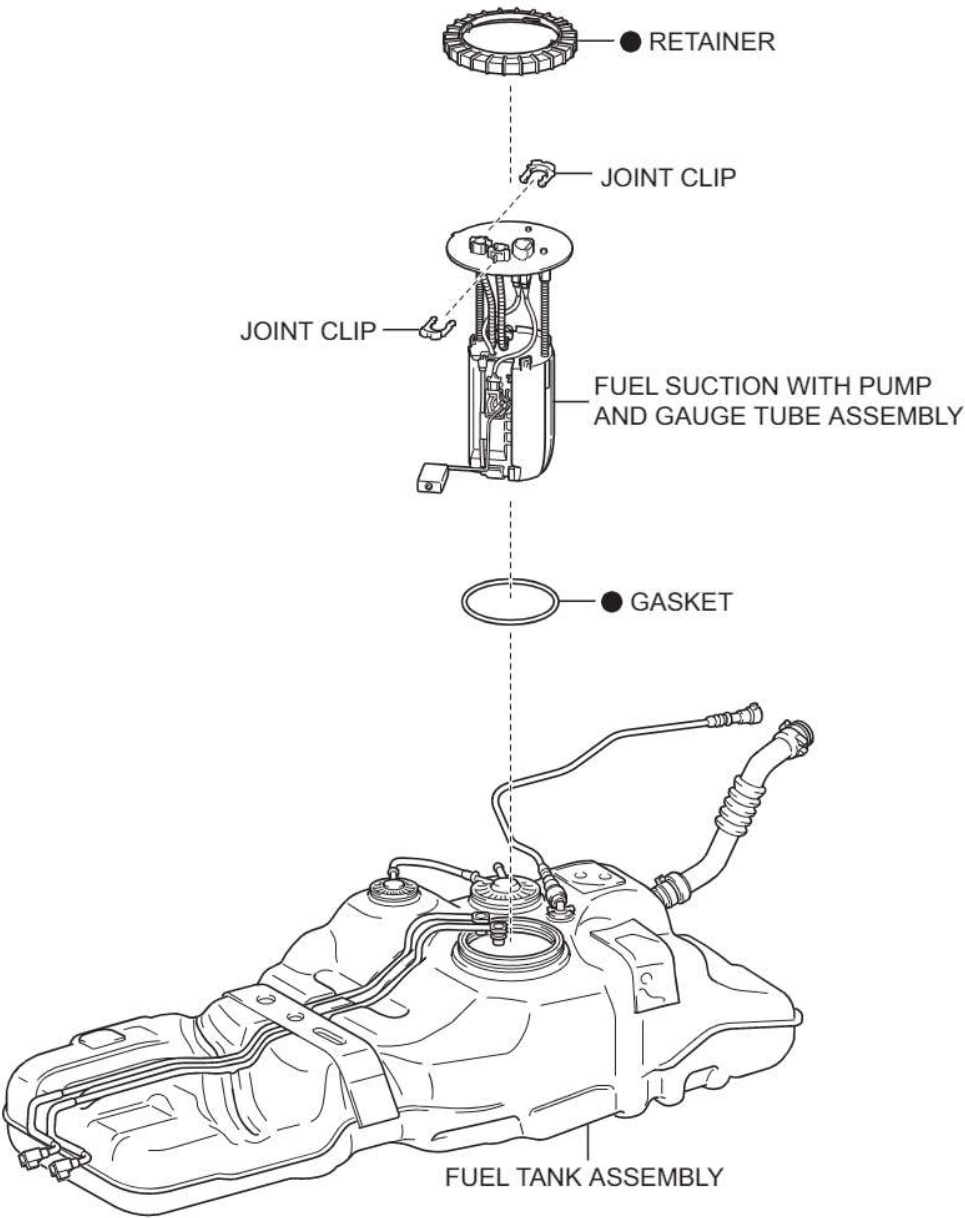
N\*m (kgf\*cm, ft\*lbf) : Specified torque

Y

1GR-FE FUEL – FUEL PUMP

FU-27

FU



● Non-reusable part

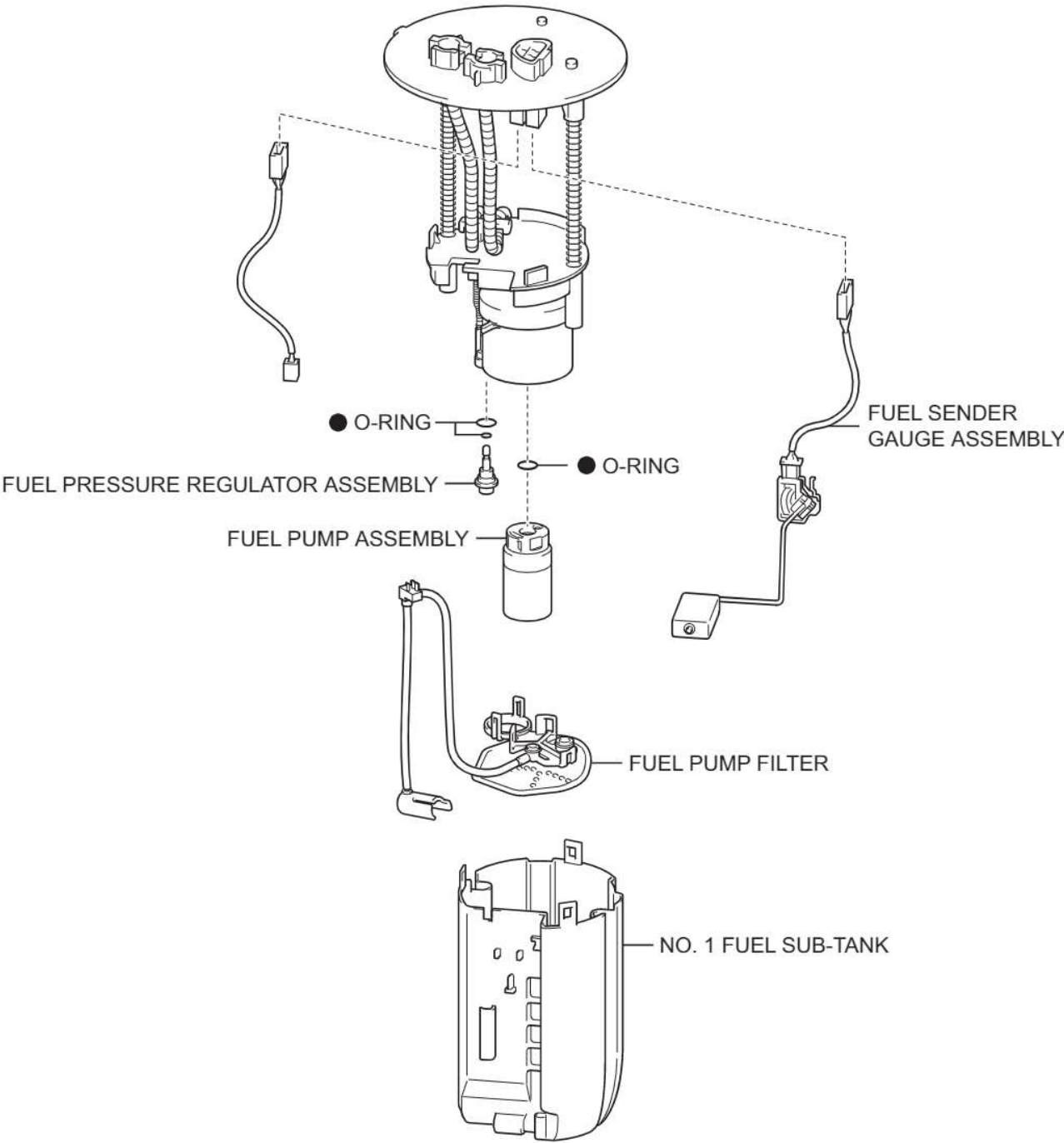
Y

A130150E02

FU-28

1GR-FE FUEL – FUEL PUMP

FU



● Non-reusable part

Y

A129895E01

## REMOVAL

1. DISCHARGE FUEL SYSTEM PRESSURE  
(See page [FU-1](#))
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
3. REMOVE FRONT DOOR SCUFF PLATE LH (See page [FU-42](#))
4. REMOVE REAR DOOR SCUFF PLATE LH (See page [FU-42](#))
5. REMOVE REAR SEAT CUSHION ASSEMBLY LH (See page [FU-42](#))
6. REMOVE REAR FLOOR SERVICE HOLE COVER (See page [FU-42](#))
7. DISCONNECT FUEL TANK TO FILLER PIPE HOSE  
(See page [FU-43](#))
8. DISCONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY (See page [FU-44](#))
9. REMOVE NO.1 FUEL TANK PROTECTOR SUB-ASSEMBLY (See page [FU-44](#))
10. DISCONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-45](#))
11. REMOVE FUEL TANK VENT HOSE (See page [FU-45](#))
12. REMOVE FUEL TANK ASSEMBLY (See page [FU-45](#))
13. REMOVE FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-47](#))
14. REMOVE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY

### NOTICE:

Protect the connector and tube joint with masking tape or the equivalent to prevent any foreign matter from sticking to them. Clean any dirt and foreign matter from the fuel suction tube assembly before removing.

- (a) Using a SST, loosen the retainer.

**SST** 09808-14020 (09808-01410, 09808-01420, 09808-01430)

### HINT:

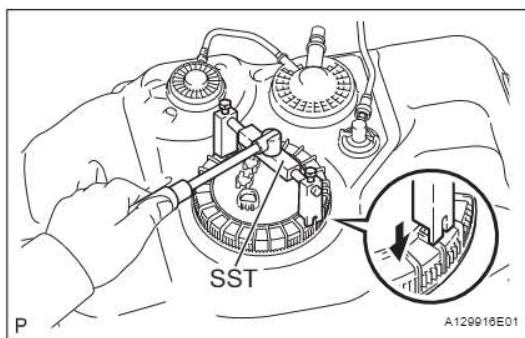
Align the tips of the SST with the ribs on the retainer.

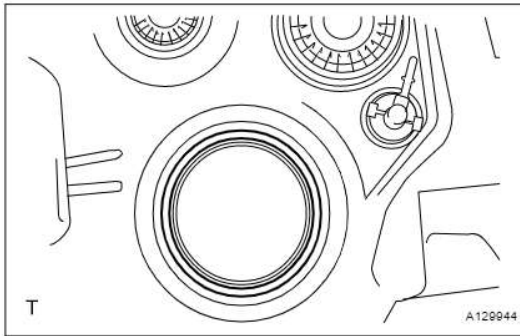
- (b) Remove the retainer.

- (c) Pull the fuel pump assembly out of the fuel tank.

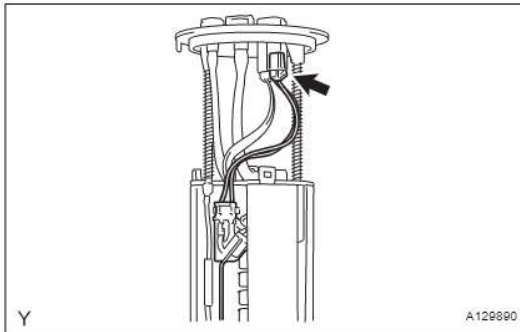
### NOTICE:

Do not bend the arm of the sender gauge.

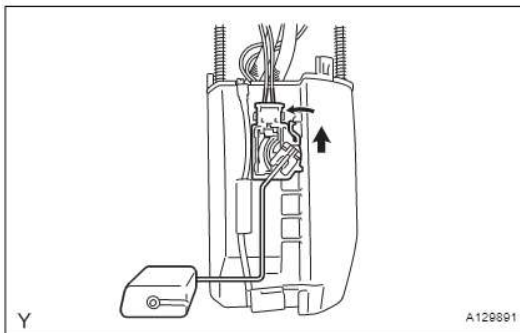


**FU-30****1GR-FE FUEL – FUEL PUMP**

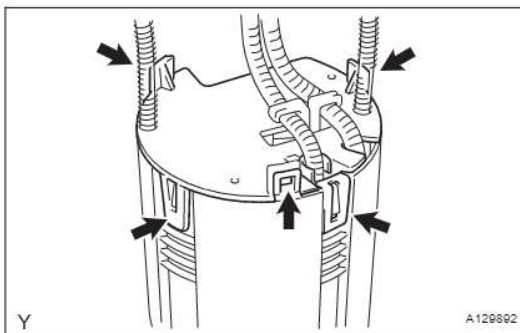
(d) Remove the gasket from the fuel tank.

**DISASSEMBLY****1. REMOVE FUEL SENDER GAUGE ASSEMBLY**

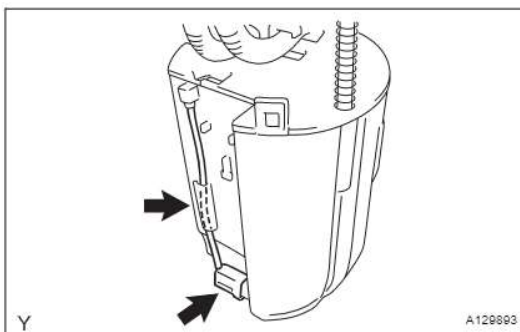
(a) Disconnect the connector.



(b) Disengage the claw and remove the sender gauge by sliding it in the direction shown in the illustration.

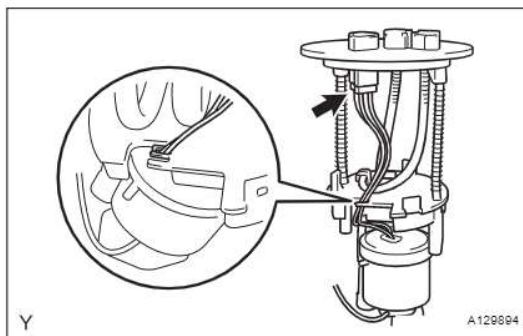
**2. REMOVE NO.1 FUEL SUB-TANK**

(a) Disengage the 5 claws and remove the fuel pump tank.

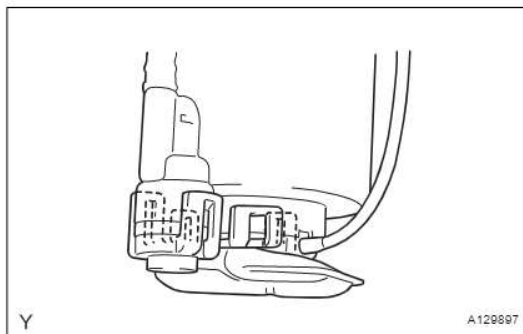


(b) Separate the connector and disengage the clamp.

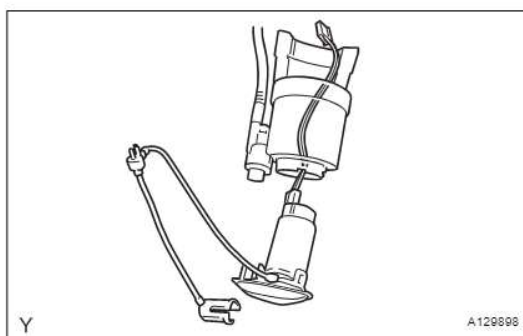
**FU**

**1GR-FE FUEL – FUEL PUMP****FU-31****3. REMOVE FUEL PUMP ASSEMBLY**

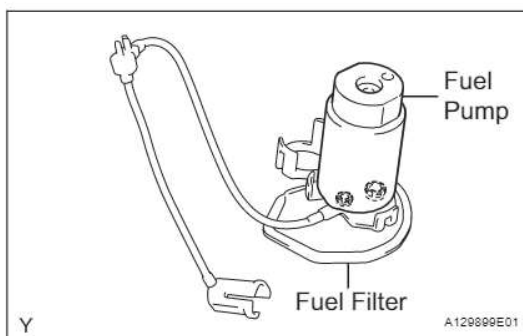
- (a) Disengage the clamp, then disconnect the connector.



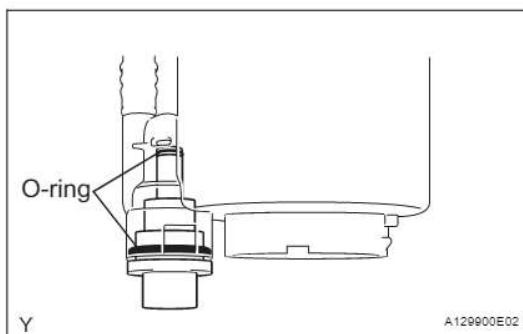
- (b) Disengage the 5 claws and separate the fuel pump from the fuel pump case.



- (c) Disconnect the connector from the fuel pump.

**4. REMOVE FUEL PUMP FILTER**

- (a) Remove the fuel filter from the fuel pump.

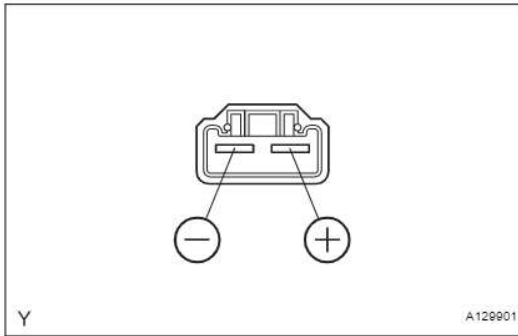
**5. REMOVE FUEL PRESSURE REGULATOR ASSEMBLY**

- (a) Remove the fuel pressure regulator and the 2 O-rings.

**FU**

## FU-32

## 1GR-FE FUEL – FUEL PUMP



## INSPECTION

## 1. INSPECT FUEL PUMP ASSEMBLY

(a) Check the resistance.

(1) Using an ohmmeter, measure the resistance between the terminals.

**Standard resistance:****0.2 to 3.0  $\Omega$  at 20°C (68°F)**

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

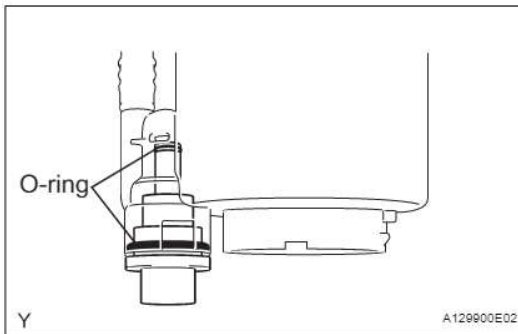
## REASSEMBLY

## 1. INSTALL FUEL PRESSURE REGULATOR ASSEMBLY

(a) Install a new O-ring into the fuel pump case.

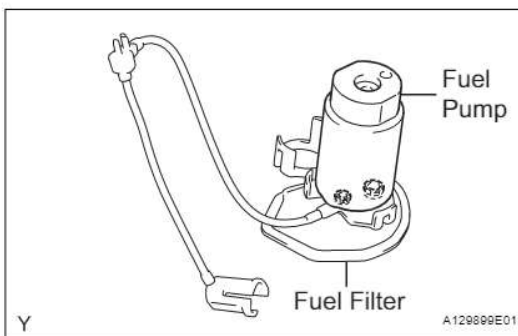
(b) Install a new O-ring onto the fuel pressure regulator.

(c) Install the pressure regulator.



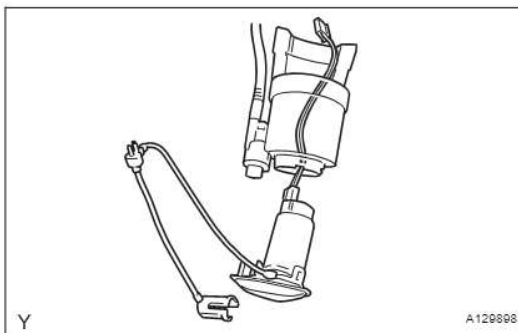
## 2. INSTALL FUEL PUMP FILTER ASSEMBLY

(a) Install the fuel filter onto the fuel pump.

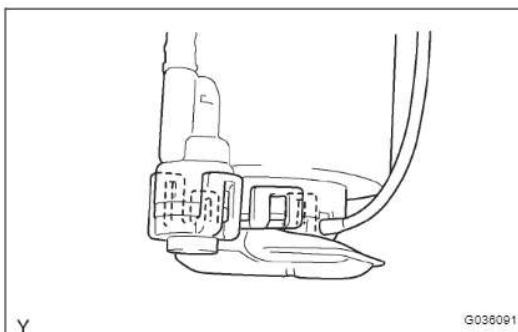


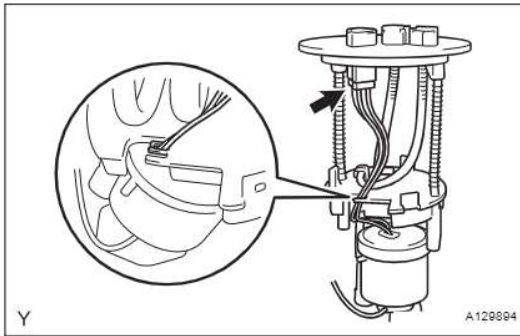
## 3. INSTALL FUEL PUMP ASSEMBLY

(a) Connect the fuel filter to the fuel pump.

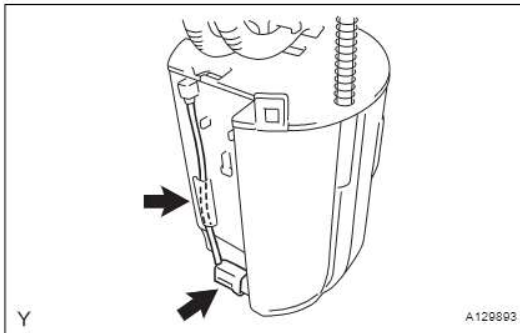


(b) Engage the 5 claw fittings and install the fuel pump onto the fuel pump case.

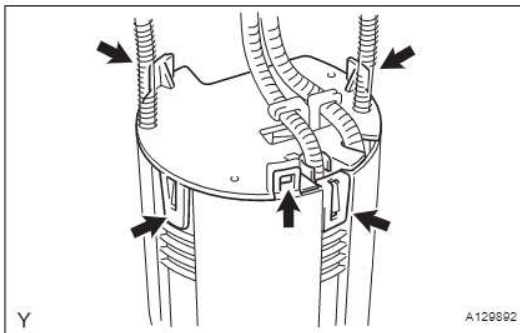


**1GR-FE FUEL – FUEL PUMP****FU-33**

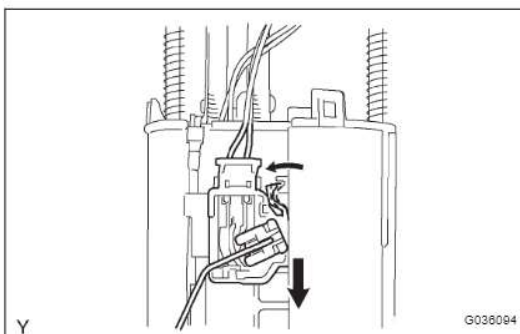
(c) Engage the clamp, then connect the connector.

**4. INSTALL NO. 1 FUEL SUB-TANK**

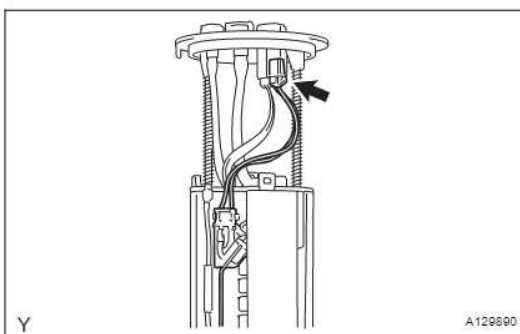
(a) Install the connector and engage the clamp.



(b) Engage the 5 claws and install the fuel pump tank.

**5. INSTALL FUEL SENDER GAUGE ASSEMBLY**

(a) Engage the claw and install the sender gauge by sliding it in the direction as shown in the illustration.



(b) Connect the connector.

**FU**

## FU-34

## 1GR-FE FUEL – FUEL PUMP

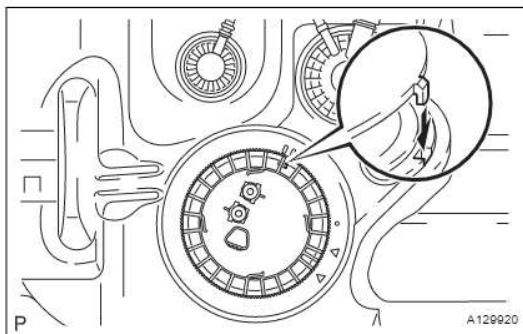
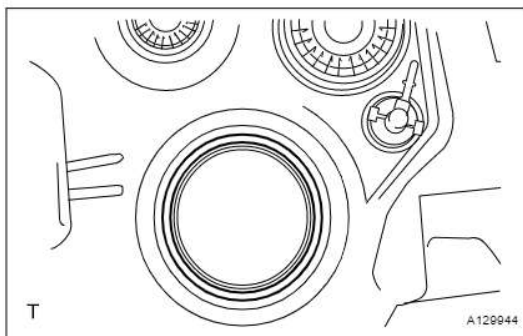
## INSTALLATION

## 1. INSTALL FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY

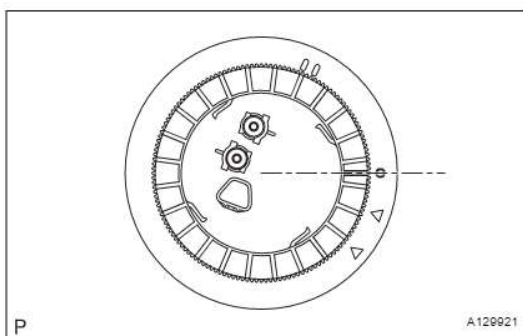
- (a) Install a new gasket onto the fuel tank.
- (b) Set the fuel suction tube assembly to the fuel tank.

**NOTICE:**

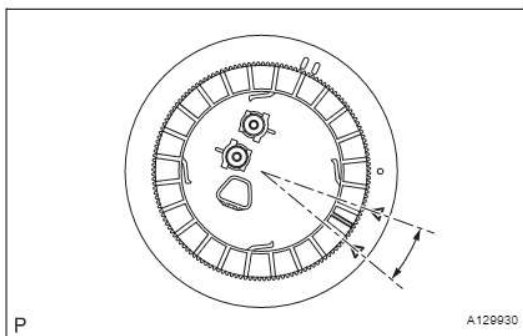
**Do not bend the arm of the fuel sender gauge.**



- (c) Fit the spline of the fuel suction tube assembly into the keyway of the fuel tank.



- (d) Install a new retainer.
  - (1) Align the mark on a new retainer with the rib on the fuel tank as shown in the illustration.



- (2) Using SST, turn the retainer 740° to 760° clockwise (more than 2 turns), and position the mark on the retainer within range A to install it.  
**SST 09808-14020 (09808-01410, 09808-01420, 09808-01430)**

**HINT:**

Align the tips of the SST with the ribs on the retainer.

2. INSTALL FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-49](#))
3. INSTALL FUEL TANK ASSEMBLY (See page [FU-50](#))
4. REMOVE FUEL TANK VENT HOSE (See page [FU-50](#))
5. CONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE (See page [FU-49](#))
6. CONNECT FUEL TANK BREATHING TUBE SUB-ASSEMBLY (See page [FU-51](#))
7. CONNECT FUEL TANK TO FILLER PIPE HOSE (See page [FU-51](#))

**1GR-FE FUEL – FUEL PUMP****FU-35**

8. **INSTALL NO.1 FUEL TANK PROTECTOR SUB-ASSEMBLY** (See page [FU-51](#))
9. **INSTALL REAR FLOOR SERVICE HOLE COVER** (See page [FU-52](#))
10. **INSTALL REAR SEAT CUSHION ASSEMBLY LH** (See page [FU-53](#))
11. **INSTALL REAR DOOR SCUFF PLATE LH** (See page [FU-52](#))
12. **INSTALL FRONT DOOR SCUFF PLATE LH** (See page [FU-53](#))
13. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**  
Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)
14. **CHECK FOR FUEL LEAKAGE** (See page [FU-7](#))

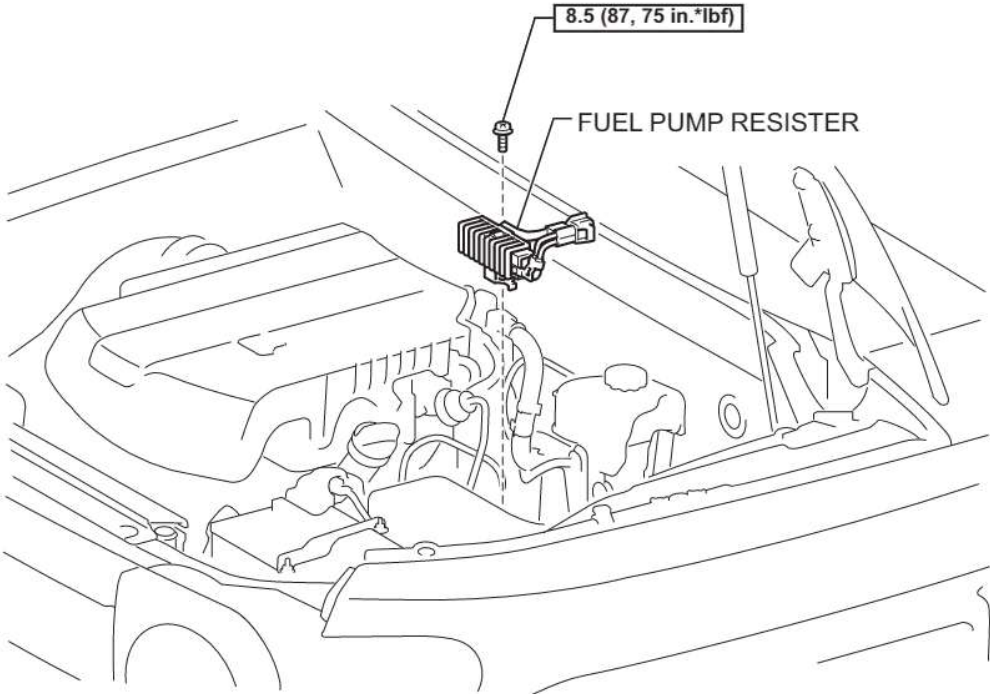
**FU**

FU-36

1GR-FE FUEL – FUEL PUMP RESISTOR

FUEL PUMP RESISTOR  
COMPONENTS

FU



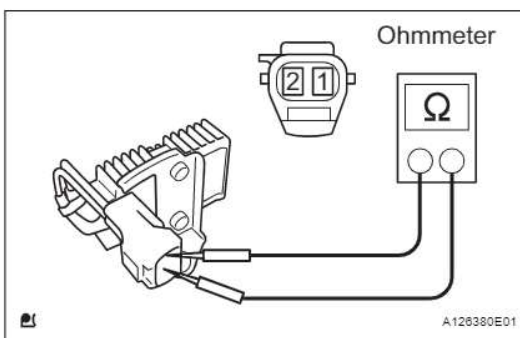
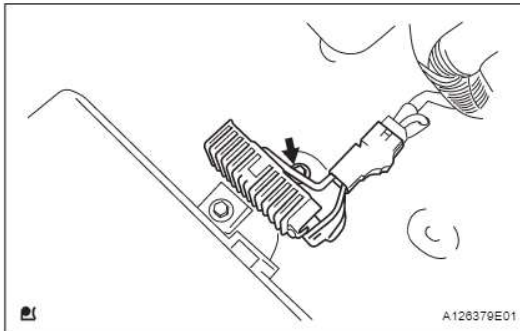
**N\*m (kgf\*cm, ft\*lbf)** : Specified torque

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**1GR-FE FUEL – FUEL PUMP RESISTOR****FU-37****REMOVAL****1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL****2. REMOVE FUEL PUMP RESISTOR**

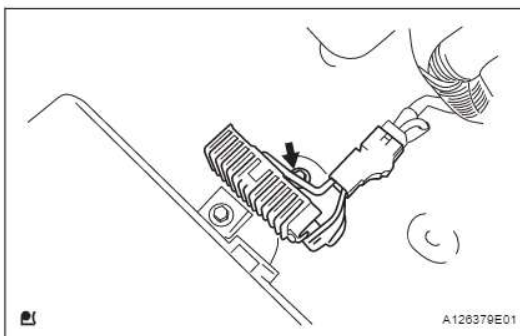
- (a) Disconnect the connector.
- (b) Remove the bolt and the fuel pump resistor.

**INSPECTION****1. INSPECT FUEL PUMP RESISTER**

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

**Standard resistance:****0.941 to 0.999  $\Omega$** 

If the result is not as specified, replace the fuel pump resistor.

**INSTALLATION****1. INSTALL FUEL PUMP RESISTOR**

- (a) Install the fuel pump resistor with the bolt.
  - Torque: 8.5 N\*m (87 kgf\*cm, 75 in.\*lbf)**
- (b) Connect the connector.

**2. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

**Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)**

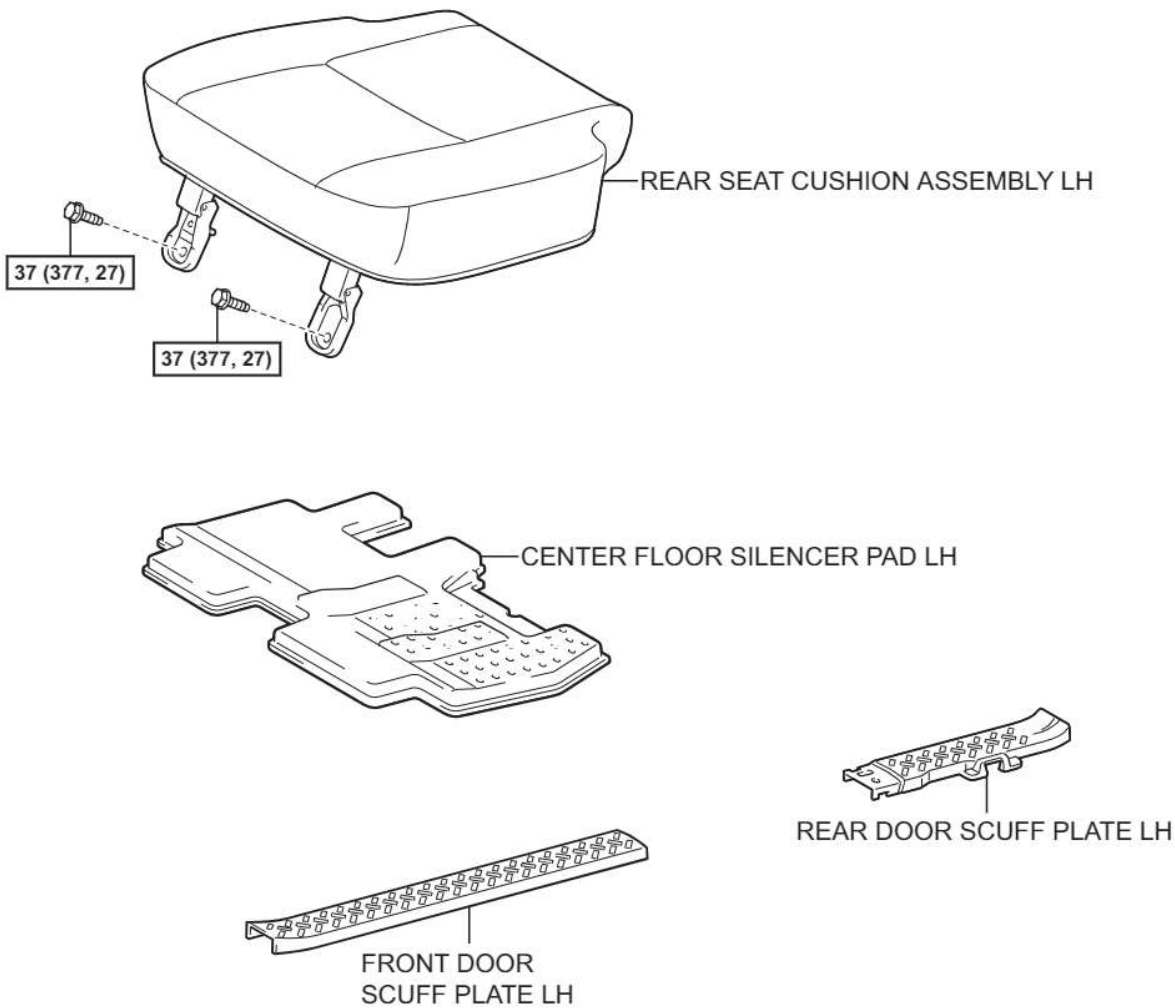
**FU**

FU-38

1GR-FE FUEL – FUEL TANK

FUEL TANK  
COMPONENTS

FU



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

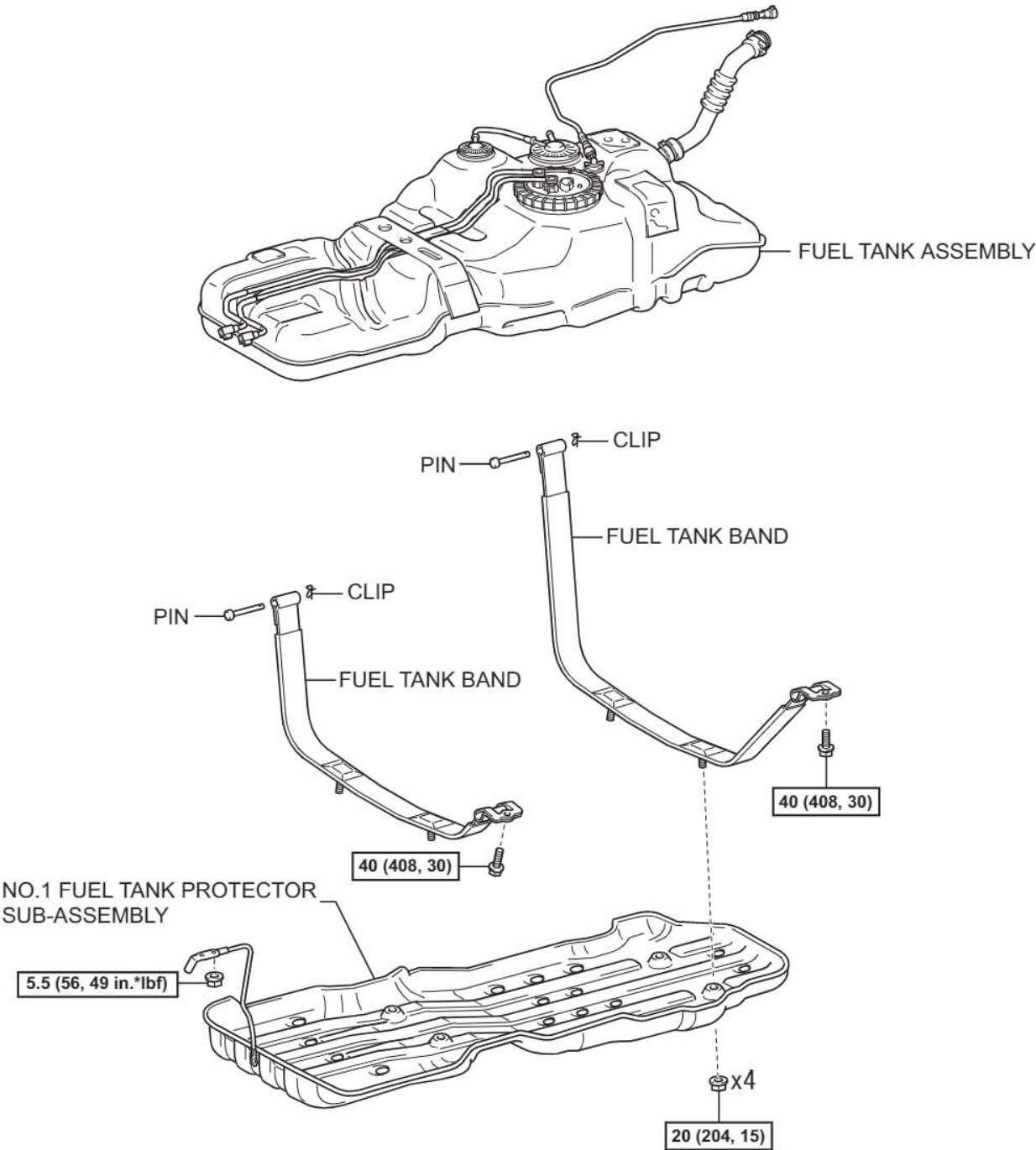
P

A129922E01

1GR-FE FUEL – FUEL TANK

FU-39

FU



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

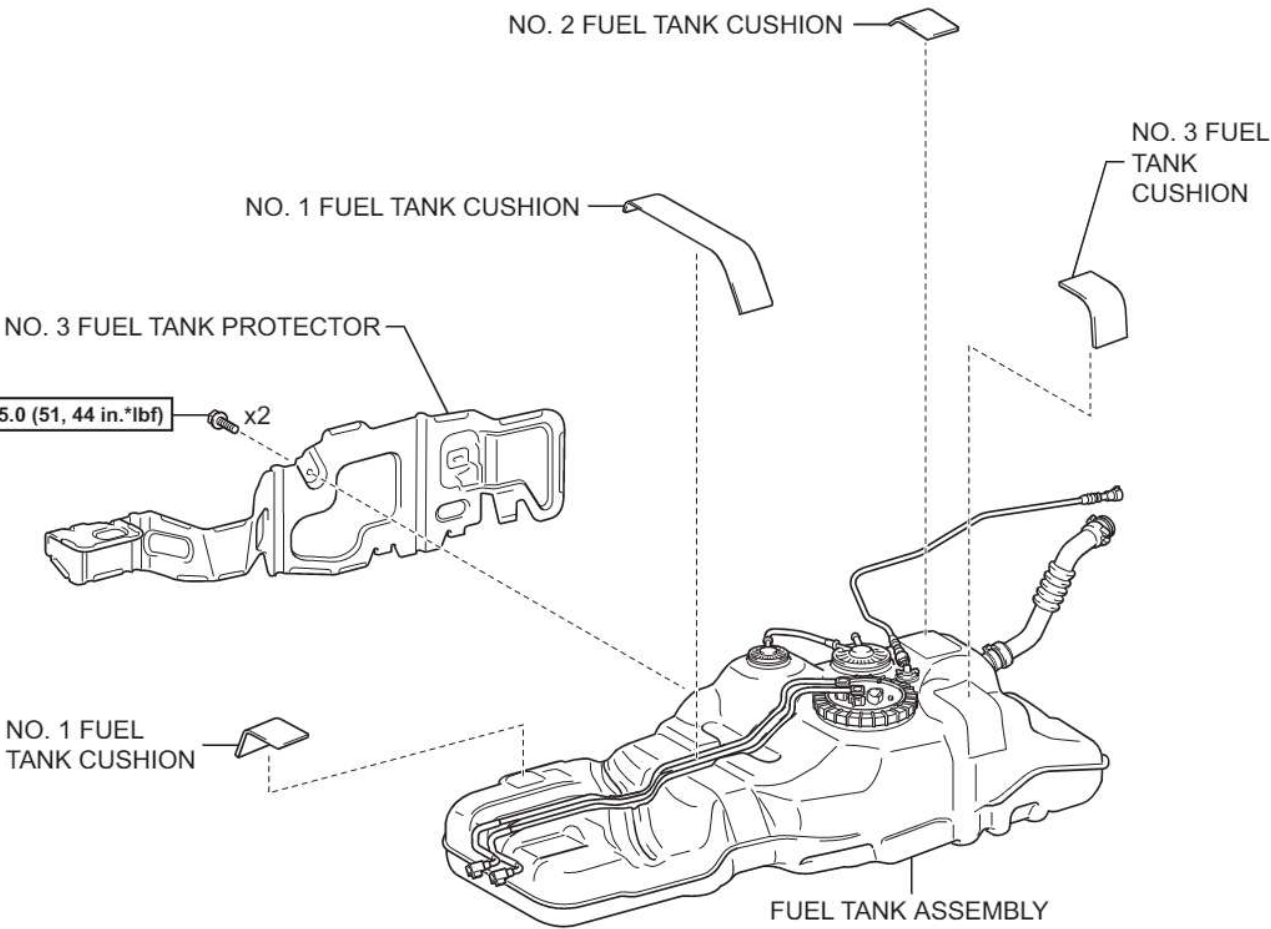
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FU-40

1GR-FE FUEL – FUEL TANK

FU



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

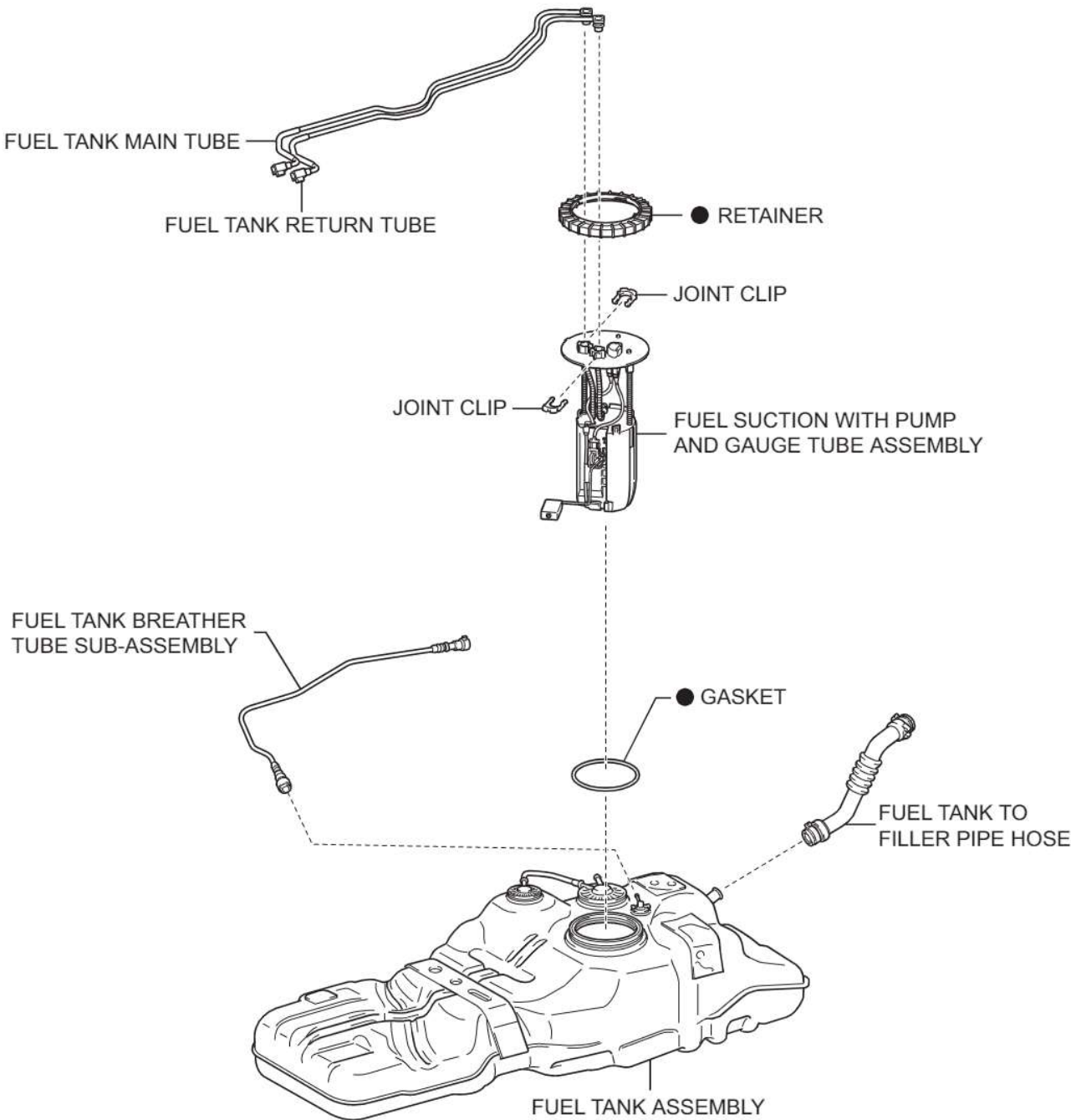
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1GR-FE FUEL – FUEL TANK

FU-41

FU



● Non-reusable part

Y

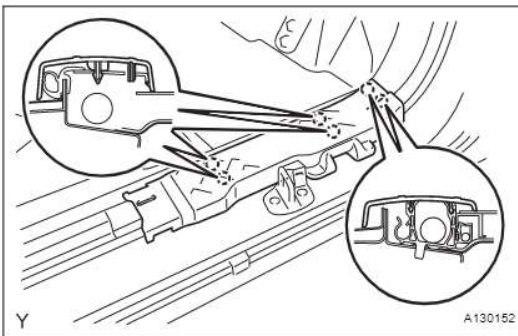
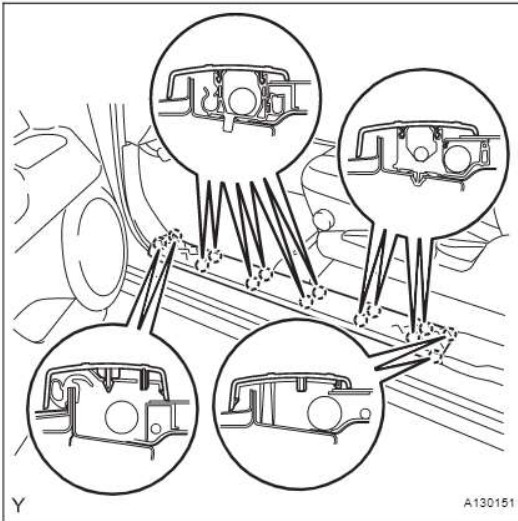
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## FU-42

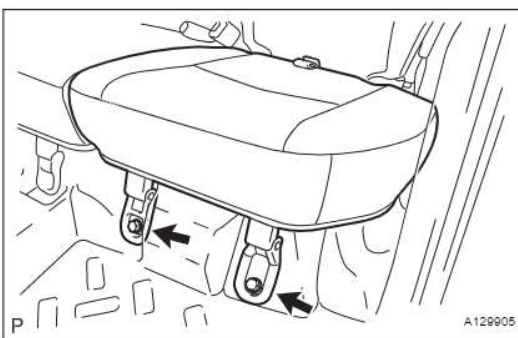
## 1GR-FE FUEL – FUEL TANK

## REMOVAL

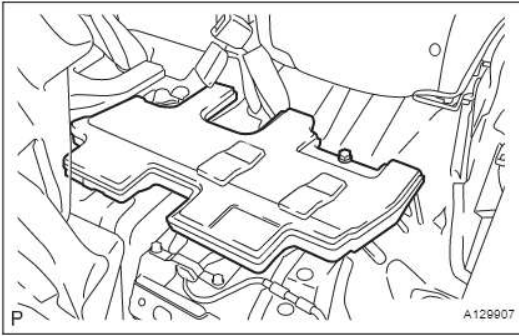
1. **DISCHARGE FUEL SYSTEM PRESSURE**  
(See page [FU-1](#))
2. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
3. **REMOVE FRONT DOOR SCUFF PLATE LH**  
(a) Disengage the 14 claws and remove the front door scuff plate.



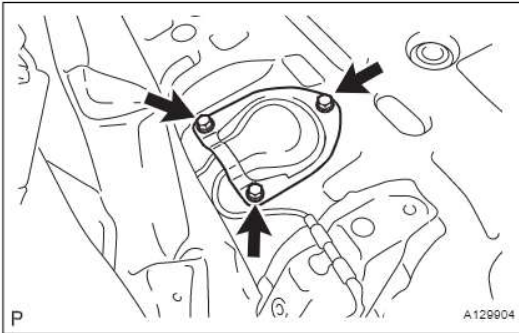
4. **REMOVE REAR DOOR SCUFF PLATE LH**  
(a) Disengage the 6 claws and remove the rear door scuff plate.



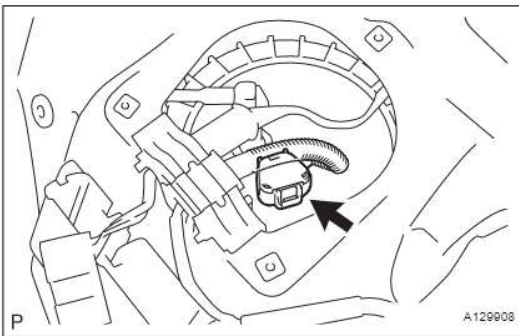
5. **REMOVE REAR SEAT CUSHION ASSEMBLY LH**  
(a) Remove the 2 bolts, then remove the rear seat cushion LH.
6. **REMOVE REAR FLOOR SERVICE HOLE COVER**  
(a) Pull back the floor carpet.

**1GR-FE FUEL – FUEL TANK****FU-43**

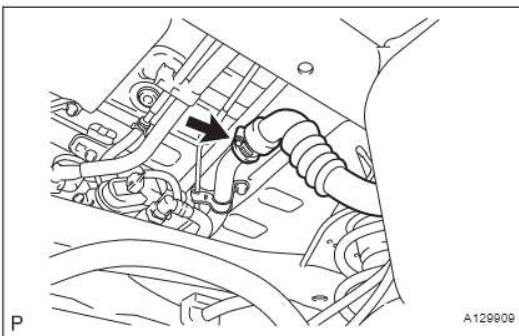
(b) Remove the center floor silencer pad LH.



(c) Remove the 3 screws from the center floor.



(d) Disconnect the connector.

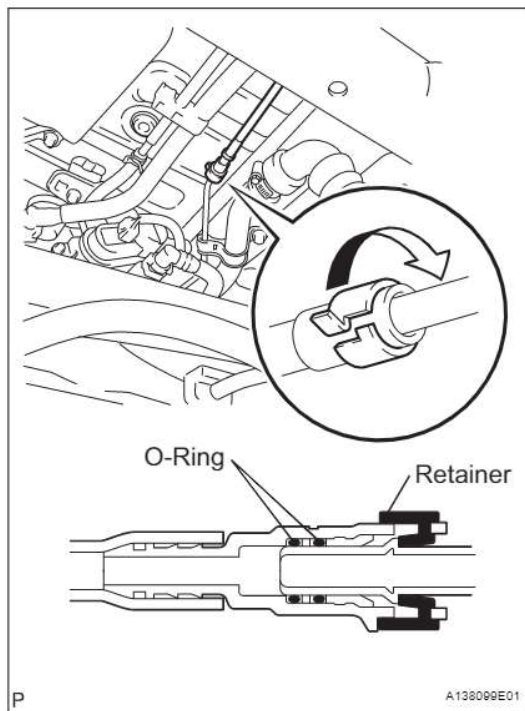
**7. REMOVE FUEL TANK TO FILLER PIPE HOSE**

(a) Loosen the clamp bolt, and disconnect the fuel tank to filler pipe hose.

**FU**

## FU-44

## 1GR-FE FUEL – FUEL TANK

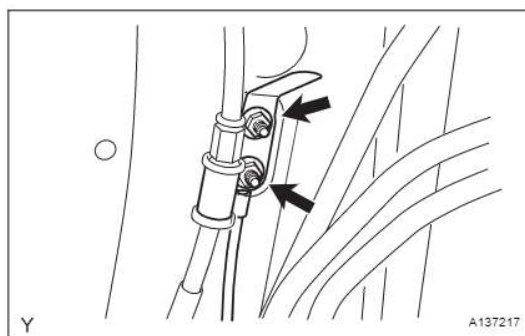


## 8. REMOVE NO. 1 FUEL TANK BREATHER TUBE SUB-ASSEMBLY

- (a) Pinch the retainer to disengage the lock claws and pull out the No.1 fuel tank breather tube.

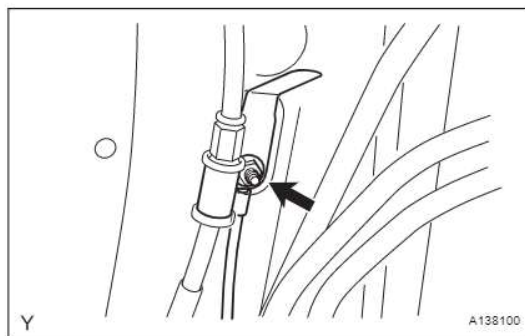
**NOTICE:**

- Check that there is no dirt or mud around the quick connector before performing this work, because the quick connector has an O-ring which seals the pipe and the connector. Clean the connector if necessary.
- Do not use any tools in this work.
- Do not bend or twist the nylon tube.
- To protect the tube, cover it with a vinyl bag after disconnecting it.
- When the connector and the pipe are stuck, turn the retainer carefully to free and then disconnect the fuel tank tube.

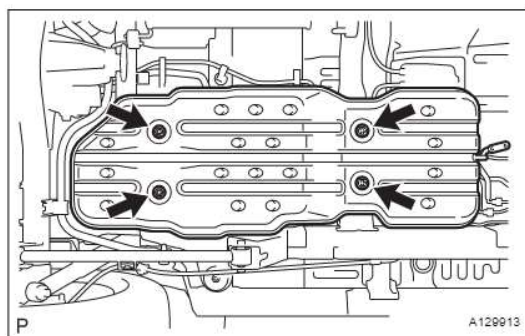


## 9. REMOVE NO. 1 FUEL TANK PROTECTOR SUB-ASSEMBLY

- (a) Remove the 2 nuts and the fuel tank protector bracket. (for automatic transmission)



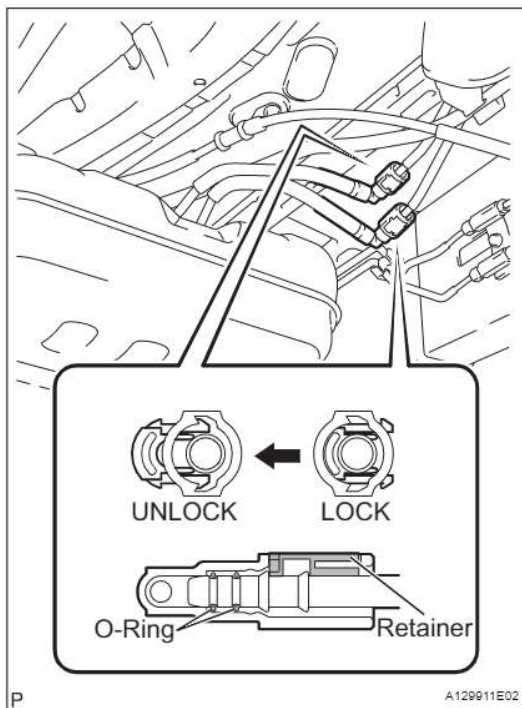
- (b) Remove the nut and the fuel tank protector bracket. (for manual transmission)



- (c) Remove the 4 nuts and the fuel tank protector.

## 1GR-FE FUEL – FUEL TANK

FU-45

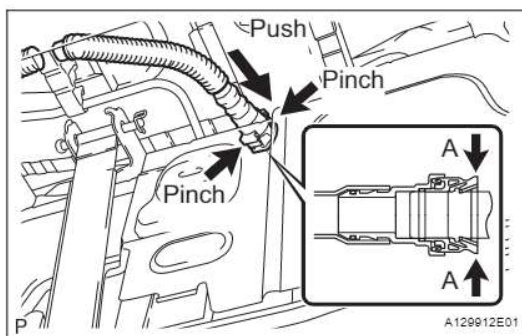
**10. DISCONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE**

- (a) Pinch the retainer to disengage the lock claws and pull out the 2 fuel tank tubes.

**NOTICE:**

- Check that there is no dirt or mud around the quick connector before performing this work, because the quick connector has an O-ring which seals the pipe and the connector. Clean the connector if necessary.
- Do not use any tools in this work.
- Do not bend or twist the nylon tube.
- To protect the tube, cover it with a vinyl bag after disconnecting it.
- When the connector and the pipe are stuck, turn the retainer carefully to disconnect them.

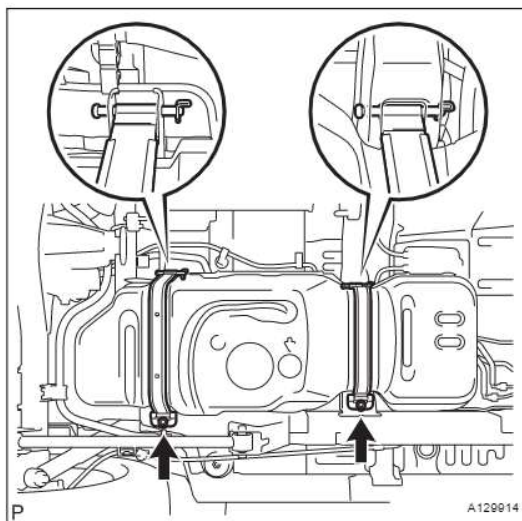
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**11. DISCONNECT FUEL TANK VENT HOSE**

- (a) Disconnect the fuel tank breather tube from the fuel tank.
- (1) Push the connector deep inside.
  - (2) Pinch portion A, as shown in the illustration.
  - (3) Pull out the connector.

**12. REMOVE FUEL TANK ASSEMBLY**

- (a) Hold the fuel tank using a mission jack.
- (b) Remove the 2 fuel tank bands.
- (1) Remove the 2 bolts.
  - (2) Remove the 2 clips and 2 pins, then remove the 2 fuel tank bands.

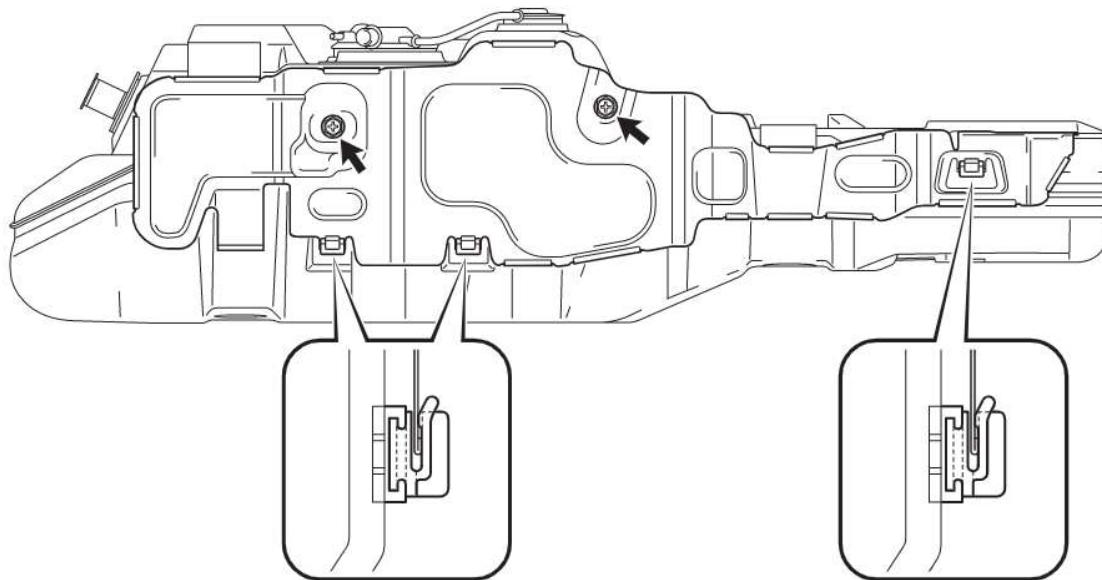


## FU-46

## 1GR-FE FUEL – FUEL TANK

**13. REMOVE NO. 3 FUEL TANK PROTECTOR**

- (a) Remove the 2 bolts and disengage the 3 claws, then remove the No. 3 fuel tank protector.

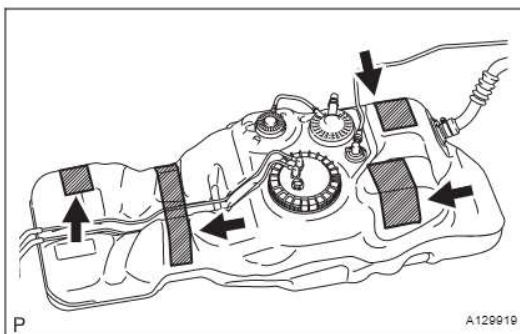


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**14. REMOVE FUEL TANK CUSHION**

- (a) Remove the 4 fuel tank cushions from the fuel tank.

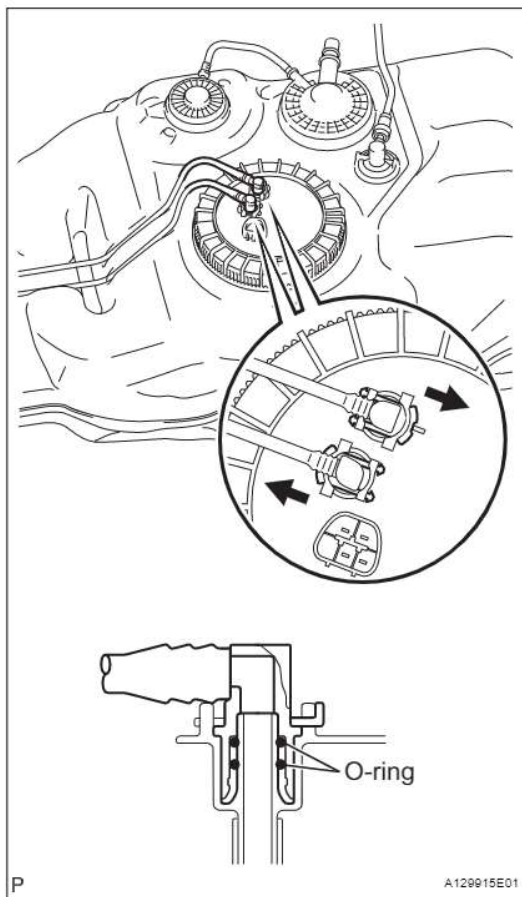


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## 1GR-FE FUEL – FUEL TANK

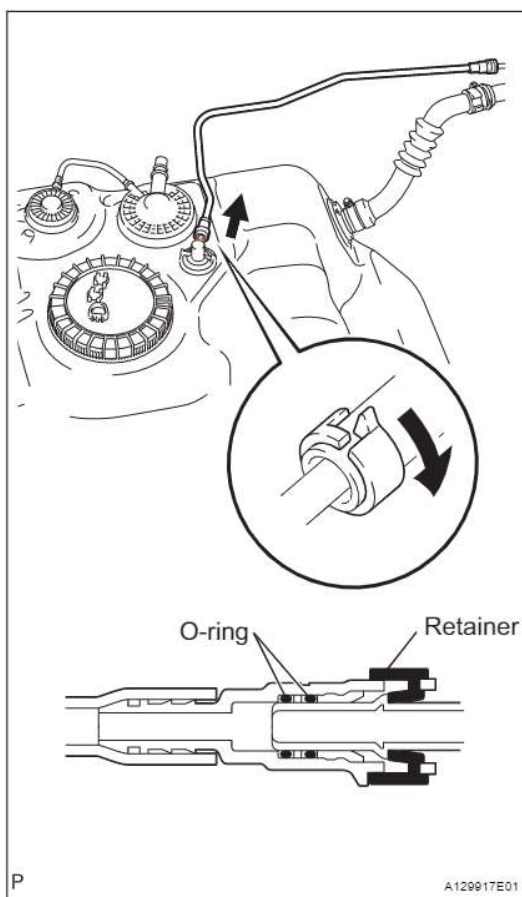
FU-47

**15. REMOVE FUEL TANK MAIN TUBE AND RETURN TUBE**

- (a) Remove the 2 joint clips, and pull out the 2 fuel tank tubes.

**NOTICE:**

- Check that there is no dirt or mud around the quick connector before performing this work, because the quick connector has an O-ring which seals the pipe and the connector. Clean the connector if necessary.
- Do not use any tools in this work.
- Do not bend or twist the nylon tube by force.
- After disconnecting, cover the fuel tube joint with a vinyl bag.
- When the fuel tube joint and fuel suction plate are stuck, turn the fuel tank main tube carefully to free and then disconnect it. Likewise, disconnect the fuel tank return tube.

**16. REMOVE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (See page [FU-29](#))****17. DRAIN FUEL****18. REMOVE FUEL TANK BREATHER TUBE SUB-ASSEMBLY**

- (a) Pinch the retainer to disengage the lock claws and pull out the fuel tank breather tube.

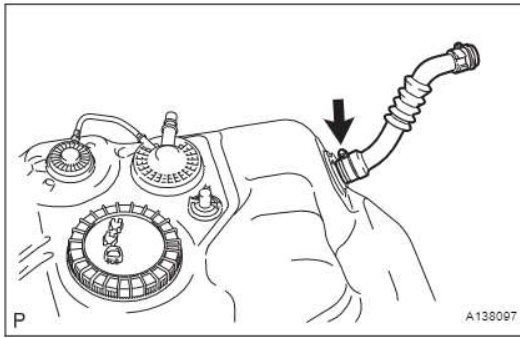
**NOTICE:**

- Check that there is no dirt or mud around the quick connector before performing this work, because the quick connector has an O-ring which seals the pipe and the connector. Clean the connector if necessary.
- Do not use any tools in this work.
- Do not bend or twist the nylon tube.
- To protect the tube, cover it with a vinyl bag after disconnecting it.
- When the connector and the pipe are stuck, turn the fuel tank breather tube carefully to disconnect them.

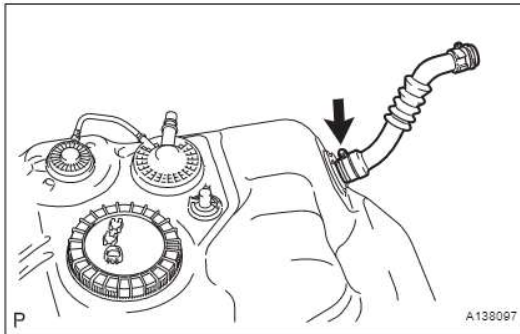
FU

## FU-48

## 1GR-FE FUEL – FUEL TANK

**19. REMOVE FUEL TANK TO FILLER PIPE HOSE**

- (a) Loosen the clamp bolt, and disconnect the fuel tank to filler pipe hose.

**INSTALLATION****1. INSTALL FUEL TANK TO FILLER PIPE HOSE**

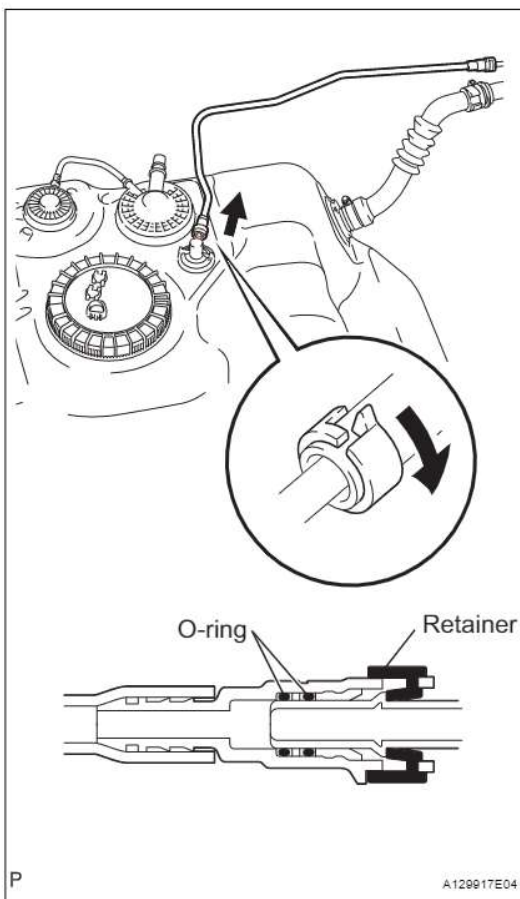
- (a) Connect a new fuel tank to filler pipe hose, as shown in the illustration, with the clamp.

**2. INSTALL FUEL TANK BREATHER TUBE SUB-ASSEMBLY**

- (a) Push the tube connector into the pipe until the connector makes a "click" sound and install the retainer.

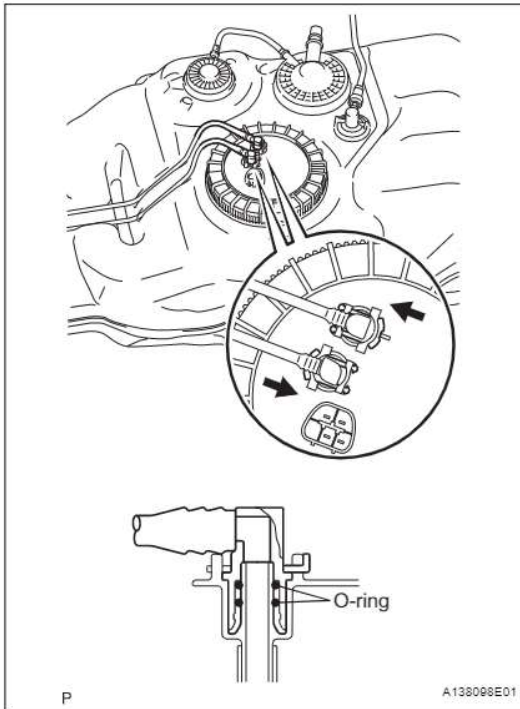
**NOTICE:**

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

**3. INSTALL FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY (See page [FU-34](#))**

## 1GR-FE FUEL – FUEL TANK

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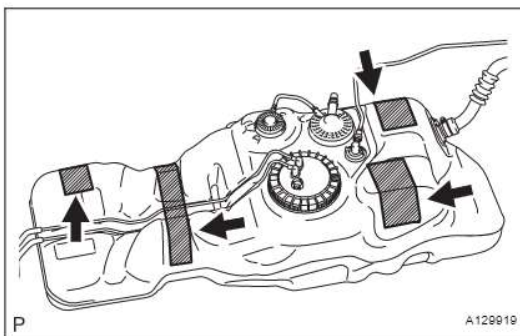


#### 4. INSTALL FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE

- (a) Install the fuel tank main tube and return tube with the 2 joint clips.

**NOTICE:**

- Check that there are no scratches or foreign matter around the connected part of the fuel tube joint and plug before performing this work.
- Check that the fuel tube joint is securely inserted into the end.
- Check that the tube joint clips are on the collar of the fuel tube joint.
- After installing the tube joint clip, check that the fuel tank main tube and return tube can be pulled out.



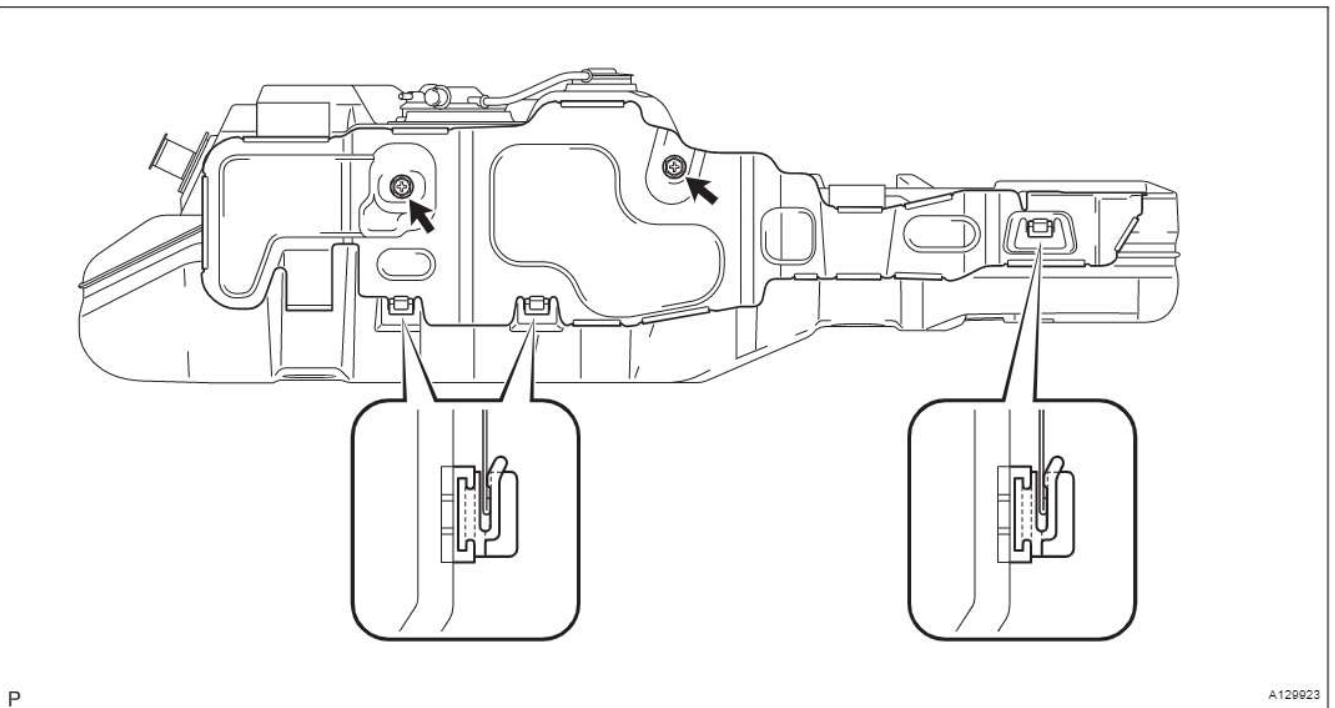
#### 5. INSTALL FUEL TANK CUSHION

- (a) Install 4 new fuel tank cushions the fuel tank.

#### 6. INSTALL NO.3 FUEL TANK PROTECTOR

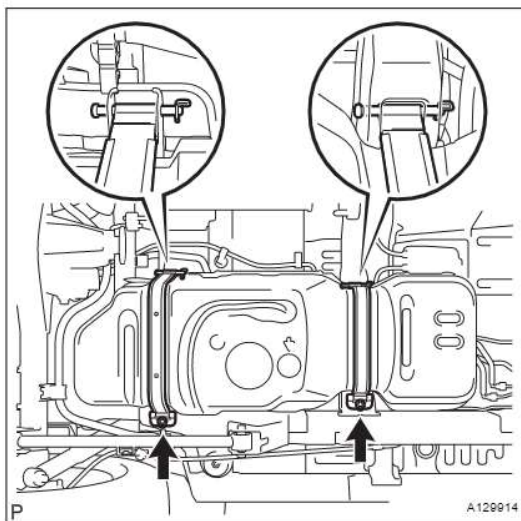
- (a) Install the No. 3 fuel tank protector with the 2 bolts and 3 claws.

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



## FU-50

## 1GR-FE FUEL – FUEL TANK

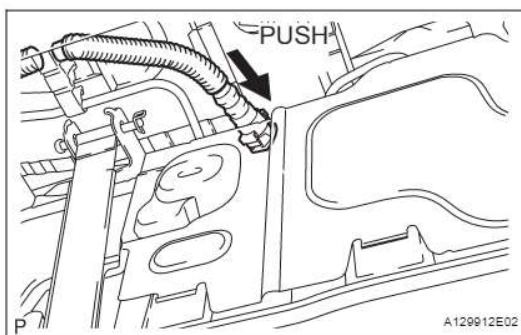


## 7. INSTALL FUEL TANK ASSEMBLY

- (a) Set a mission jack to the fuel tank.
- (b) Install the fuel tank and 2 fuel tank bands with the 2 clips, 2 pins and the 2 bolts.

**Torque: 40 N\*m (408 kgf\*cm, 30 ft.\*lbf)**

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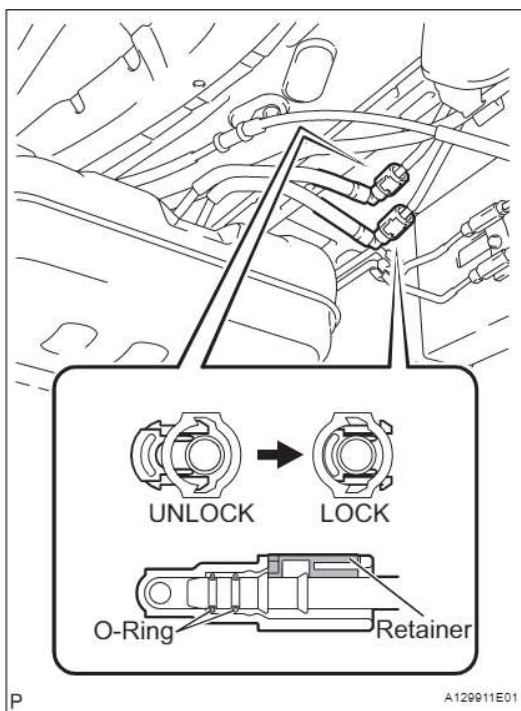


## 8. INSTALL FUEL TANK VENT HOSE

- (a) Connect the fuel tank vent hose.
  - (1) Align the fuel tank vent hose connector with the pipe, then push in the fuel tank vent connector until the retainer makes a "click" sound to connect the fuel tank vent hose to the charcoal canister.

**NOTICE:**

- Check that there are no scratches or foreign matter on the disconnected parts of the fuel tank vent connector and pipe before performing the work.
- After connecting the fuel tank vent hose, check that the fuel tank vent hose is securely connected by pulling the quick connector.

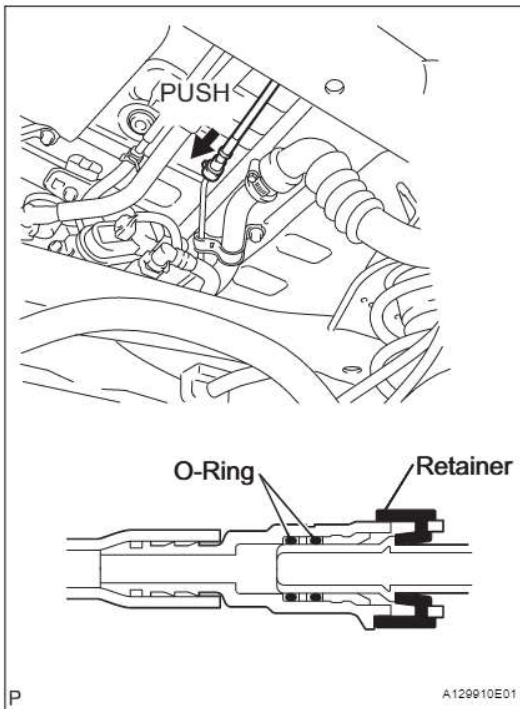


## 9. CONNECT FUEL TANK MAIN TUBE AND FUEL TANK RETURN TUBE

- (a) Push the tube connector into the pipe until the connector makes "click" sound.

**NOTICE:**

- Check that there is no 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.

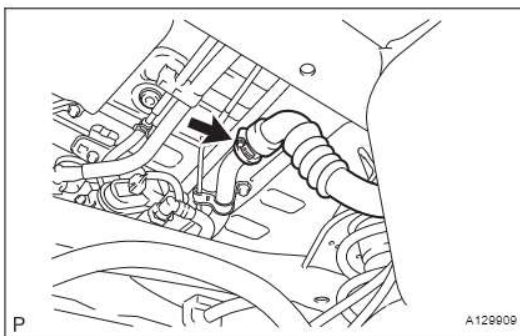


#### 10. CONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY

- (a) Push the tube connector into the pipe until the connector makes "click" sound.

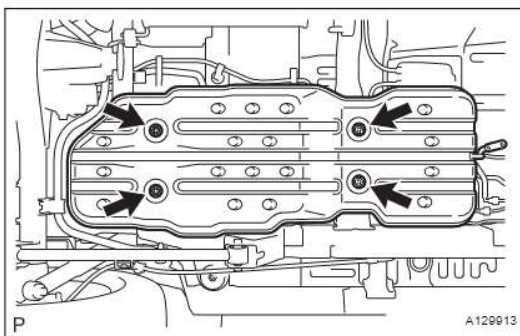
##### NOTICE:

- Check that there is no 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.



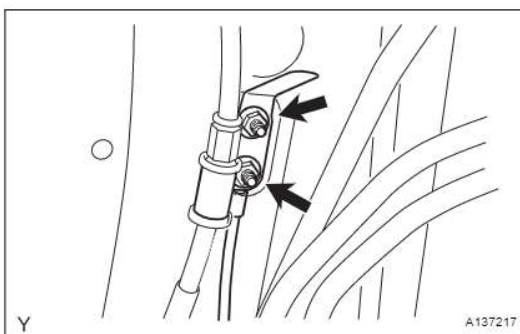
#### 11. CONNECT FUEL TANK TO FILLER PIPE HOSE

- (a) Connect the fuel tank to filler pipe hose, as shown in the illustration, with the clamp.



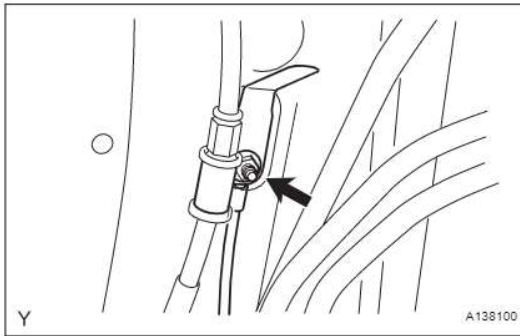
#### 12. INSTALL NO. 1 FUEL TANK PROTECTOR SUB-ASSEMBLY

- (a) Install the fuel tank protector with the 4 nuts.  
Torque: 20 N\*m (204 kgf\*cm, 15 ft.\*lbf)

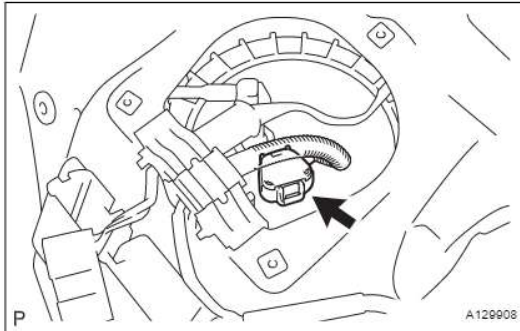


- (b) Install the fuel tank protector bracket with the 2 nuts.  
(for automatic transmission)  
Torque: 5.5 N\*m (56 kgf\*cm, 49 in.\*lbf)

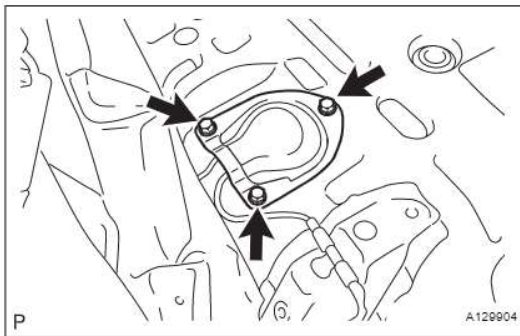
FU

**FU-52****1GR-FE FUEL – FUEL TANK**

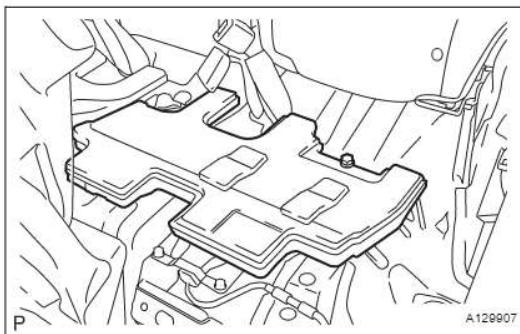
- (c) Install the fuel tank protector bracket with the nut.  
(for manual transmission)  
**Torque: 5.5 N\*m (56 kgf\*cm, 49 in.\*lbf)**

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

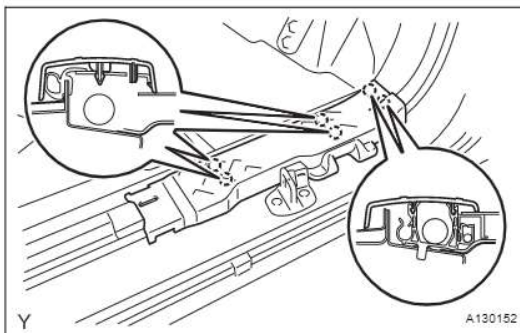
- (a) Connect the connector.



- (b) Install the 3 screws from the center floor.



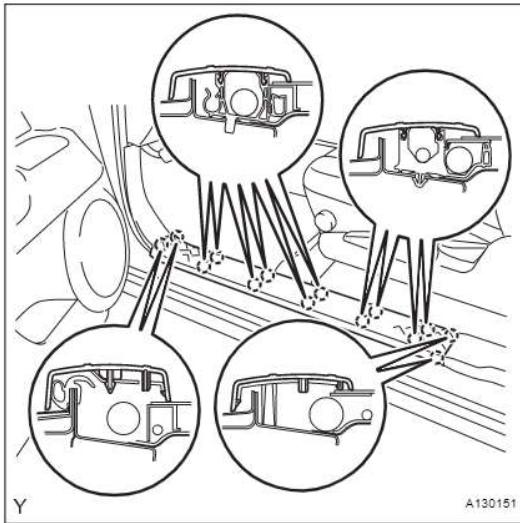
- (c) Install the center floor silencer pad LH.  
(d) Install the floor carpet.

**14. INSTALL REAR DOOR SCUFF PLATE LH**

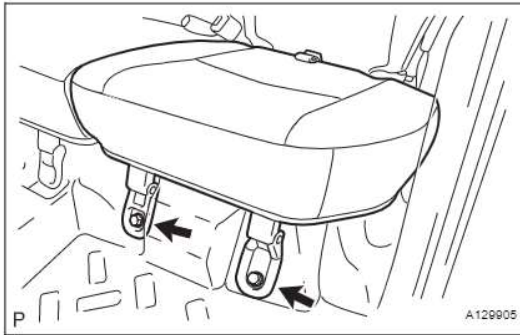
- (a) Engage the 6 claws and install the rear door scuff plate.

## 1GR-FE FUEL – FUEL TANK

FU-53

**15. INSTALL FRONT DOOR SCUFF PLATE LH**

- (a) Engage the 14 claws and install the front door scuff plate.

**16. INSTALL REAR SEAT CUSHION ASSEMBLY LH**

- (a) Install the rear seat cushion assembly LH with the 2 bolts.

Torque: 37 N\*m (377 kgf\*cm, 27 ft.\*lbf)

**17. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

Torque: 3.9 N\*m (40 kgf\*cm, 35 in.\*lbf)

**18. CHECK FOR FUEL LEAKAGE (See page [FU-7](#))**

FU