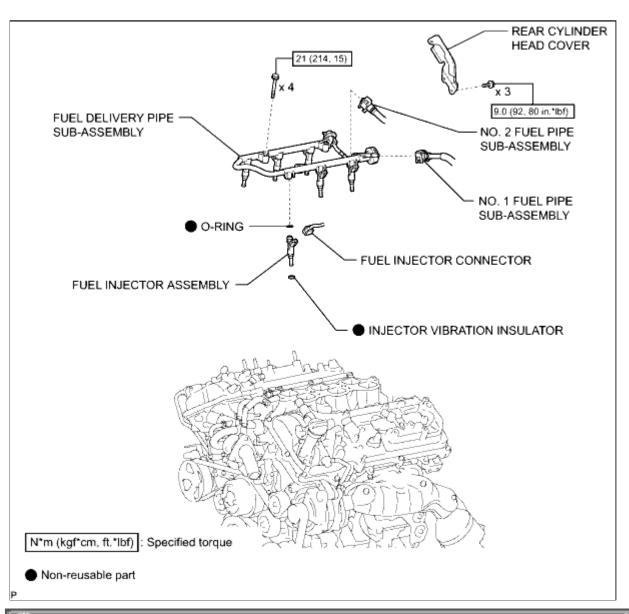
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000003AIE005X
Title: 1GR-FE FUEL: FUEL INJECTOR: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



⊕ TOYOTA :

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000WQQ04EX
Title: 1GR-FE FUEL: FUEL INJECTOR: INSPECTION (2010 4Runner)		

# **INSPECTION**

#### 1. INSPECT FUEL INJECTOR ASSEMBLY

(a) Measure the resistance according to the value(s) in the table below.

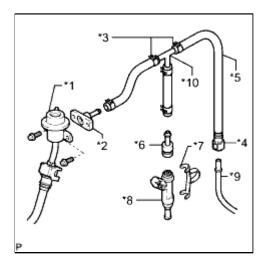
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	11.6 to 12.4 Ω

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

#### 2. INSPECT INJECTION VOLUME AND LEAKAGE

(a) Check the injector injection.



#### **CAUTION:**

- This test involves high-pressure fuel and electricity.
- Take every precaution regarding safe handling of both the fuel and the electrical parts.
- Perform this test in a safe area and avoid any sparks or flame.
- Do not smoke.
  - (1) Assemble SST as shown in the illustration.

#### SST: 09268-31012

09268-41091

09268-41120

09268-41140

03200 41140

09268-41310 09268-41500

90467-13001

95333-06030

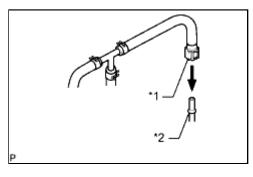
*1	Fuel Pressure Regulator
*2	SST (Union)
*3	SST (Clip)
*4	SST (Fuel Tube Connector)
*5	SST (Hose)
*6	SST (Adapter)
*7	SST (Clamp)
*8	SST (Fuel injector)
*9	Fuel Pipe
*10	SST (T-Joint)

- (3) Disconnect the fuel inlet hose (fuel tube connector) from the fuel pipe.
- (4) Remove the bolt and disconnect the fuel pressure regulator from the fuel delivery pipe.

#### **NOTICE:**

Do not disconnect the No. 2 fuel pipe from the fuel pressure regulator.

(5) Connect SST to the fuel pipe.



## **Text in Illustration**

*1	SST (Fuel Tube Connector)
* 2	Fuel Pipe

#### **CAUTION:**

Always read the precautions before connecting the fuel tube connector.

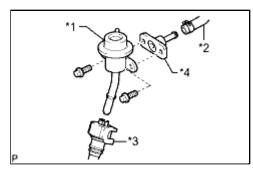
(6) Connect SST (hose) to the fuel inlet of the pressure regulator with another SST (union) and the 2 bolts.

SST: 09268-31012

09268-41091 95336-08070

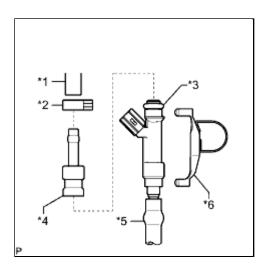
Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

## **Text in Illustration**



*1	Fuel Pressure Regulator
*2	SST (Hose)
*3	No. 2 Fuel Pipe Sub-assembly
*4	SST (Union)

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



(8) Install a new O-ring to the injector.

(9) Connect SST (adapter and hose) to the injector and hold the injector and adapter with SST (clamp).

SST: 09268-31012

09268-41140

09268-41310

90467-13001

95336-08070

#### **Text in Illustration**

*1	SST (Hose)
* 2	SST (Clip)
*3	O-Ring
*4	SST (Adapter)
*5	Vinyl Tube
*6	SST (Clamp)

(10) Put the injector into a graduated cylinder.

#### **CAUTION:**

#### Install a suitable vinyl tube to the injector to contain any gasoline spray.

- (11) Connect the Techstream to the DLC3.
- (12) Turn the ignition switch to ON.

#### **NOTICE:**

Do not start the engine.

- (13) Turn the Techstream on.
- (14) Enter the following menus: Powertrain / Engine and ECT / Active Test / Activate the Fuel Pump Speed Control.

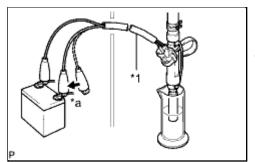
(15) Connect SST (wire) to the injector and the battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector 2 or 3 times.

#### SST: 09842-30080

Standard injection volume:

71 to 86 cm<sup>3</sup> (4.3 to 5.2 cu. in.) per 15 seconds Difference between each injector:

15 cm<sup>3</sup> (0.9 cu. in.) or less



## **Text in Illustration**

* a	Connect
*1	SST (Wire)

#### NOTICE:

Always turn the voltage on and off on the battery side, not the fuel pump side.

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

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

Standard fuel leakage:

1 drop or less per 12 minutes

If the fuel leakage is not as specified, replace the injector assembly.

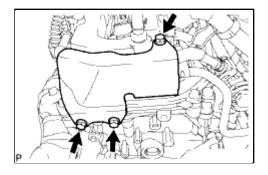
(4)

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000Q4804TX
Title: 1GR-FE FUEL: FUEL INJECTOR: REMOVAL (2010 4Runner)		

# **REMOVAL**

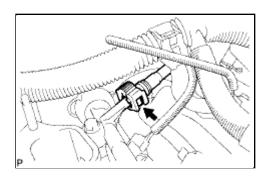
#### 1. REMOVE INTAKE AIR SURGE TANK

#### 2. REMOVE REAR CYLINDER HEAD COVER



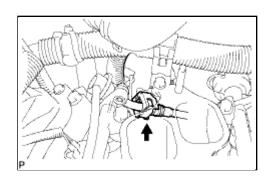
(a) Remove the 3 bolts and cover.

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



(a) Disconnect the No. 1 fuel pipe sub-assembly

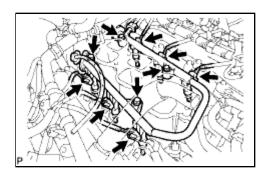
#### 4. DISCONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY



(a) Disconnect the No. 2 fuel pipe sub-assembly

# cardiagn.com

#### 5. REMOVE FUEL DELIVERY PIPE SUB-ASSEMBLY



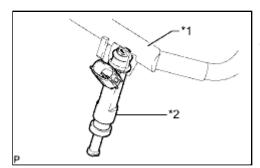
(a) Disconnect the 6 fuel injector connectors.

(b) Remove the 4 bolts and fuel delivery pipe together with the 6 fuel injectors.

#### **NOTICE:**

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

#### **6. REMOVE FUEL INJECTOR ASSEMBLY**



(a) Remove the 6 fuel injectors from the fuel delivery pipe.

# **Text in Illustration**

*1	Fuel Delivery Pipe
*2	Fuel Injector

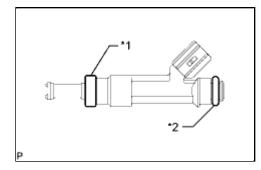
(b) Remove the O-ring and injector vibration insulator from each fuel injector.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000Q4604MX
Title: 1GR-FE FUEL: FUEL INJECTOR: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

#### 1. INSTALL FUEL INJECTOR ASSEMBLY

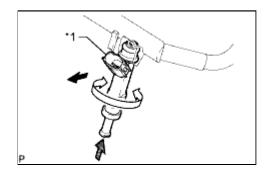


(a) Install a new insulator to each fuel injector.

## **Text in Illustration**

*1	New Insulator
*2	New O - Ring

- (b) Apply a light coat of spindle oil or gasoline to new O-rings and install one to each fuel injector.
- (c) Install the 6 injectors.



(1) While turning each fuel injector left and right, install it to the fuel delivery pipe.

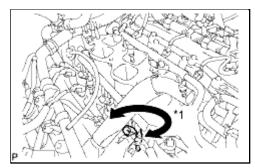
#### **Text in Illustration**

*1	Connector
<b>→</b>	O utward
$\Rightarrow$	Turn
<b>ZZ</b>	Push

(2) Position the fuel injectors with the connectors facing outward.

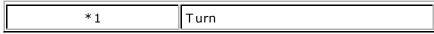
#### 2. INSTALL FUEL DELIVERY PIPE SUB-ASSEMBLY

- (a) Place the fuel delivery pipe together with the 6 fuel injectors on the intake manifold.
- (b) Temporarily install the 4 bolts, which are used to hold the fuel delivery pipe in place, to the intake manifold.



(c) Check that the fuel injectors rotate smoothly.

## **Text in Illustration**



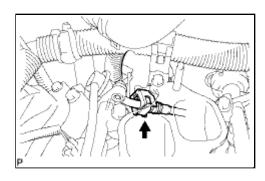
If the fuel injectors do not rotate smoothly, replace the O-ring of any injector that does not rotate smoothly.

- (d) Position the fuel injectors with the connectors facing outward.
- (e) Tighten the 6 bolts.

Torque: 21 N·m (214 kgf·cm, 15ft·lbf)

(f) Connect the 6 fuel injector connectors.

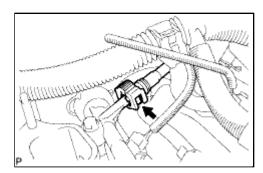
#### 3. CONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY



(a) Connect the No. 2 fuel pipe sub-assembly

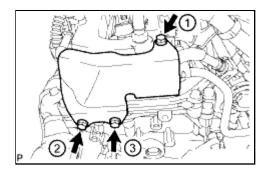
#### 4. CONNECT NO. 1 FUEL PIPE SUB-ASSEMBLY

(a) Connect the No. 1 fuel pipe sub-assembly



#### 5. INSTALL REAR CYLINDER HEAD COVER

(a) Temporarily install the cover with the 3 bolts.



(b) Tighten the 3 bolts in the sequence shown in the illustration.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

#### 6. INSTALL INTAKE AIR SURGE TANK

(a) Install the intake air surge tank

#### 7. INSPECT FOR FUEL LEAK

- (a) Make sure that there are no fuel leaks after performing maintenance on the fuel system.
  - (1) Connect the Techstream to the DLC3.
  - (2) Turn the ignition switch to ON and turn the Techstream on.

#### **NOTICE:**

#### Do not start the engine.

- (3) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- (4) Check that there are no leaks from the fuel system.

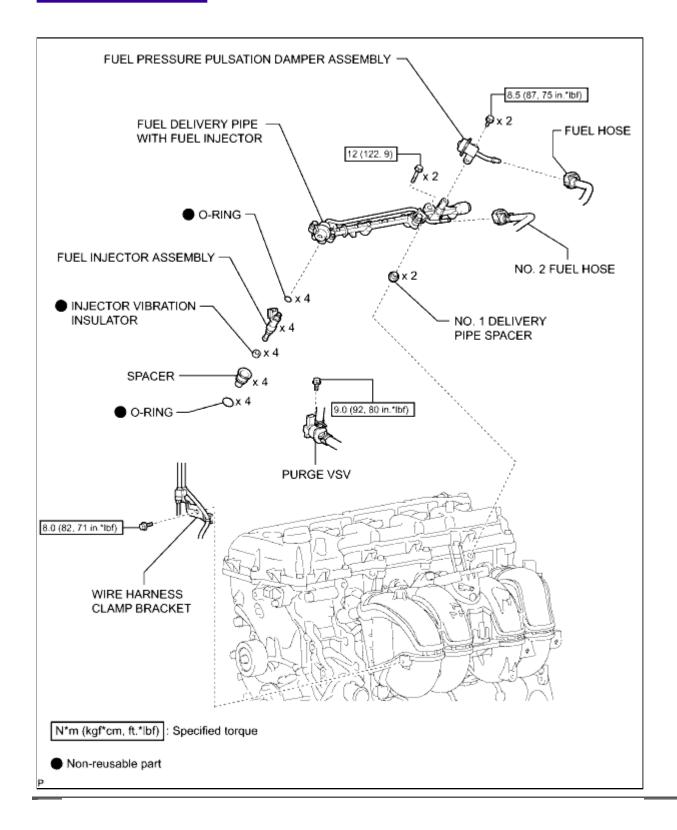
  If there are fuel leaks, repair or replace parts as necessary.
- (5) Turn the ignition switch off.
- (6) Disconnect the Techstream from the DLC3.

(B)

Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000PE204AX
Title: 2TR-FE FUEL: FUEL INJECTOR: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000Q48057X
Title: 2TR-FE FUEL: FUEL INJECTOR: REMOVAL (2010 4Runner)		

# **REMOVAL**

#### 1. DISCHARGE FUEL SYSTEM PRESSURE

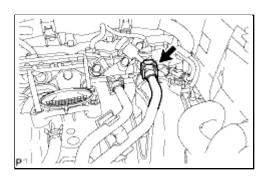
(a) Discharge the fuel system pressure

#### 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

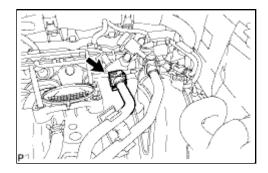
#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

#### 3. REMOVE THROTTLE BODY WITH MOTOR ASSEMBLY



#### 4. DISCONNECT FUEL HOSE



#### 5. DISCONNECT NO. 2 FUEL HOSE

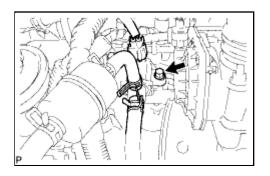
(a) Disconnect the No. 2 fuel hose

6. REMOVE FUEL PRESSURE PULSATION DAMPER ASSEMBLY

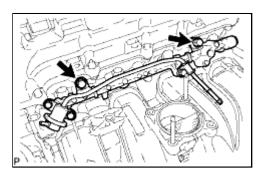
7. REMOVE FUEL DELIVERY PIPE WITH FUEL INJECTOR



- (a) Disconnect the 4 injector connectors.
- (b) Disconnect the purge VSV connector.
- (c) Detach the wire harness clamp.
- (d) Remove the bolt and wire harness clamp bracket.



(e) Remove the bolt and disconnect the purge VSV.

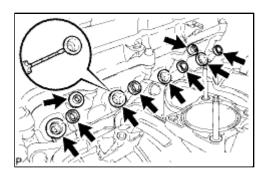


(f) Remove the 2 bolts and fuel delivery pipe together with the fuel injectors.

#### **NOTICE:**

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

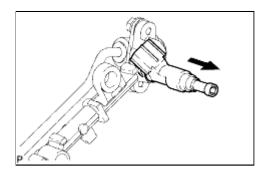
(g) Remove the 2 No. 1 delivery pipe spacers.



- (h) Remove the 4 injector vibration insulators.
- (i) Using a screwdriver, remove the 4 spacers.

#### 8. REMOVE FUEL INJECTOR ASSEMBLY

(a) Remove the 4 fuel injectors from the fuel delivery pipe.



#### Text in Illustration



(2)

(#) TOYOTA

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000WQQ04LX
Title: 2TR-FE FUEL: FUEL INJECTOR: INSPECTION (2010 4Runner)		

# **INSPECTION**

#### 1. INSPECT FUEL INJECTOR ASSEMBLY

(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	11.6 to 12.4 Ω

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

#### 2. INSPECT INJECTION VOLUME AND LEAKAGE

(a) Check the injection volume.

#### **CAUTION:**

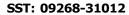
This test involves high-pressure fuel and electricity, therefore, safety precautions should be taken. Perform this test in a safe area and avoid any sparks and flames. Do not smoke.

- (3) Remove the fuel hose from the fuel pipe ...

#### **NOTICE:**

Do not disconnect the No. 2 fuel hose.

(5) Assemble SST as shown in the illustration.



09268-41091

09268-41110

09268-41120

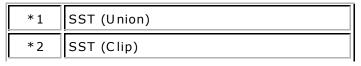
09268-41310

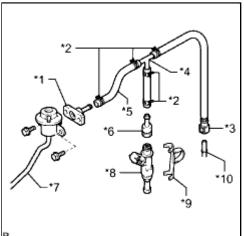
09268-41500

95336-08070

90467-13001







*3	SST (Fuel Tube Connector)
*4	SST (3 Way)
*5	SST (Hose)
*6	SST (Adapter)
*7	Fuel Pressure Regulator
*8	Fuel Injector
*9	SST (Clamp)
*10	Fuel Pipe

(6) Connect SST to the fuel pipe.

SST: 09268-31012

09268-41500



# **Text in Illustration**

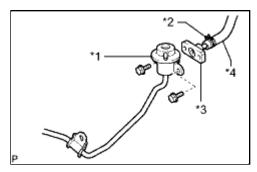
*1	SST (Fuel Tube Connector)
*2	Fuel Pipe

(7) Install the pressure regulator to SST (union) with the 2 bolts.

SST: 09268-31012

09268-41091 95336-08070 90467-13001

Torque: 8.5 N·m (87 kgf·cm, 75in·lbf)



## **Text in Illustration**

*1	Fuel Pressure Regulator
* 2	SST (Clip)
*3	SST (Union)
*4	SST (Hose)

#### **NOTICE:**

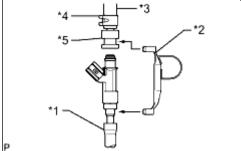
Make sure that the O-ring is installed to the pressure regulator.

(8) Install the O-ring to the injector.

(9) Assemble SST as shown in the illustration.

#### SST: 09268-31012

09268-41110 09268-41310 95336-08070 90467-13001



## **Text in Illustration**

* 1	Vinyl Tube
* 2	SST (Clamp)
*3	SST (Hose)
*4	SST (Clip)
* 5	SST (Adaptor)

(10) Put the injector into a graduated cylinder.

#### **CAUTION:**

Install a suitable vinyl tube to the injector to contain any gasoline spray.

(11) O perate the fuel pump

(12) 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: 09842-30080

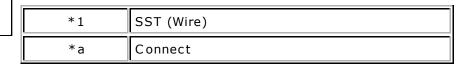
Standard injection volume:

71 to 86 cm<sup>3</sup> (4.3 to 5.2 cu in.) per 15 seconds

Difference between each injector:

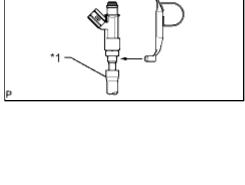
15 cm<sup>3</sup> (0.9 cu in.) or less





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

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



the fuel leakage from the injector.

Fuel leakage:

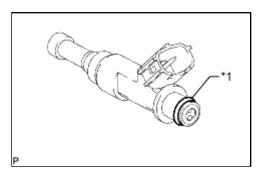
1 drop or less in 12 minutes



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000Q46050X
Title: 2TR-FE FUEL: FUEL INJECTOR: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

#### 1. INSTALL FUEL INJECTOR ASSEMBLY

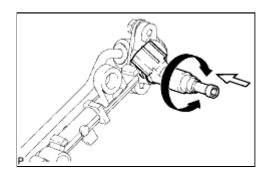


(a) Apply a light coat of gasoline or spindle oil to new O-rings, and then install one to each fuel injector.

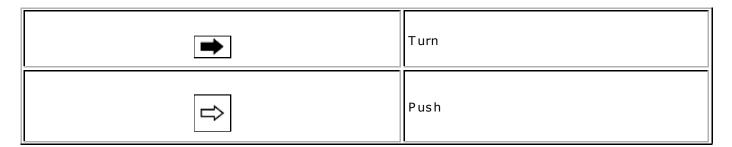
## **Text in Illustration**

* 1	0
<b>* 1</b>	O-ring

- (b) Apply a light coat of gasoline or spindle oil to the contact surfaces of the fuel delivery pipe and the O-ring of the fuel injector.
- (c) Apply a light coat of gasoline or spindle oil to the O-ring again, and then install the fuel injector to the fuel delivery pipe by turning it right and left.



#### **Text in Illustration**



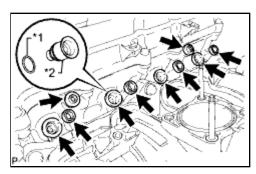
#### **NOTICE:**

Make sure that the O-ring is not cracked or jammed when installing.

(d) Check that the fuel injector rotates smoothly.

If the fuel injector does not rotate smoothly, replace the O-ring.

#### 2. INSTALL FUEL DELIVERY PIPE WITH FUEL INJECTOR



(a) Apply a light coat of gasoline or spindle oil to new O-rings, and then install one to each spacer.

#### **Text in Illustration**

*1	New O -ring
* 2	Spacer

- (b) Install the 4 spacers to the cylinder head.
- (c) Install 4 new injector vibration insulators to the cylinder head.
- (d) Install the 2 No. 1 delivery pipe spacers to the cylinder head.
- (e) Install the fuel delivery pipe together with the 4 fuel injectors, and then temporarily install the fuel delivery pipe with the 2 bolts.

#### **NOTICE:**

Do not drop the fuel injectors when installing the fuel delivery pipe.

(f) Check that the fuel injectors rotate smoothly.

If any fuel injector does not rotate smoothly, replace its O-ring.

(g) Tighten the 2 bolts.

Torque: 12 N·m (122 kgf·cm, 9ft·lbf)

(h) Install the purge VSV with the bolt.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

(i) Install the harness clamp bracket with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)

- (j) Attach the wire harness clamp.
- (k) Connect the purge VSV connector.
- (I) Connect the 4 injector connectors.

## 3. INSTALL FUEL PRESSURE PULSATION DAMPER ASSEMBLY

#### 4. CONNECT FUEL HOSE

#### 5. CONNECT NO. 2 FUEL HOSE

#### 6. INSTALL THROTTLE BODY WITH MOTOR ASSEMBLY

#### 7. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



#### 8. INSPECT FOR FUEL LEAK

- (a) Make sure that there are no fuel leaks after performing maintenance on the fuel system.
  - (1) Connect the Techstream to the DLC3.
  - (2) Turn the ignition switch to ON and turn the Techstream on.

#### **NOTICE:**

Do not start the engine.

- (3) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- (4) Check that there are no leaks from the fuel system.
  - If there are fuel leaks, repair or replace parts as necessary.
- (5) Turn the ignition switch off.
- (6) Disconnect the Techstream from the DLC3.

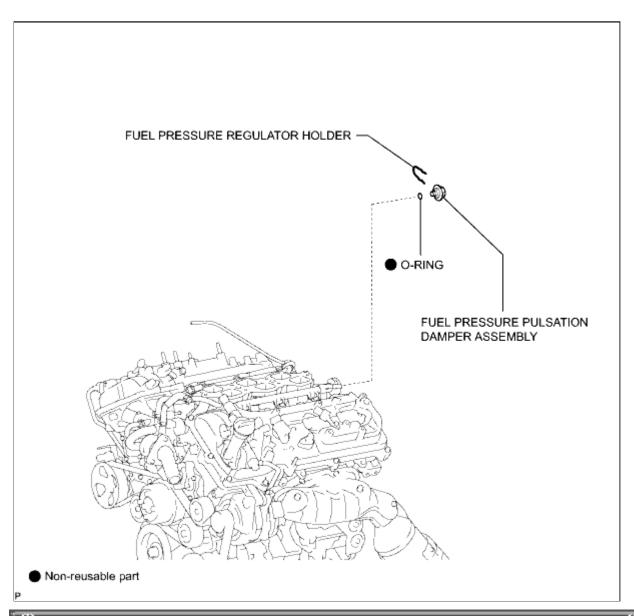




Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000003AIG006X
Title: 1GR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



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⊕ TOYOTA ⊕

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000UK1031X
Title: 1GR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: REMOVAL (2010 4Runner)		

# **REMOVAL**

#### 1. DISCHARGE FUEL SYSTEM PRESSURE

(a) Discharge the fuel system pressure

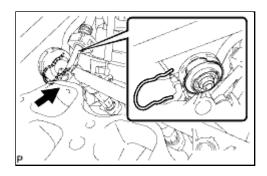
#### 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

#### 3. REMOVE INTAKE AIR SURGE TANK

#### 4. REMOVE FUEL PRESSURE PULSATION DAMPER ASSEMBLY



(a) Remove the fuel pressure regulator holder.

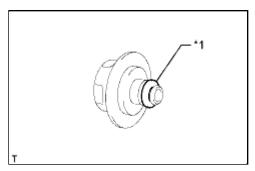
- (b) Pull the fuel pressure pulsation damper out of the fuel delivery pipe.
- (c) Remove the O-ring from the fuel pressure pulsation damper.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000UJZ02ZX
Title: 1GR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

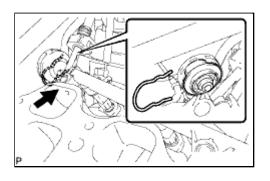
#### 1. INSTALL FUEL PRESSURE PULSATION DAMPER ASSEMBLY



(a) Apply a light coat of spindle oil or gasoline to a new O-ring and install the O-ring to the fuel pressure pulsation damper.

## **Text in Illustration**

*1	New O - Ring	
----	--------------	--



(b) Install the fuel pressure pulsation damper to the fuel delivery pipe.

(c) Install the fuel pressure regulator holder.

#### 2. INSTALL INTAKE AIR SURGE TANK

#### 3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

#### NOTICE:

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



4. INSPECT FOR FUEL LEAK NFO

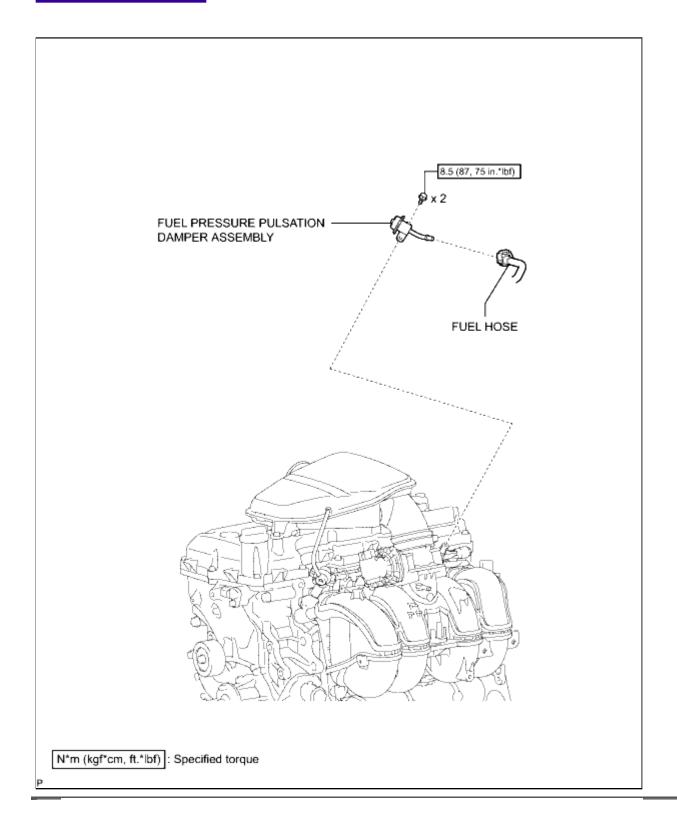
(9)

(#) TOYOTA

Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000044H7003X
Title: 2TR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000UK103BX
Title: 2TR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: REMOVAL (2010 4Runner)		

# **REMOVAL**

#### 1. DISCHARGE FUEL SYSTEM PRESSURE

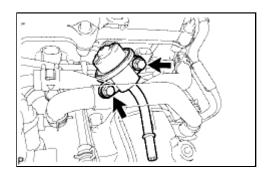
(a) Discharge the fuel system pressure

#### 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected





# 4. REMOVE FUEL PRESSURE PULSATION DAMPER ASSEMBLY

(a) Remove the 2 bolts and fuel pressure pulsation damper.

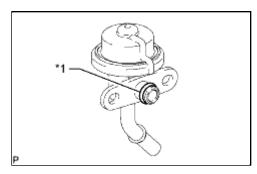




Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000UJZ039X
Title: 2TR-FE FUEL: FUEL PRESSURE PULSATION DAMPER: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

#### 1. INSTALL FUEL PRESSURE PULSATION DAMPER ASSEMBLY



(a) Apply a light coat of gasoline or spindle oil to the O-ring.

## **Text in Illustration**

*1	O-ring

(b) Install the fuel pressure pulsation damper with the 2 bolts.

Torque: 8.5 N·m (87 kgf·cm, 75in·lbf)

- 2. CONNECT FUEL HOSE NFO
- 3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



4. INSPECT FOR FUEL LEAK

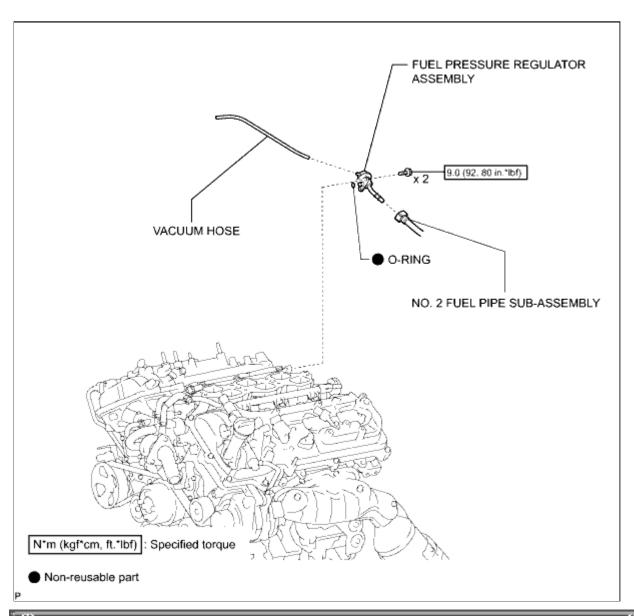




Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000003AIF006X
Title: 1GR-FE FUEL: FUEL PRESSURE REGULATOR: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



⊕ TOYOTA :

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000015Y500RX
Title: 1GR-FE FUEL: FUEL PRESSURE REGULATOR: REMOVAL (2010 4Runner)		

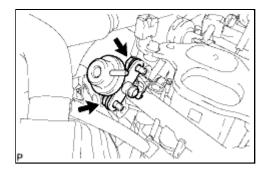
# **REMOVAL**

- 1. DISCHARGE FUEL SYSTEM PRESSURE
  - (a) Discharge the fuel system pressure
- 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

- 3. REMOVE INTAKE AIR SURGE TANK
- 4. DISCONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY
- 5. REMOVE FUEL PRESSURE REGULATOR ASSEMBLY
  - (a) Disconnect the vacuum hose.



(b) Remove the 2 bolts and fuel pressure regulator.

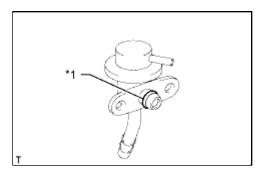
(c) Remove the O-ring from the fuel pressure regulator.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000015Y300QX
Title: 1GR-FE FUEL: FUEL PRESSURE REGULATOR: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

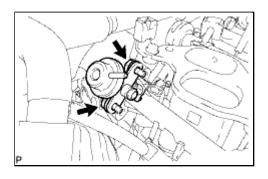
#### 1. INSTALL FUEL PRESSURE REGULATOR ASSEMBLY



(a) Apply a light coat of spindle oil or gasoline to a new O-ring and install the O-ring to the fuel pressure regulator.

#### **Text in Illustration**

* 1	New O - Ring
	g



(b) Install the fuel pressure regulator with the 2 bolts.

Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

- (c) Connect the vacuum hose.
- 2. CONNECT NO. 2 FUEL PIPE SUB-ASSEMBLY
- 3. INSTALL INTAKE AIR SURGE TANK
- 4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



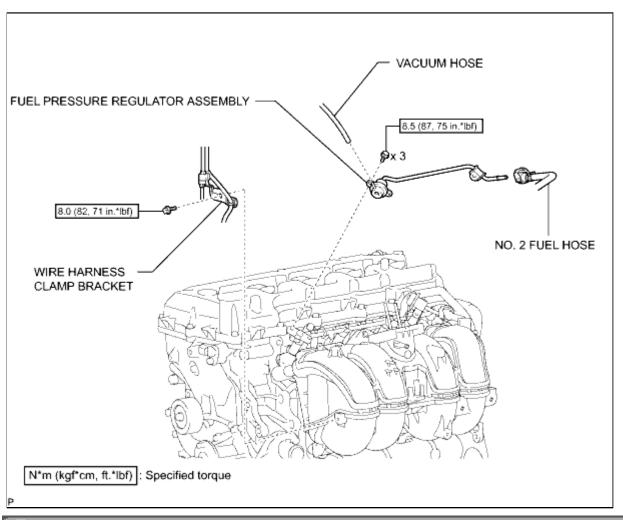
5. INSPECT FOR FUEL LEAK NFO



Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000044H6003X
Title: 2TR-FE FUEL: FUEL PRESSURE REGULATOR: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



⊕ TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000015ZM009X
Title: 2TR-FE FUEL: FUEL PRESSURE REGULATOR: REMOVAL (2010 4Runner)		

# **REMOVAL**

#### 1. DISCHARGE FUEL SYSTEM PRESSURE

(a) Discharge the fuel system pressure

#### 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

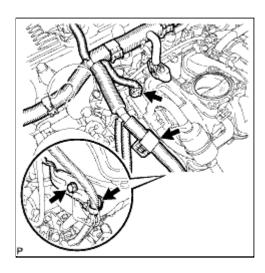
#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



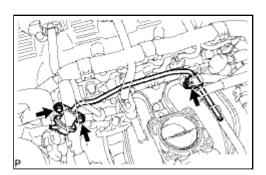
- 3. REMOVE THROTTLE BODY WITH MOTOR ASSEMBLY
  - (a) Remove the throttle body with motor assembly
- 4. DISCONNECT NO. 2 FUEL HOSE

#### 5. REMOVE FUEL PRESSURE REGULATOR ASSEMBLY



- (a) Disconnect the purge VSV connector.
- (b) Detach the wire harness clamp.
- (c) Remove the bolt and wire harness clamp bracket.

(d) Remove the 3 bolts and fuel pressure regulator.

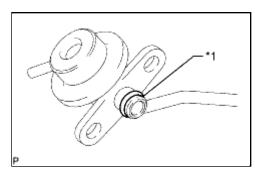




Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000015ZK009X
Title: 2TR-FE FUEL: FUEL PRESSURE REGULATOR: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

#### 1. INSTALL FUEL PRESSURE REGULATOR ASSEMBLY



(a) Apply a light coat of gasoline or spindle oil to the O-ring.

### **Text in Illustration**

*1	O-ring

(b) Install the fuel pressure regulator with the 3 bolts.

Torque: 8.5 N·m (87 kgf·cm, 75in·lbf)

(c) Install the wire harness clamp bracket with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71in·lbf)

- (d) Attach the wire harness clamp.
- (e) Connect the purge VSV connector.
- 2. CONNECT NO. 2 FUEL HOSE
- 3. INSTALL THROTTLE BODY WITH MOTOR ASSEMBLY
- 4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

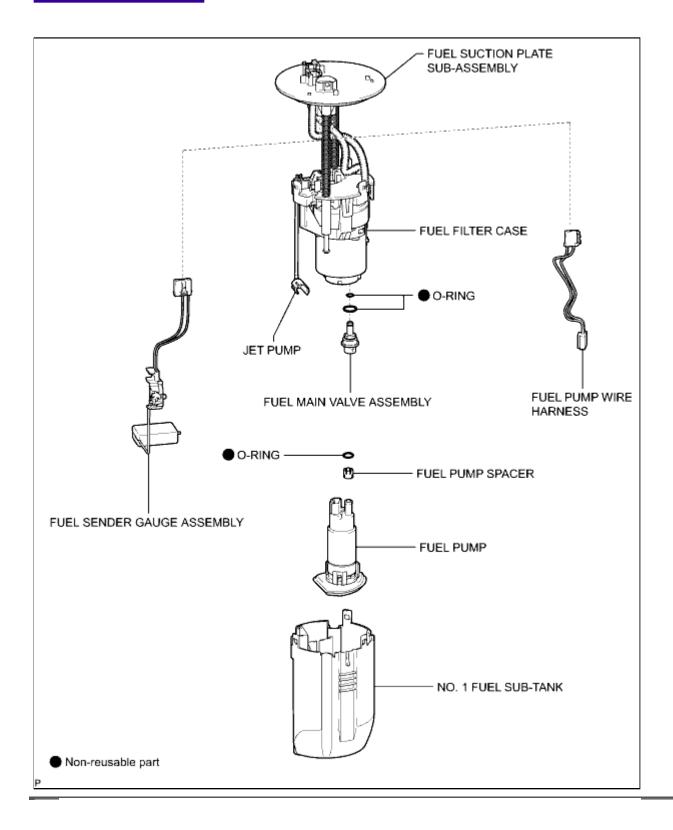
5. INSPECT FOR FUEL LEAK



Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QS002X
Title: 1GR-FE FUEL: FUEL PUMP: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**

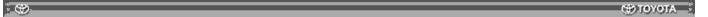


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QT002X
Title: 1GR-FE FUEL: FUEL PUMP: REMOVAL (2010 4Runner)		

# **REMOVAL**

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

(a) Remove the fuel suction with pump and gauge tube assembly lacksquare .

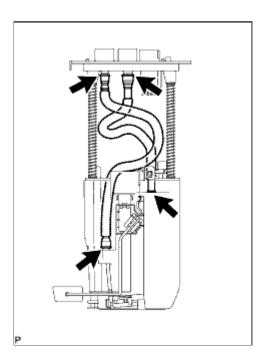


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000004619002X
Title: 1GR-FE FUEL: FUEL PUMP: DISASSEMBLY (2010 4Runner)		

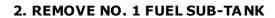
# **DISASSEMBLY**

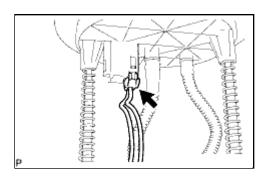
#### **NOTICE:**

Do not disconnect the hoses indicated in the illustration.



1. REMOVE FUEL SENDER GAUGE ASSEMBLY

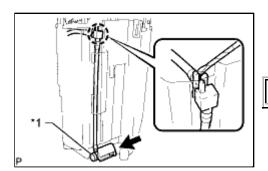




(a) Disconnect the fuel pump connector.

(b) Disconnect the jet pump from the No. 1 fuel sub-tank.

### **Text in Illustration**



\*1 Jet Pump

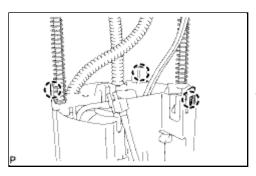
(c) Using a small screwdriver, detach the claw from the No. 1 fuel sub-tank.

### HINT:

Tape the screwdriver tip before use.

#### **NOTICE:**

Do not damage the No. 1 fuel sub-tank.



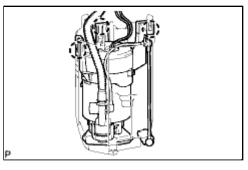
(d) Using a screwdriver, detach the 3 claws from the claw holes.

### **HINT:**

Tape the screwdriver tip before use.

#### **NOTICE:**

Do not damage the No. 1 fuel sub-tank.



(e) Using a screwdriver, detach the 3 claws from the claw holes.

#### HINT:

Tape the screwdriver tip before use.

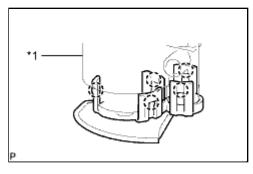
#### **NOTICE:**

Do not damage the No. 1 fuel sub-tank.

### 3. REMOVE FUEL PUMP

(a) Using a screwdriver, detach the 5 claws from the claw holes and disconnect the fuel pump from the fuel filter case.

### **Text in Illustration**

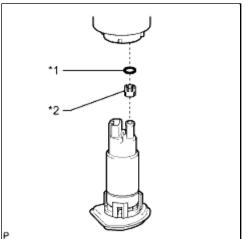


* 1	Fuel Filter Case

### **HINT:**

Tape the screwdriver tip before use.

(b) Disconnect the fuel pump wire harness connector from the fuel pump to remove it.

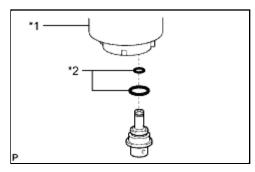


(c) Remove the O-ring and fuel pump spacer from the fuel pump.

### **Text in Illustration**

* 1	O-Ring
* 2	Fuel Pump Spacer

### 4. REMOVE FUEL MAIN VALVE ASSEMBLY



(a) Remove the fuel main valve from the fuel filter case.

### **Text in Illustration**

*1	Fuel Filter Case
*2	O-Ring

(b) Remove the 2 O-rings from the fuel main valve.

: 🖘

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QR002X
Title: 1GR-FE FUEL: FUEL PUMP: INSPECTION (2010 4Runner)		

### **INSPECTION**

#### 1. INSPECT FUEL PUMP

- (a) Inspect the resistance of the fuel pump.
  - (1) Measure the resistance according to the value(s) in the table below.

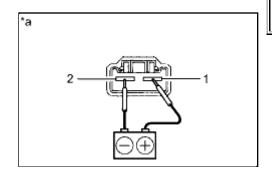
Standard Resistance:

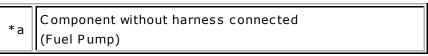
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	0.2 to 3.0 Ω

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

- (b) Inspect the operation of the fuel pump.
  - (1) Connect the positive (+) lead of the battery to terminal 1 of the connector and the negative (-) lead to terminal
    - 2. Check that the fuel pump operates.

### **Text in Illustration**





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

#### NOTICE:

- These tests must be performed within 10 seconds to prevent the coil from burning out.
- Keep the fuel pump as far away from the battery as possible.
- Always turn the voltage on and off on the battery side, not the fuel pump side.
- When the pump is locked and does not operate due to foreign matter being stuck, etc., replace the fuel pump ECU together with the fuel pump, as the fuel pump ECU may be damaged electrically.

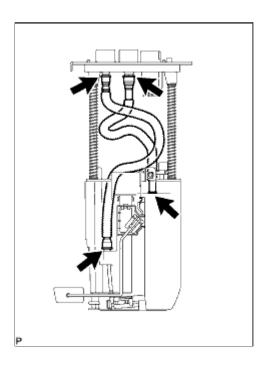


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM00000461A002X
Title: 1GR-FE FUEL: FUEL PUMP: REASSEMBLY (2010 4Runner)		

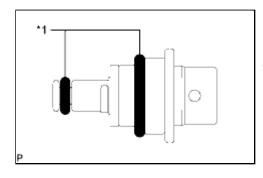
### **REASSEMBLY**

#### **NOTICE:**

Do not disconnect the hoses indicated in the illustration.



### 1. INSTALL FUEL MAIN VALVE ASSEMBLY



(a) Apply a light coat of gasoline to 2 new O-rings and install the O-rings to the fuel main valve.

### **Text in Illustration**

	*1	New O - Ring
--	----	--------------

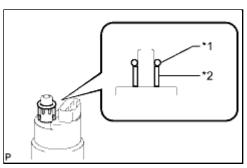
(b) Install the fuel main valve to the fuel filter case.

#### **NOTICE:**

Make sure the O-rings are not cut or pinched during installation.

#### 2. INSTALL FUEL PUMP

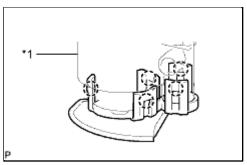
(a) Connect the fuel pump wire harness connector to the fuel pump.



(b) Apply a light coat of gasoline to a new O-ring. Then install the fuel pump spacer and O-ring to the fuel pump.

### **Text in Illustration**

*1	New O - Ring
* 2	Fuel Pump Spacer

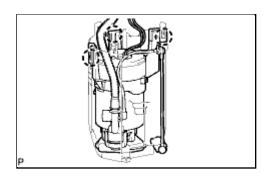


(c) Attach the 5 claws to the claw holes to install the fuel pump to the fuel filter case.

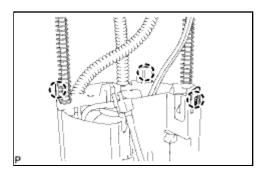
### **Text in Illustration**

	*1	Fuel Filter Case
--	----	------------------

### 3. INSTALL NO. 1 FUEL SUB-TANK

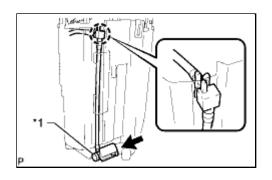


(a) Attach the 3 claws to the claw holes to install the No. 1 fuel sub-tank.



(b) Attach the 3 claws to the claw holes.

(c) Install the tube part to the No. 1 fuel sub-tank.



(1) Attach the claw on the end of the tube to the claw hole. Install the tube to the 2 clamps on the No. 1 fuel sub-tank.

(d) Connect the jet pump to the No. 1 fuel sub-tank.

#### **Text in Illustration**



(e) Connect the fuel pump connector.

4. INSTALL FUEL SENDER GAUGE ASSEMBLY

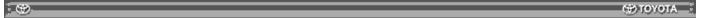


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QQ002X
Title: 1GR-FE FUEL: FUEL PUMP: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

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

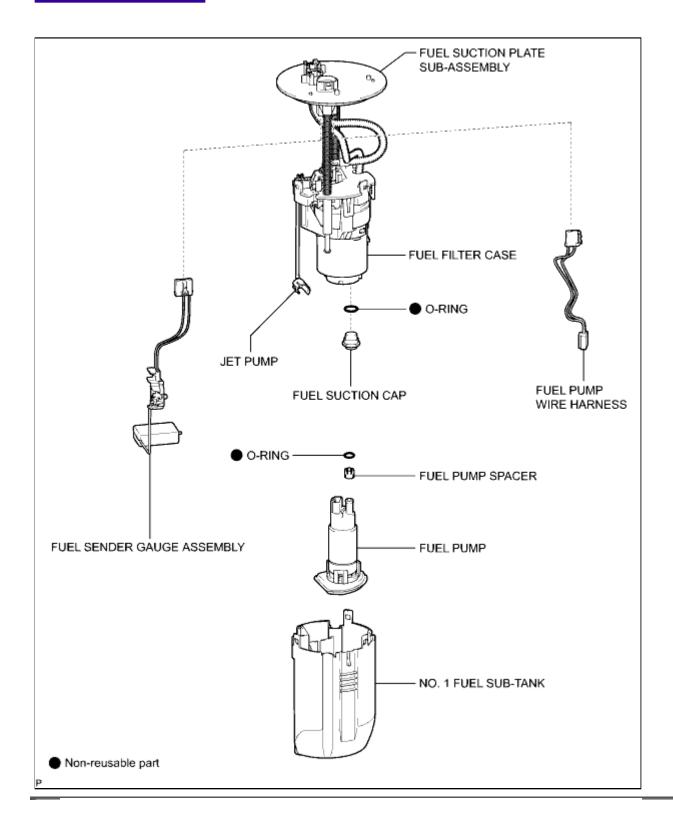
(a) Install the fuel suction with pump and gauge tube assembly lacksquare .



Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QK002X
Title: 2TR-FE FUEL: FUEL PUMP: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**

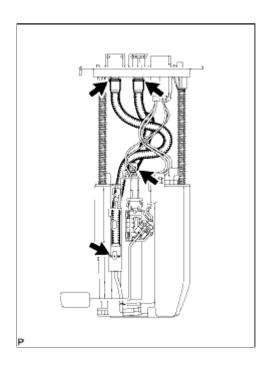


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045Z9002X
Title: 2TR-FE FUEL: FUEL PUMP: DISASSEMBLY (2010 4Runner)		

# **DISASSEMBLY**

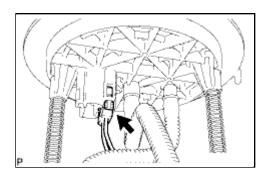
#### **NOTICE:**

Do not disconnect the hoses indicated in the illustration.



1. REMOVE FUEL SENDER GAUGE ASSEMBLY

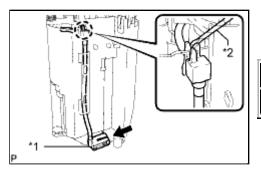




(a) Disconnect the fuel pump connector.

(b) Disconnect the jet pump from the No. 1 fuel sub-tank.

### **Text in Illustration**



*1	Jet Pump
*2 Protective Tape	

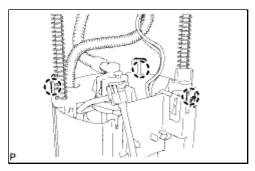
(c) Using a small screwdriver, detach the claw from the No. 1 fuel sub-tank.

### **HINT:**

Tape the screwdriver tip before use.

#### **NOTICE:**

Do not damage the No. 1 fuel sub-tank.



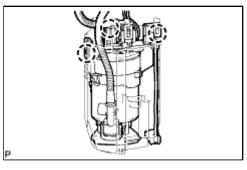
(d) Using a screwdriver, detach the 3 claws from the claw holes.

#### **HINT:**

Tape the screwdriver tip before use.

### **NOTICE:**

Do not damage the No. 1 fuel sub-tank.



(e) Using a screwdriver, detach the 3 claws from the claw holes.

#### HINT:

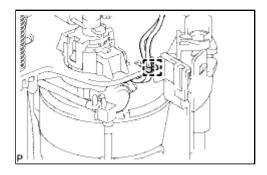
Tape the screwdriver tip before use.

### NOTICE:

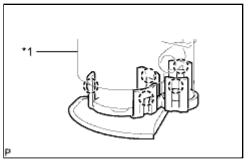
Do not damage the No. 1 fuel sub-tank.

### 3. REMOVE FUEL PUMP

(a) Detach the fuel pump wire harness clamp.



(b) Using a screwdriver, detach the 5 claws from the claw holes and disconnect the fuel pump from the fuel filter case.



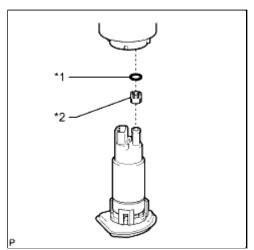
### **Text in Illustration**

* 1	Fuel Filter Case

### HINT:

Tape the screwdriver tip before use.

(c) Disconnect the fuel pump wire harness connector from the fuel pump to remove it.



(d) Remove the O-ring and fuel pump spacer from the fuel pump.

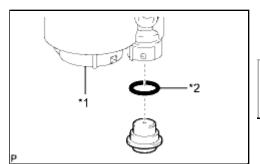
### **Text in Illustration**

* 1	O-ring
*2 Fuel Pump Spacer	

#### 4. REMOVE FUEL SUCTION CAP

(a) Remove the fuel suction cap from the fuel filter case.

### **Text in Illustration**



*1	Fuel Filter Case
* 2	O-ring

(b) Remove the O-ring from the fuel suction cap.

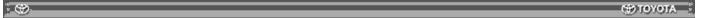


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QL002X
Title: 2TR-FE FUEL: FUEL PUMP: REMOVAL (2010 4Runner)		

# **REMOVAL**

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

(a) Remove the fuel suction with pump and gauge tube assembly lacksquare .



Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QJ002X
Title: 2TR-FE FUEL: FUEL PUMP: INSPECTION (2010 4Runner)		

### **INSPECTION**

#### 1. INSPECT FUEL PUMP

- (a) Inspect the resistance of the fuel pump.
  - (1) Measure the resistance according to the value(s) in the table below.

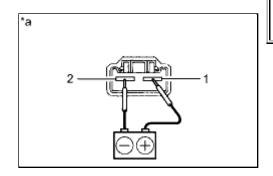
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	0.2 to 3.0 Ω

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

- (b) Inspect the operation of the fuel pump.
  - (1) Connect the positive (+) lead of the battery to terminal 1 of the connector and the negative (-) lead to terminal
    - 2. Check that the fuel pump operates.

### **Text in Illustration**





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

#### **NOTICE:**

- This test must be performed within 10 seconds to prevent the coil from burning out.
- Keep the fuel pump as far away from the battery as possible.
- Always turn the voltage on and off on the battery side, not the fuel pump side.
- When the pump is locked and does not operate due to foreign matter being stuck, etc., replace the fuel pump ECU together with the fuel pump, as the fuel pump ECU may be damaged electrically.

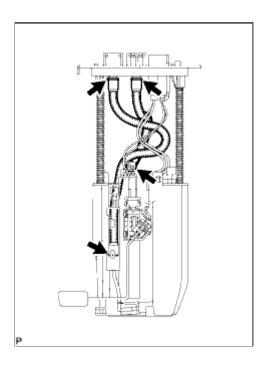
\*

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045ZA002X
Title: 2TR-FE FUEL: FUEL PUMP: REASSEMBLY (2010 4Runner)		

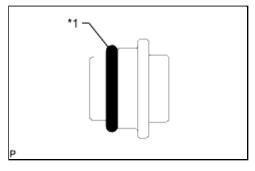
### **REASSEMBLY**

#### **NOTICE:**

Do not disconnect the hoses indicated in the illustration.



### 1. INSTALL FUEL SUCTION CAP



(a) Apply a light coat of gasoline to a new O-ring and install the O-ring to the fuel suction cap.

### **Text in Illustration**

	*1	New O -ring
--	----	-------------

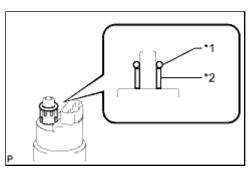
(b) Install the fuel suction cap to the fuel filter case.

#### **NOTICE:**

Make sure the O-ring is not cut or pinched during installation.

#### 2. INSTALL FUEL PUMP

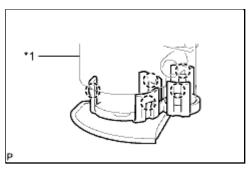
(a) Connect the fuel pump wire harness connector to the fuel pump.



(b) Apply a light coat of gasoline to a new O-ring. Then install the fuel pump spacer and O-ring to the fuel pump.

### **Text in Illustration**

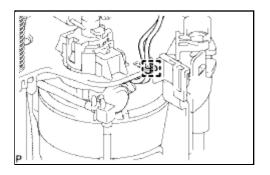
*1	New O - ring
*2	Fuel Pump Spacer



(c) Attach the 5 claws to the claw holes to install the fuel pump to the fuel filter case.

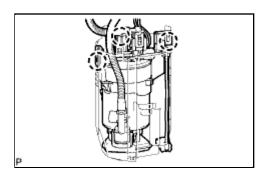
### **Text in Illustration**

*1	Fuel Filter Case
----	------------------

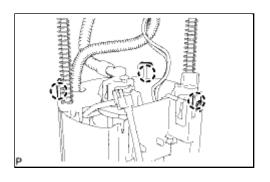


(d) Attach the fuel pump wire harness clamp.

### 3. INSTALL NO. 1 FUEL SUB-TANK

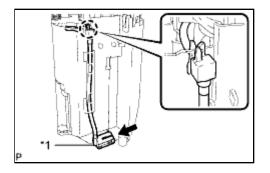


(a) Attach the 3 claws to the claw holes to install the No. 1 fuel sub-tank.



(b) Attach the 3 claws to the claw holes.

(c) Install the tube part to the No. 1 fuel sub-tank.



(1) Attach the claw on the end of the tube to the claw hole. Install the tube to the 2 clamps on the No. 1 fuel sub-tank.

(d) Connect the jet pump to the No. 1 fuel sub-tank.

#### **Text in Illustration**



(e) Connect the fuel pump connector.

4. INSTALL FUEL SENDER GAUGE ASSEMBLY





Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045QI002X
Title: 2TR-FE FUEL: FUEL PUMP: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

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

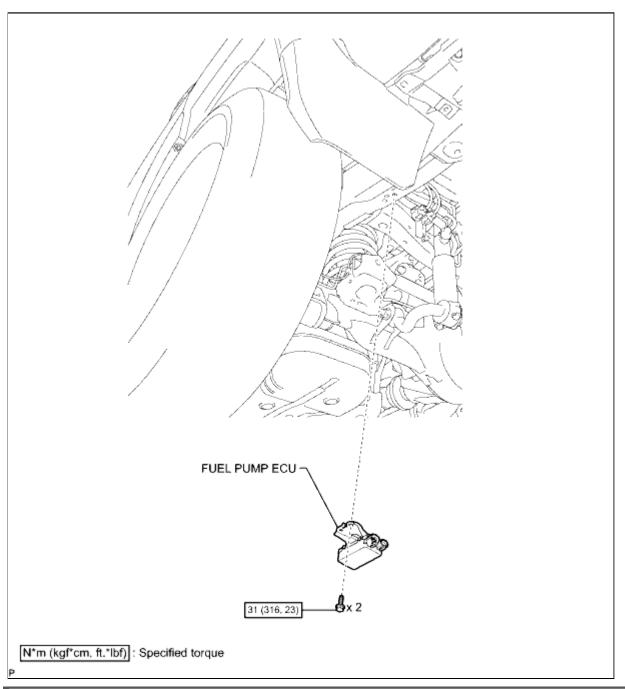
(a) Install the fuel suction with pump and gauge tube assembly lacksquare .



Last Modified: 5-10-2010	6.4 K	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D3002X	
Title: 1GR-FE FUEL: FUEL PUMP ECU: COMPONENTS (2010 4Runner)			

# **COMPONENTS**

# **ILLUSTRATION**

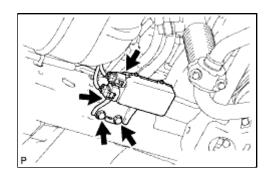


(#) TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D4002X	
Title: 1GR-FE FUEL: FUEL PUMP ECU: REMOVAL (2010 4Runner)			

# **REMOVAL**

### 1. REMOVE FUEL PUMP ECU



(a) Disconnect the 2 connectors.

(b) Remove the 2 bolts and fuel pump ECU.

#### **NOTICE:**

Make sure the fuel pump ECU is not subjected to physical shocks, such as being dropped, etc.



**ЭТОУОТА** 

Last Modified: 5-10-2010	6.4 A	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D2002X	
Title: 1GR-FE FUEL: FUEL PUMP ECU: INSTALLATION (2010 4Runner)			

# **INSTALLATION**

### 1. INSTALL FUEL PUMP ECU

(a) Install the fuel pump ECU with the 2 bolts.

Torque: 31 N·m (316 kgf·cm, 23ft·lbf)

#### **NOTICE:**

Do not use the fuel pump ECU if it has been subjected to physical shocks, such as being dropped, etc.

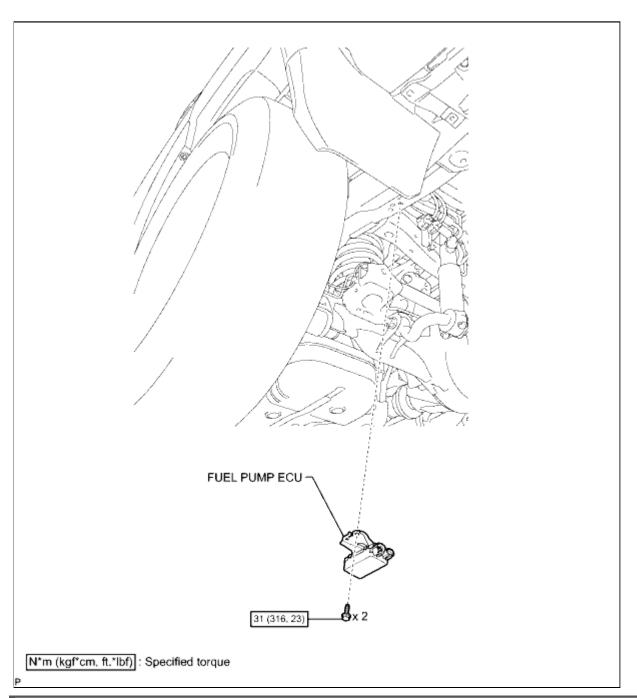
(b) Connect the 2 connectors.



Last Modified: 5-10-2010	6.4 K	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D3003X	
Title: 2TR-FE FUEL: FUEL PUMP ECU: COMPONENTS (2010 4Runner)			

# **COMPONENTS**

# **ILLUSTRATION**

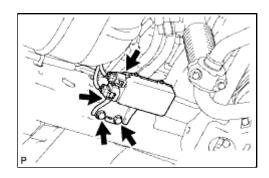


⊕ TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D4003X	
Title: 2TR-FE FUEL: FUEL PUMP ECU: REMOVAL (2010 4Runner)			

# **REMOVAL**

### 1. REMOVE FUEL PUMP ECU



(a) Disconnect the 2 connectors.

(b) Remove the 2 bolts and fuel pump ECU.

#### **NOTICE:**

Make sure the fuel pump ECU is not subjected to physical shocks, such as being dropped, etc.



**ЭТОУОТА** 

Last Modified: 5-10-2010	6.4 A	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045D2003X	
Title: 2TR-FE FUEL: FUEL PUMP ECU: INSTALLATION (2010 4Runner)			

# **INSTALLATION**

### 1. INSTALL FUEL PUMP ECU

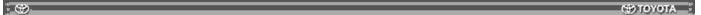
(a) Install the fuel pump ECU with the 2 bolts.

Torque: 31 N·m (316 kgf·cm, 23ft·lbf)

#### **NOTICE:**

Do not use the fuel pump ECU if it has been subjected to physical shocks, such as being dropped, etc.

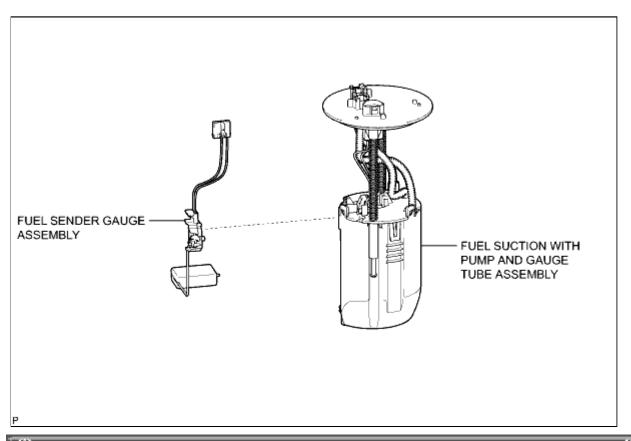
(b) Connect the 2 connectors.



Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045LT002X
Title: 1GR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



⊕ TOYOTA 🖫

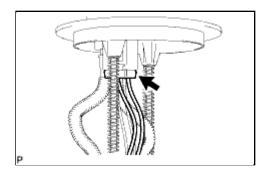
Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045LU002X
Title: 1GR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: REMOVAL (2010 4Runner)		

### **REMOVAL**

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

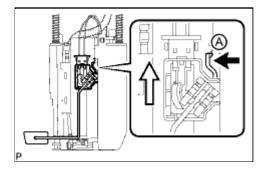
(a) Remove the fuel suction with pump and gauge tube assembly lacksquare .

#### 2. REMOVE FUEL SENDER GAUGE ASSEMBLY

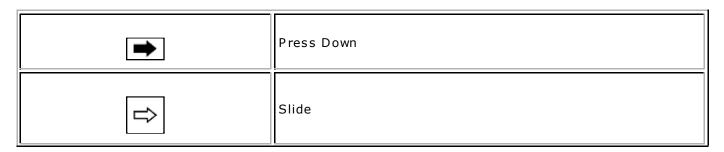


(a) Disconnect the fuel sender gauge connector.

(b) Press down on the fuel sender gauge claw labeled A . Then slide the fuel sender gauge upward to remove it.



#### **Text in Illustration**

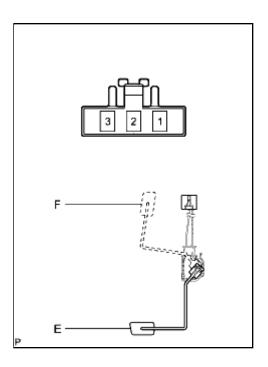


⊕ TOYOTA\_

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045LS002X
Title: 1GR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: INSPECTION (2010 4Runner)		

# **INSPECTION**

### 1. INSPECT FUEL SENDER GAUGE ASSEMBLY



(a) Check that the float moves smoothly between  ${\sf F}$  and  ${\sf E}$ .

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 - 3	Float position is F (upper)	12 to 18 Ω
	Float position is E (lower)	405 to 415 Ω

If the result is not as specified, replace the fuel sender gauge assembly.

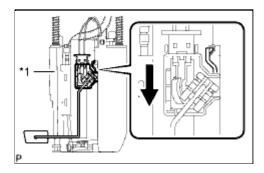
(#) TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045LR002X
Title: 1GR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

### 1. INSTALL FUEL SENDER GAUGE ASSEMBLY

(a) Set the fuel sender gauge on the fuel sub-tank. Then slide the fuel sender gauge downward to install it.



#### **Text in Illustration**

*1	Fuel Sub-tank
•	Slide

(b) Connect the fuel sender gauge connector.

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

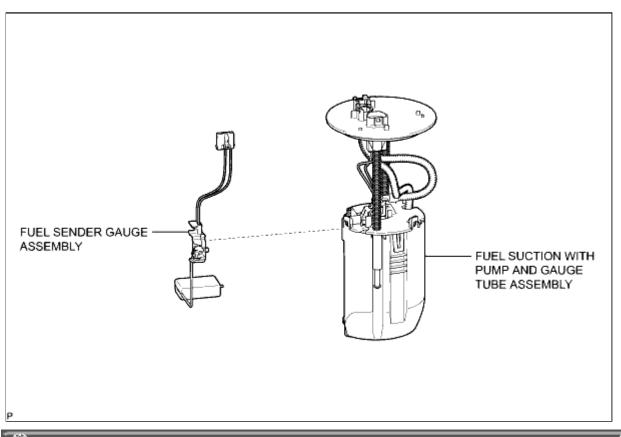
(a) Install the fuel suction with pump and gauge tube assembly lacksquare.



Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045MA002X
Title: 2TR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



®- ⊕TOYOTA :

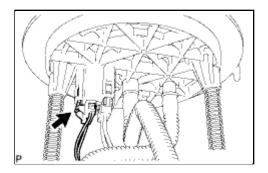
Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045MB002X
Title: 2TR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: REMOVAL (2010 4Runner)		

# **REMOVAL**

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

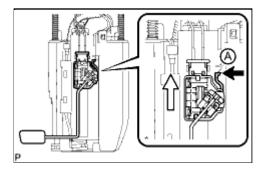
(a) Remove the fuel suction with pump and gauge tube assembly lacksquare .

#### 2. REMOVE FUEL SENDER GAUGE ASSEMBLY

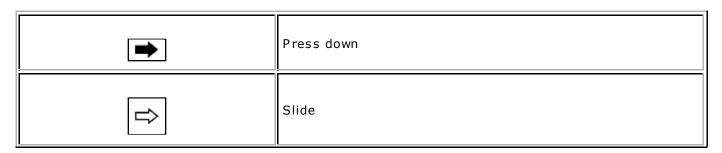


(a) Disconnect the fuel sender gauge connector.

(b) Press down on the fuel sender gauge claw labeled A . Then slide the fuel sender gauge upward to remove it.



#### **Text in Illustration**

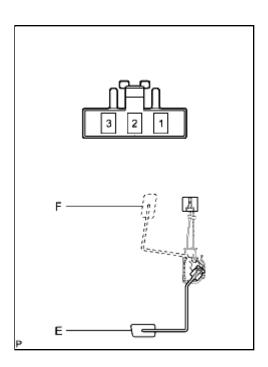


⊕ TOYOTA\_

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045M9002X
Title: 2TR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: INSPECTION (2010 4Runner)		

# **INSPECTION**

### 1. INSPECT FUEL SENDER GAUGE ASSEMBLY



(a) Check that the float moves smoothly between  ${\sf F}$  and  ${\sf E}$ .

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 - 3	Float position is F (upper)	12 to 18 Ω
	Float position is E (lower)	405 to 415 Ω

If the result is not as specified, replace the fuel sender gauge assembly.

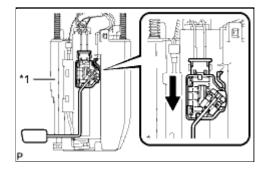
(#) TOYOTA

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045M8002X
Title: 2TR-FE FUEL: FUEL SENDER GAUGE ASSEMBLY: INSTALLATION (2010 4Runner)		

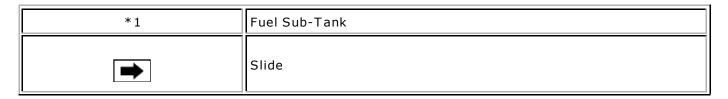
# **INSTALLATION**

#### 1. INSTALL FUEL SENDER GAUGE ASSEMBLY

(a) Set the fuel sender gauge on the No. 1 fuel sub-tank. Then slide the fuel sender gauge downward to install it.

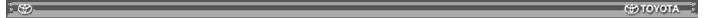


#### **Text in Illustration**



(b) Connect the fuel sender gauge connector.

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



Last Modified: 5-10-2010	6.4 L	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000028RU018X
Title: 1GR-FE FUEL: FUEL SYSTEM: PRECAUTION (2010 4Runner)		

## **PRECAUTION**

#### 1. PRECAUTION

- (a) Before starting work on the fuel system, including inspections and repairs, disconnect the cable from the negative (-) battery terminal.
- (b) Do not smoke or work near fire when performing work on the fuel system.
- (c) Keep gasoline away from rubber or leather parts.

#### 2. DISCHARGE FUEL SYSTEM PRESSURE

#### **CAUTION:**

- Take precautions to prevent gasoline from spilling out before removing fuel system parts.
- Pressure still remains in the fuel lines even after performing the following procedures. When disconnecting a fuel line, cover it with a piece of cloth to prevent fuel from spraying or coming out.
- (a) Remove the circuit opening relay from the engine room relay block.
- (b) Start the engine. After the engine stops, turn the ignition switch off.

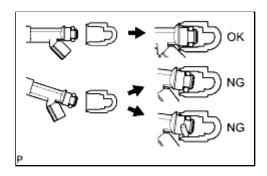
#### HINT:

#### DTC P0171 (system to lean) may be stored.

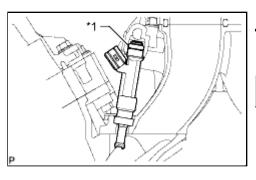
- (c) Check that the engine does not start.
- (d) Remove the fuel tank cap and let the air out of the fuel tank.
- (e) Disconnect the cable from the negative (-) battery terminal.
- (f) Reinstall the circuit opening relay.

#### 3. FUEL SYSTEM

- (a) When disconnecting a high fuel pressure line, a large amount of gasoline will spill out. Follow these procedures.
  - (1) Disconnect the fuel pump tube.
  - (2) Drain any fuel remaining inside the fuel pump tube.
  - (3) To protect the disconnected fuel pump tube from damage and contamination, cover it with a plastic bag.
  - (4) Put a container under the connection.
    - (b) Observe these precautions when removing and installing the injectors.
      - (1) Never reuse the O-ring.
      - (2) When installing a new O -ring to the injector, do not damage it.
      - (3) Coat new O-rings with spindle oil or gasoline before installing. Do not use engine oil, gear oil or brake oil.



(c) Install the injector to the delivery pipe and lower intake manifold as shown in the illustration.



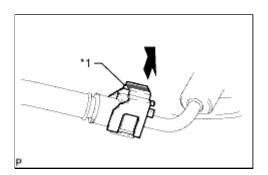
## **Text in Illustration**

* 1	O-Ring	

#### **NOTICE:**

Before installing the injector, be sure to apply spindle oil or gasoline to the place where the delivery pipe or cylinder head contacts the O-ring of the injector.

(d) Observe these precautions when disconnecting the fuel tube connector (for quick type A).

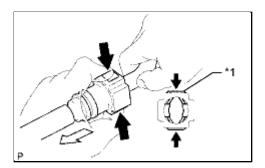


(1) Fuel hose connector cover type:

Detach the lock claw by lifting up the cover as shown in the illustration.

* 1	Fuel Hose Connector Cover

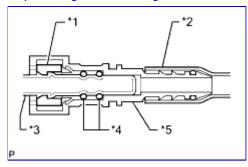
- (2) Check for dirt or mud on the pipe and around the connector before disconnection. Clean if necessary.
- (3) If the connector and the pipe are stuck, pinch the connector, push and pull the pipe to disconnect the pipe and pull it out.



*1	Retainer
<b>→</b>	Pinch
$\Rightarrow$	Pull

#### **NOTICE:**

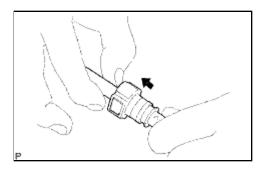
• Check for foreign matter in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-ring or cause leaks in the seal between the pipe and connector.



- Do not use any tools to separate the pipe and connector.
- Do not forcefully bend or twist the nylon tube.
- Check for foreign matter on the pipe seal surface. Clean if necessary.
- Put the pipe and connector ends in plastic bags to prevent damage and foreign matter contamination.
- If the pipe and connector are stuck together, pinch the connector between your fingers and turn it carefully to disconnect it.

*1	Retainer
*2	Nylon Tube
*3	Pipe
*4	O-Ring
*5	Fuel Tube Connector

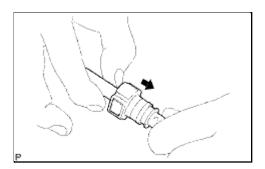
- (4) Check for dirt or mud on the seal surface of the disconnected pipe. Clean if necessary.
- (5) To protect the disconnected pipe and connector from damage and contamination, cover them with a plastic bag.
- (e) Observe these precautions when connecting the fuel tube connector (for quick type A).



- (1) Check that there is no damage or contamination in the connected part of the pipe.
- (2) A lign 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 tight, apply a small amount of fresh engine oil to the tip of the pipe.



(3) After connecting the pipe and the connector, check that the pipe is securely connected by trying to pull them apart.

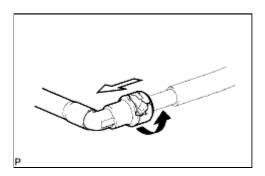




- (4) Fuel hose connector cover type:
  - Attach the lock claws to the connector by pushing down on the cover.
- (5) Check for any fuel leaks.
- (f) Observe these precautions when disconnecting the fuel tube connector (for quick type B):
  - (1) Check if there is any dirt or mud on the pipe and around the connector before disconnecting

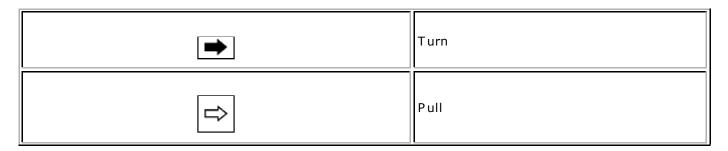
them. Clean if necessary.

(2) Disconnect the parts by hand.



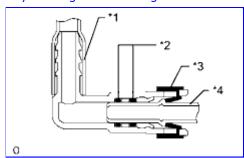
(3) If the connector and pipe are stuck, push and pull the connector to disconnect the pipe and pull it out.

#### **Text in Illustration**



#### **NOTICE:**

• Check for foreign matter 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.

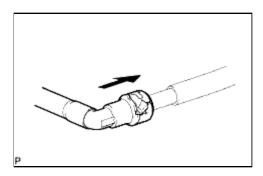


- Do not use any tools to separate the pipe and connector.
- Do not forcefully bend or twist the nylon tube.
- Check for foreign matter on the pipe seal surface. Clean if necessary.
- Put the pipe and connector ends in plastic bags to prevent damage and foreign matter contamination.
- If the pipe and connector are stuck together, pinch the connector between your fingers and turn it carefully to disconnect it.

*1	Nylon Tube
*2	O-Ring

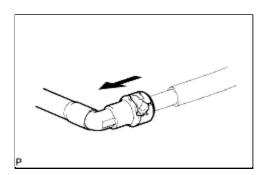
*3	Retainer
*4	Pipe

- (4) Check for dirt or mud on the seal surface of the disconnected pipe. Clean if necessary.
- (5) To protect the disconnected pipe and connector from damage and contamination, cover them with a plastic bag.
- (g) Observe these precautions when connecting the fuel tube connector (for quick type B):
  - (1) Align the axis of the connector with the axis of the pipe, and push in the connector until the connector makes a "click" sound. If the connection is tight, apply a small amount of new engine oil to the tip of the pipe.





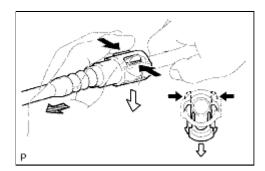
(2) After connecting the pipe and the connector, check that the pipe is securely connected by trying to pull them apart.





- (3) Check for fuel leaks.
- (h) Observe these precautions when disconnecting the fuel tube connector (for quick type C).

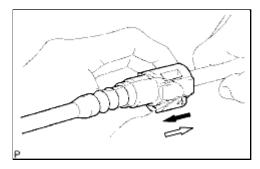
- (1) Check that there is no damage or foreign matter on the part of the pipe that contacts the connector.
- (2) Detach the 2 claws of the connector retainer. Push down on the connector and disconnect it from the pipe.



*1	Retainer
<b>→</b>	Push
$\Rightarrow$	Down
	Pull

#### **HINT:**

If the connector and pipe are stuck, pinch the fuel pipe by hand, and push and pull the connector to disconnect it.

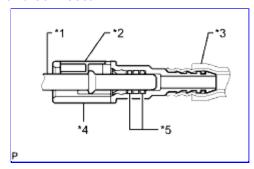






#### **NOTICE:**

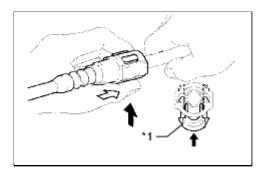
• Check for any dirt and foreign matter contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-ring or cause leaks in the seal between the pipe and connector.



- Do not use any tools to separate the pipe and connector.
- Do not allow any scratches or foreign matter on the parts when disconnecting them, as the fuel tube joint contains the O-rings that seal the plug.
- Check for any dirt and foreign matter on the pipe seal surface. Clean if necessary.
- Do not forcibly bend, twist or turn the nylon tube.
- Protect the disconnected part by covering it with a plastic bag and tape after disconnecting the main tube.
- If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the main tube.

*1	Pipe
*2	Retainer
*3	Nylon Tube
*4	Connector
* 5	O-Ring

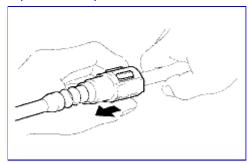
- (3) Check for foreign matter on the seal surface of the disconnected pipe. Clean it if necessary.
- (4) To protect the disconnected pipe and connector from damage and foreign matter, cover them with a plastic bag.
- (i) Observe these precautions when connecting the fuel tube connector (for quick type C).
  - (1) Check for foreign matter on the pipe and around the connector before connecting it. Clean it if necessary.
  - (2) A lign the axis of the connector with the axis of the pipe. Push the pipe into the connector, and then push up on the retainer.



*1	Retainer
<b>→</b>	Up
ightharpoonup	Push

#### **NOTICE:**

- Before connecting the tube connectors to the pipes, check if there is any damage or foreign matter in the connectors.
- After connecting the pipe and the connector, check that the pipe is securely connected by trying to pull them apart.



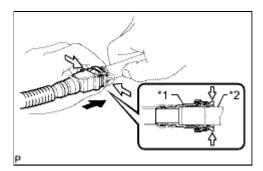
#### **Text in Illustration**



(j) Observe these precautions when handling the nylon tube.

#### **NOTICE:**

- Be careful not to turn the connection part of the nylon tube and the quick connector when connecting them.
- Do not kink the nylon tube.
- Do not remove the EPDM protector on the outside of the nylon tube.
- Do not bend the nylon tube as this may cause blockage.
- (k) Observe these precautions when disconnecting the fuel tank breather tube connector:

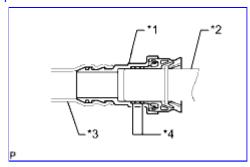


*1	Fuel Tank Breather Tube Connector
*2	Pipe
•	Push
₽	Pinch

(1) Pinch the retainer and pull out the fuel tank breather tube connector with the fuel tank breather tube connector pushed toward the pipe to disconnect the fuel tank breather tube from the pipe.

#### **NOTICE:**

• Remove dirt or foreign objects on the fuel tank breather tube connector before performing this procedure.

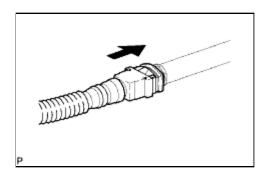


- Do not allow any scratches or foreign objects on the parts when disconnecting them as the fuel tank breather tube connector has the O-ring that seals the pipe.
- Perform this work by hand. Do not use any tools.
- Do not forcibly bend, kink or twist the nylon tube.
- Protect the connecting part by covering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

*1	Fuel Tank Breather Tube Connector
*2	Pipe

* 3	Nylon Tube
*4	O-Ring

(I) Observe these precautions when connecting the fuel tank breather tube connector:



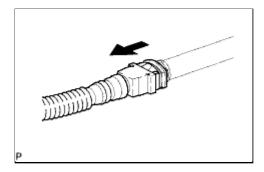
(1) A lign the fuel tank breather tube connector with the pipe, and then push in the fuel tank breather tube connector until the retainer makes a "click" sound to connect the fuel tank breather tube to the pipe.

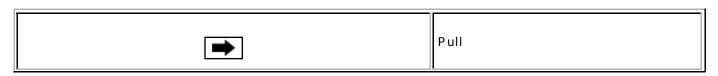
#### Text in Illustration



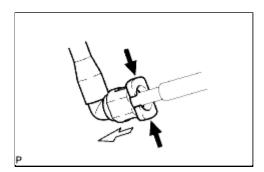
#### **NOTICE:**

- Check that there are no scratches or foreign objects on the connected part of the fuel tank breather tube connector and pipe before performing this procedure.
- After connecting the fuel tank breather tube, check that the fuel tank breather tube is securely connected by pulling the fuel tank breather tube connector.
  - (2) After connecting the pipe and the connector, check that the pipe is securely connected by trying to pull them apart.





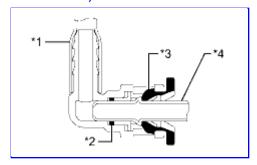
- (3) Inspect for fuel leaks.
- (m) Observe these precautions when disconnecting the fuel cut-off tube connector:
  - (1) Pinch the projection of the retainer to detach the lock claws and pull out the fuel cut-off tube.



*1	Fuel Tank Breather Tube Connector
* 2	Pipe
•	Push
仓	Pinch

#### **NOTICE:**

• Check if there is any dirt or mud around the connector before this operation and remove the dirt as necessary.

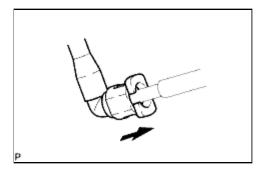


- It is necessary to prevent mud or dirt from entering the quick connector. If mud enters the connector, the O-ring may not properly seal the connection.
- Disconnect the quick connector by hand.
- Do not bend or twist the nylon tube.
- To protect the tubes, cover them with a plastic bag after checking for dirt.
- If the connector and the pipe are stuck, try wiggling or pushing and pulling the connector to release it. Pull the connector off of the pipe carefully.

*1 Nylon Tube
---------------

*2	O-Ring
*3	Retainer
*4	Pipe

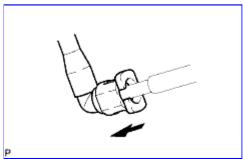
- (n) Observe these precautions when connecting the fuel tank breather tube connector:
  - (1) Push in the tube connector to the pipe until the connector makes a "click" sound.





#### **NOTICE:**

- Check if there is any damage or foreign objects on the connected part of the pipe.
- After connecting the pipe and the connector, check that the pipe is securely connected by trying to pull them apart.



#### **Text in Illustration**



(2) Inspect for fuel leaks.

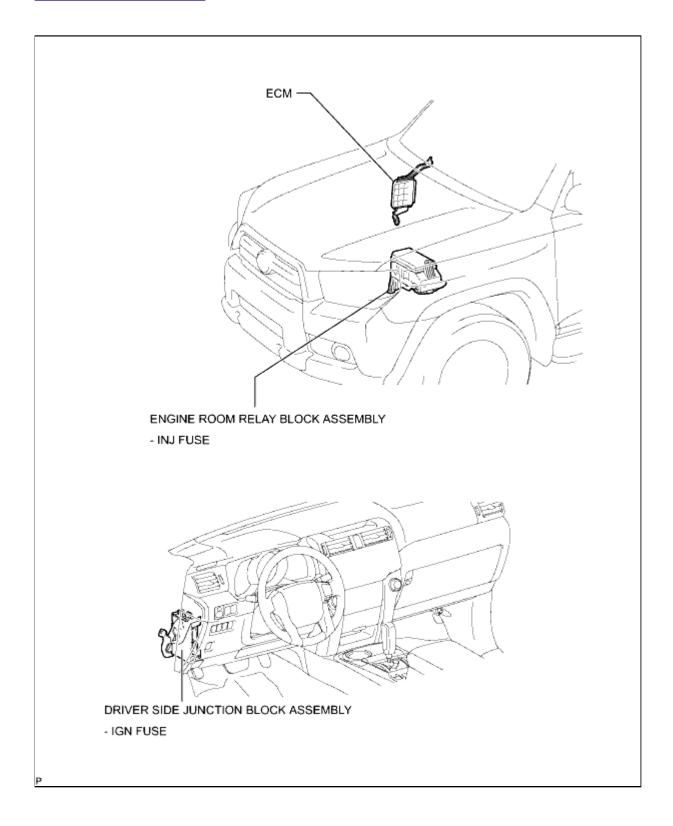
#### 4. INSPECT FOR FUEL LEAK

(2)

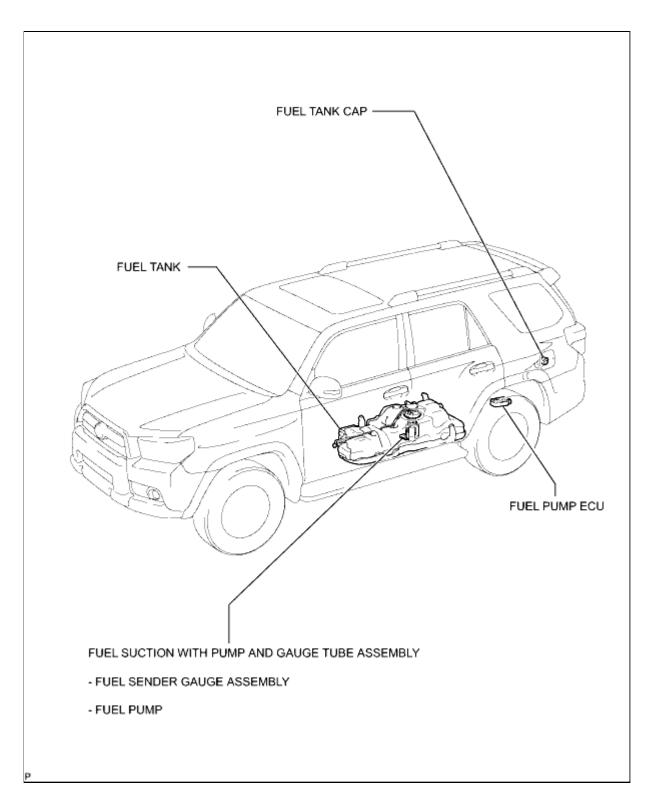
Last Modified: 5-10-2010	6.4 R	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000003AIH004X	
Title: 1GR-FE FUEL: FUEL SYSTEM: PARTS LOCATION (2010 4Runner)			

# **PARTS LOCATION**

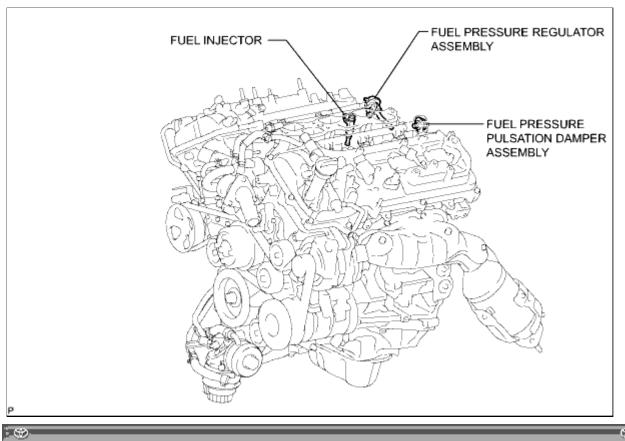
# **ILLUSTRATION**



# **ILLUSTRATION**



# **ILLUSTRATION**



⊕TOYOTA :

Last Modified: 5-10-2010	6.4 G	From: 200908	
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000YL701GX	
Title: 1GR-FE FUEL: FUEL SYSTEM: ON-VEHICLE INSPECTION (2010 4Runner)			

## **ON-VEHICLE INSPECTION**

#### 1. CHECK FUEL PUMP OPERATION AND FOR FUEL LEAK

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

#### NOTICE:

Do not start the engine.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Active Test / Activate the Fuel Pump Speed Control.
- (e) Check the fuel pump operation.
  - (1) Check for pressure in the fuel inlet tube from the fuel line. Check that the sound of fuel flowing in the fuel tank can be heard.

If there is no sound, check the integration relay, fuel pump, ECM and wiring connector.

(f) Inspect for fuel leaks .

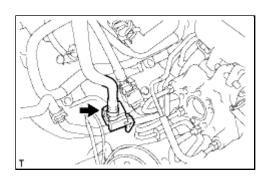
#### 2. CHECK FUEL PRESSURE

- (b) Discharge the fuel system pressure
- (c) Disconnect the cable from the negative (-) battery terminal.

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



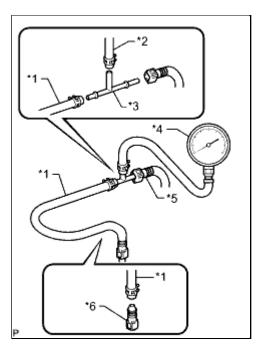


(d) Disconnect the No. 1 fuel pipe sub-assembly

(e) Install SST (pressure gauge) as shown in the illustration.

SST: 09268-31012

09268-41120 09268-41500



90467-13001 95336-08070

SST: 09268-45014

09268-41200 09268-41220

## **Text in Illustration**

*1	SST (Hose)
* 2	SST (Clip)
*3	SST (T-Joint)
*4	SST (Gauge)
*5	No. 1 Fuel Tube Sub-assembly
*6	Fuel Tube Connector

- (f) Wipe off any gasoline.
- (g) Reconnect the cable to the negative (-) battery terminal.

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



- (h) Operate the fuel pump.
  - (1) Connect the Techstream to the DLC3.
  - (2) Turn the ignition switch to ON.

#### NOTICE:

Do not start the engine.

- (3) Turn the Techstream on.
- (4) Enter the following menus: Powertrain / Engine and ECT / Active Test / Activate the Fuel Pump Speed Control / O N.
- (i) Measure the fuel pressure.

Standard fuel pressure:

321 to 327 kPa (3.27 to 3.33 kgf/cm $^2$ , 46.5 to 47.4 psi)

If the pressure is higher than the specification, replace the fuel pressure regulator.

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

- (j) Start the engine.
- (k) Measure the fuel pressure.

Standard fuel pressure:

321 to 327 kPa (3.27 to 3.33 kgf/cm $^2$ , 46.5 to 47.4 psi)

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

(I) Stop the engine.

(m) Check that the fuel pressure remains as specified for 5 minutes after the engine stops.

Standard fuel pressure:

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

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

- (n) Disconnect the cable from the negative (-) battery terminal and carefully remove SST and the fuel tube connector to prevent gasoline from spraying.

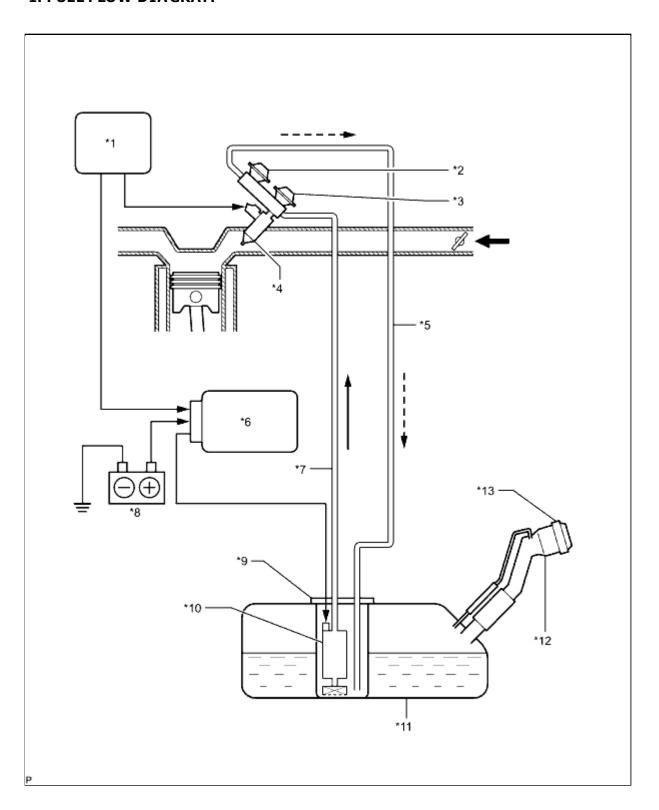




Last Modified: 5-10-2010	6.4 U	From: 200908	
Model Year: 2010	Model: 4Runner	Doc ID: RM000002WEH00WX	
Title: 1GR-FE FUEL: FUEL SYSTEM: SYSTEM DIAGRAM (2010 4Runner)			

# **SYSTEM DIAGRAM**

## 1. FUEL FLOW DIAGRAM

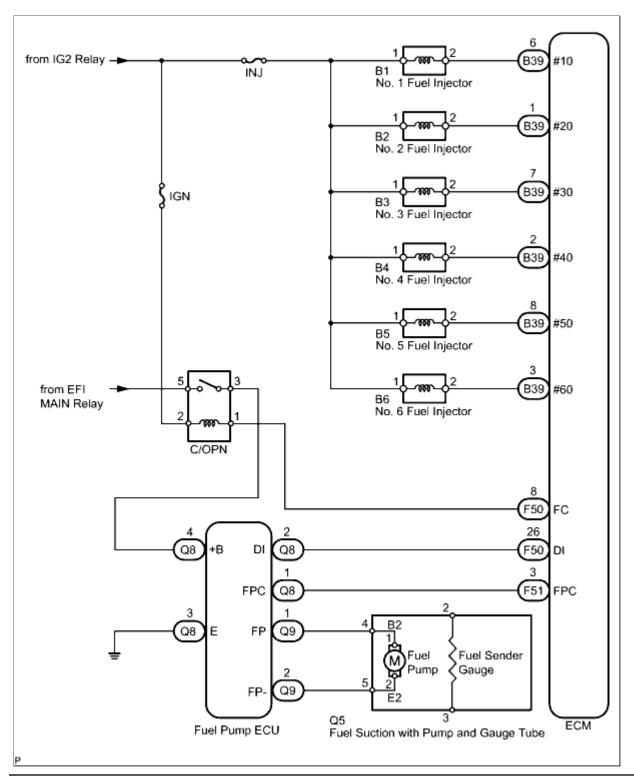


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#### **Text in Illustration**

*1	ECM	*2	Fuel Pressure Regulator
* 3	Fuel Pressure Pulsation Damper	*4	Fuel Injector
*5	Fuel Return Tube	*6	Fuel Pump ECU
*7	Fuel Main Tube	*8	Battery
* 9	Fuel Suction Tube	*10	Fuel Pump
*11	Fuel Tank	*12	Fuel Filler Pipe
*13	Fuel Tank Cap	-	-
<b>→</b>	Intake Air	-	-

## 2. ELECTRICAL CONTROL DIAGRAM



; (#) (#) TOYOTA

Last Modified: 5-10-2010	6.4 L	From: 200908	
Model Year: 2010	Model: 4Runner	Doc ID: RM0000028RU01EX	
Title: 2TR-FE FUEL: FUEL SYSTEM: PRECAUTION (2010 4Runner)			

## **PRECAUTION**

#### 1. PRECAUTION

- (a) Before starting work on the fuel system, including inspections and repairs, disconnect the cable from the negative (-) battery terminal.
- (b) Do not smoke or work near fire when performing work on the fuel system.
- (c) Keep gasoline away from rubber or leather parts.

#### 2. DISCHARGE FUEL SYSTEM PRESSURE

#### **CAUTION:**

- Take precautions to prevent gasoline from spilling out before removing fuel system parts.
- Pressure still remains in the fuel lines even after performing the following procedures. When disconnecting a fuel line, cover it with a piece of cloth to prevent fuel from spraying or coming out.
- (a) Remove the circuit opening relay from the engine room relay block.
- (b) Start the engine. After the engine stops, turn the ignition switch off.

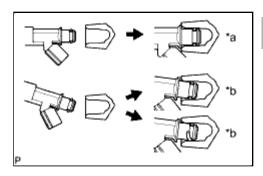
#### HINT:

#### DTC P0171 (system to lean) may be stored.

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

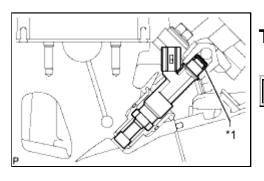
#### 3. FUEL SYSTEM

- (a) When disconnecting a high pressure fuel line, a large amount of gasoline will spill out. Follow these procedures.
  - (1) Disconnect the fuel pump tube.
  - (2) Drain any fuel remaining inside the fuel pump tube.
  - (3) To protect the disconnected fuel pump tube from damage and contamination, cover it with a plastic bag.
  - (4) Put a container under the connection.
    - (b) Observe these precautions when removing and installing the injectors.



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↑ D	NG

- (1) Never reuse the O-ring.
- (2) When installing a new O-ring to the injector, do not damage it.
- (3) Coat new O-rings with spindle oil or gasoline before installing. Do not use engine oil, gear oil or brake oil.
- (c) Install the injector to the delivery pipe and lower intake manifold as shown in the illustration.

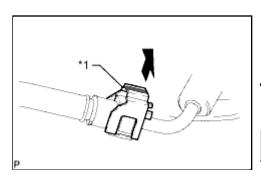


*1	O-ring

#### **NOTICE:**

Before installing the injector, be sure to apply spindle oil or gasoline to the place where the delivery pipe or cylinder head contacts the O-ring of the injector.

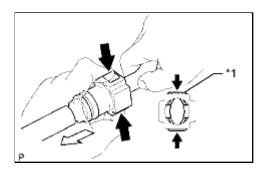
(d) Observe these precautions when disconnecting the fuel tube connector (for quick type A).



- (1) Fuel Hose Connector Cover Type:
  - Detach the lock claw by lifting up the cover as shown in the illustration.



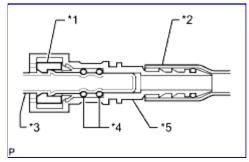
- (2) Check for dirt or mud on the pipe and around the connector before disconnection. Clean if necessary.
- (3) If the connector and pipe are stuck, pinch the connector, push and pull the pipe to disconnect the pipe and pull it out.



*1	Retainer
<b>→</b>	Pinch
$\Rightarrow$	Pull

#### **NOTICE:**

• Check for foreign matter 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.

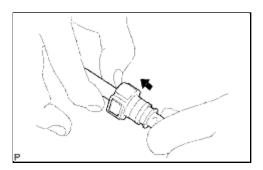


- Do not use any tools to separate the pipe and connector.
- Do not forcefully bend or twist the nylon tube.
- Check for foreign matter on the pipe seal surface. Clean if necessary.
- Put the pipe and connector ends in plastic bags to prevent damage and foreign matter contamination.
- If the pipe and connector are stuck together, pinch the connector between your fingers and turn it carefully to disconnect it.

*1	Retainer
* 2	Nylon Tube
*3	Pipe
*4	O-ring
*5	Fuel Tube Connector

- (4) Check for dirt or mud on the seal surface of the disconnected pipe. Clean if necessary.
- (5) To protect the disconnected pipe and connector from damage and contamination, cover them with a plastic bag.
- (e) Observe these precautions when connecting the fuel tube connector (for quick type A).
  - (1) Before connecting the connector, check that there is no damage or contamination in the connecting part of the pipe.
  - (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 tight, apply a small amount of fresh

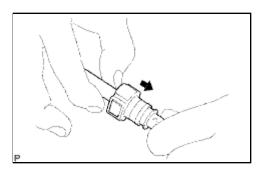
engine oil to the tip of the pipe.



#### **Text in Illustration**

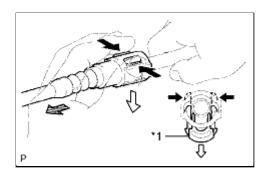


(3) After connecting the pipe and connector, check that the pipe and connector are securely connected by trying to pull them apart.





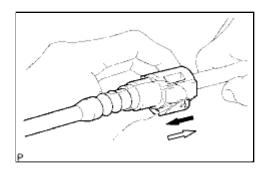
- (4) Fuel Hose Connector Cover Type:
  - Attach the lock claws to the connector by pushing down on the cover.
- (5) Check for any fuel leaks.
- (f) Observe these precautions when disconnecting the fuel tube connector (for quick type B).
  - (1) Check that there is no damage or foreign matter on the part of the pipe that contacts the connector.
  - (2) Detach the 2 claws of the connector retainer. Push the retainer out and disconnect the connector from the pipe.



*1	Retainer
•	Push
$\Rightarrow$	Push Out
	Pull

#### **HINT:**

If the connector and pipe are stuck, pinch the fuel pipe by hand and push and pull the connector to disconnect it.

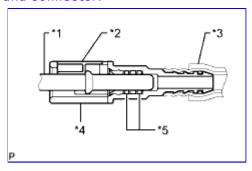


#### **Text in Illustration**

<b>→</b>	Pull
ightharpoonup	Push

#### **NOTICE:**

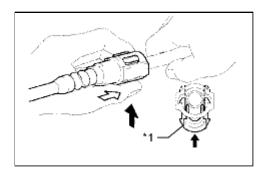
• Check for any dirt and foreign matter contamination in the pipe and around the connector. Clean if necessary. Foreign matter may damage the O-ring or cause leaks in the seal between the pipe and connector.



- Do not use any tools to separate the pipe and connector.
- Do not allow any scratches or foreign matter on the parts when disconnecting them, as the fuel tube joint contains the O-rings that seal the plug.
- Check for any dirt and foreign matter on the pipe seal surface. Clean if necessary.
- Do not forcibly bend, twist or turn the nylon tube.
- Protect the disconnected part by covering it with a plastic bag and tape after disconnecting the main tube.
- If the pipe and connector are stuck together, pinch the tube between your fingers and turn it carefully to free it. Then disconnect the main tube.

*1	Pipe
*2	Retainer
*3	Nylon Tube
*4	Connector
* 5	O - ring

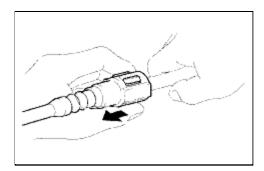
- (3) Check for foreign matter on the seal surface of the disconnected pipe. Clean if necessary.
- (4) To protect the disconnected pipe and connector from damage and foreign matter, cover them with a plastic bag.
- (g) Observe these precautions when connecting the fuel tube connector (for quick type B).
  - (1) Check for foreign matter on the pipe and around the connector before connecting it. Clean if necessary.
  - (2) Align the axis of the connector with the axis of the pipe. Push the connector onto the pipe, and then push in the retainer.



*1	Retainer
•	Push In
$\Rightarrow$	Push

#### **NOTICE:**

- Before connecting the tube connectors to the pipes, check if there is any damage or foreign matter in the connectors.
- After connecting the pipe and connector, check that the pipe and connector are securely connected by trying to pull them apart.



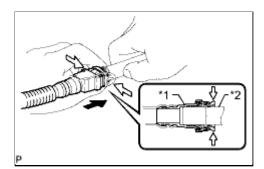
#### **Text in Illustration**



(h) Observe these precautions when handling the nylon tube.

#### **NOTICE:**

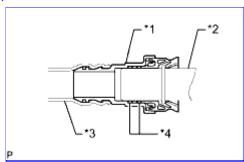
- Be careful not to turn the connection part of the nylon tube and quick connector when connecting them.
- Do not kink the nylon tube.
- Do not bend the nylon tube as this may cause blockage.
- (i) Observe these precautions when disconnecting the fuel tank breather tube connector.
  - (1) Pinch the retainer and pull out the fuel tank breather tube connector with the fuel tank breather tube connector pushed toward the pipe to disconnect the fuel tank breather tube from the pipe.



*1	Fuel Tank Breather Tube Connector
* 2	Pipe
<b>→</b>	Push
飠	Pinch

#### **NOTICE:**

• Remove dirt or foreign objects on the fuel tank breather tube connector before performing this procedure.

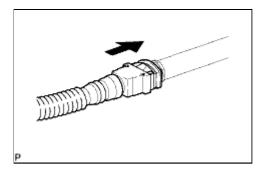


- Do not allow any scratches or foreign objects on the parts when disconnecting them as the fuel tank breather tube connector has the O-ring that seals the pipe.
- Perform this work by hand. Do not use any tools.
- Do not forcibly bend, kink or twist the nylon tube.
- Protect the connecting part by covering it with a plastic bag after disconnecting the fuel tank breather tube.
- If the fuel tank breather tube connector and pipe are stuck, push and pull them to disconnect them.

* 1	Fuel Tank Breather Tube Connector
* 2	Pipe
*3	Nylon Tube

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- (j) Observe these precautions when connecting the fuel tank breather tube connector.
  - (1) A lign the fuel tank breather tube connector with the pipe, and then push in the fuel tank breather tube connector until the retainer makes a "click" sound to connect the fuel tank breather tube to the pipe.

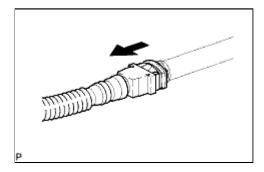


#### **Text in Illustration**



#### **NOTICE:**

- Check that there are no scratches or foreign objects on the connected part of the fuel tank breather tube connector and pipe before performing this procedure.
- After connecting the fuel tank breather tube, check that the fuel tank breather tube is securely connected by pulling the fuel tank breather tube connector.
  - (2) After connecting the pipe and connector, check that the pipe and connector are securely connected by trying to pull them apart.



#### **Text in Illustration**



(3) Inspect for fuel leaks.

## 4. INSPECT FOR FUEL LEAK

(a) Inspect for fuel leaks .

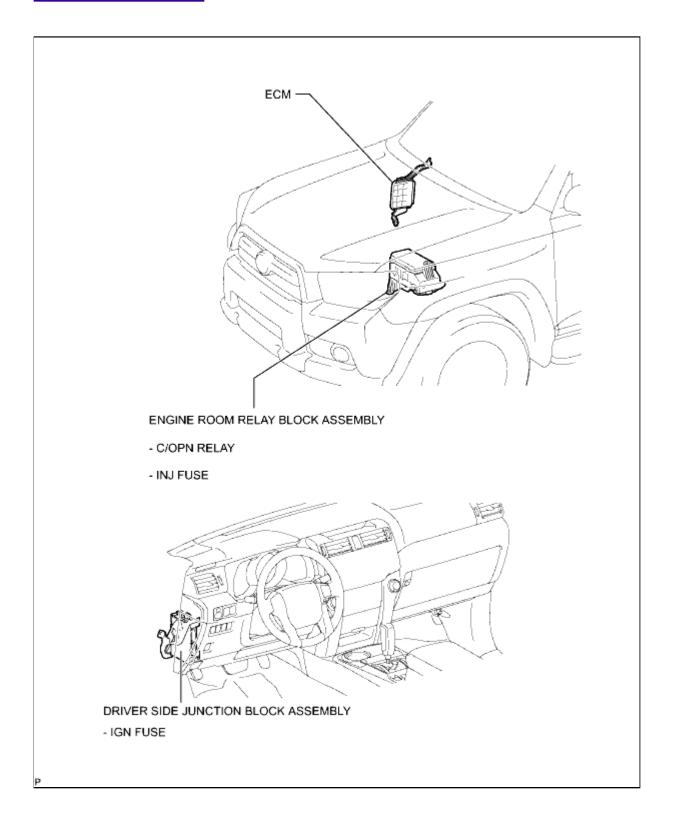


⊕ TOYOTA ::

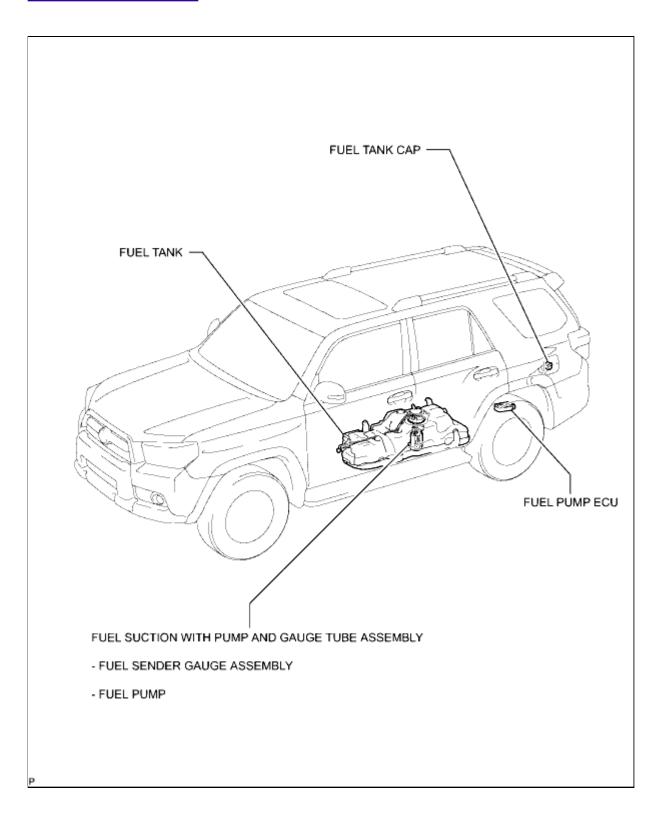
Last Modified: 5-10-2010	6.4 R	From: 200908	
Model Year: 2010	Model: 4Runner	Doc ID: RM000000VHO02JX	
Title: 2TR-FE FUEL: FUEL SYSTEM: PARTS LOCATION (2010 4Runner)			

# **PARTS LOCATION**

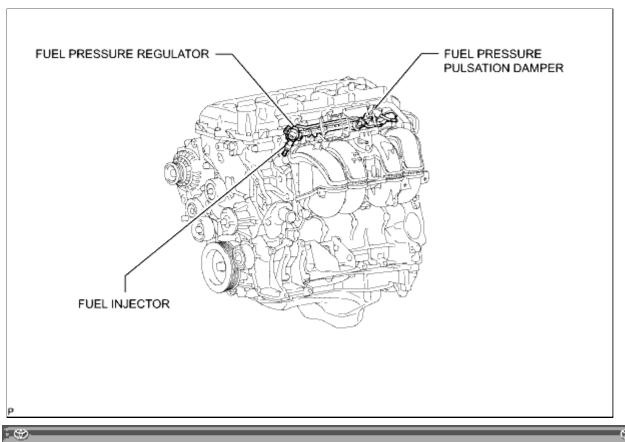
# **ILLUSTRATION**



# **ILLUSTRATION**



# **ILLUSTRATION**



**⊕тоуота** ...

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000Q3M02TX
Title: 2TR-FE FUEL: FUEL SYSTEM: ON-VEHICLE INSPECTION (2010 4Runner)		

## **ON-VEHICLE INSPECTION**

### 1. CHECK FUEL PUMP OPERATION AND FOR FUEL LEAK

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

#### **NOTICE:**

Do not start the engine.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Active Test / Activate the Fuel Pump Speed Control.
- (e) Check the fuel pump operation.
  - (1) Check for pressure in the fuel inlet tube from the fuel line. Check that the sound of fuel flowing in the fuel tank can be heard.

If there is no sound, check the integration relay, fuel pump, ECM and wiring connector.

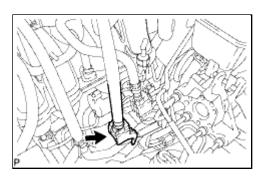
### 2. CHECK FUEL PRESSURE

- (b) Discharge the fuel system pressure
- (c) Disconnect the cable from the negative (-) battery terminal.

### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



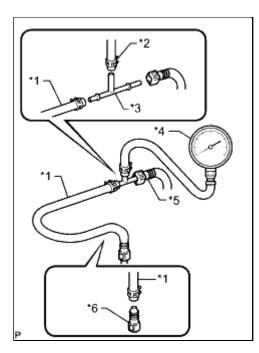


(d) Disconnect the fuel hose

(e) Install SST (pressure gauge) as shown in the illustration.

SST: 09268-31012

09268-41500 90467-13001



95336-08070

SST: 09268-45014

09268-41200 09268-41220 09268-41250

### **Text in Illustration**

*1	SST (Hose)
* 2	SST (Clip)
*3	SST (T-Joint)
*4	SST (Gauge)
* 5	Fuel Hose
*6	SST (Fuel Tube Connector)

- (f) Wipe off any gasoline.
- (g) Reconnect the cable to the negative (-) battery terminal.

#### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



- (h) Operate the fuel pump.
  - (1) Connect the Techstream to the DLC3.
  - (2) Turn the ignition switch to ON.

### NOTICE:

Do not start the engine.

- (3) Turn the Techstream on.
- (4) Enter the following menus: Powertrain / Engine and ECT / Active Test / Activate the Fuel Pump Speed Control / ON.
- (i) Measure the fuel pressure.

Standard fuel pressure:

281 to 287 kPa (2.87 to 2.93 kgf/cm $^2$ , 41 to 42 psi)

If the pressure is higher than the specification, replace the fuel pressure regulator.

If the pressure is below the specification, check the fuel hoses and connectors, fuel pump and fuel pressure regulator.

- (j) Start the engine.
- (k) Measure the fuel pressure.

Standard fuel pressure:

281 to 287 kPa (2.87 to 2.93 kgf/cm<sup>2</sup>, 41 to 42 psi)

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

(I) Stop the engine.

(m) Check that the fuel pressure remains as specified for 5 minutes after the engine stops.

Standard fuel pressure:

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

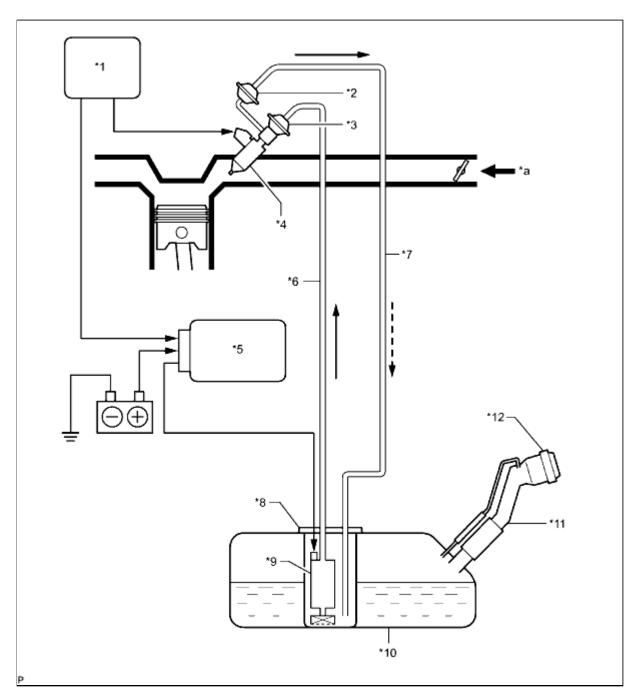
If the pressure is not as specified, check the fuel pump, pressure regulator and/or injectors.

- (n) Disconnect the cable from the negative (-) battery terminal and carefully remove SST and the fuel tube connector to prevent gasoline from spraying.



Last Modified: 5-10-2010	6.4 U	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM000000PDZ02JX
Title: 2TR-FE FUEL: FUEL SYSTEM: SYSTEM DIAGRAM (2010 4Runner)		

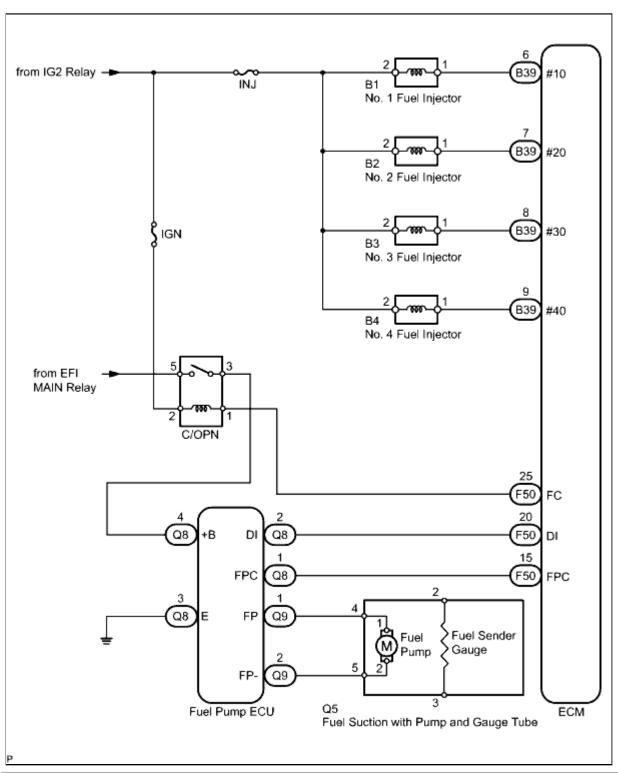
# **SYSTEM DIAGRAM**



### **Text in Illustration**

* 1	ECM	* 2	Fuel Pressure Regulator
*3	Fuel Pressure Pulsation Damper	*4	Fuel Injector

* 5	*5 Fuel Pump ECU		Fuel Main Tube
*7	Fuel Return Tube	*8	Fuel Suction Tube
* 9	Fuel Pump	*10	Fuel Tank
*11	Fuel Filler Pipe	*12	Fuel Tank Cap
* a	Intake Air	-	-



C43.

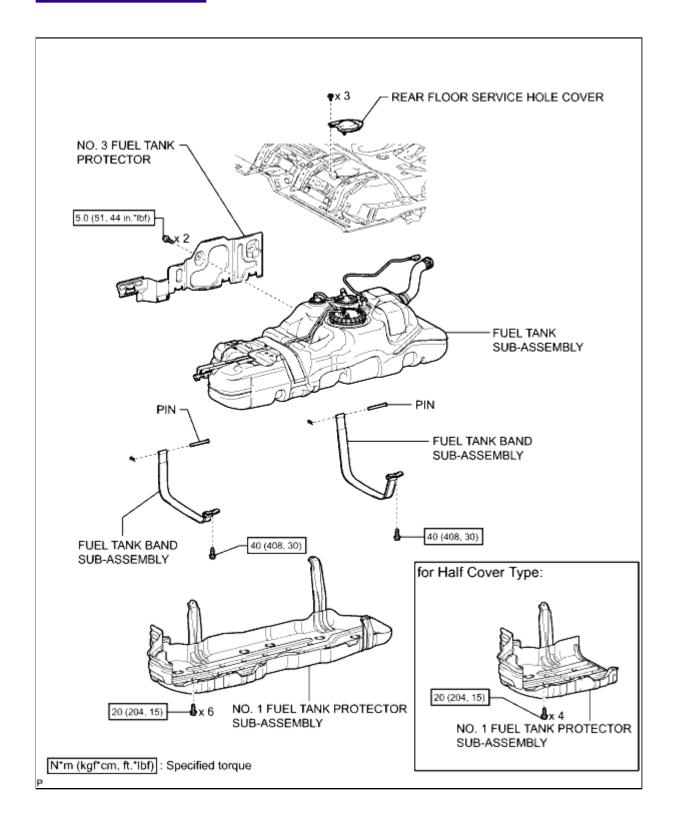
ASS TOWARD

(#) TOYOTA

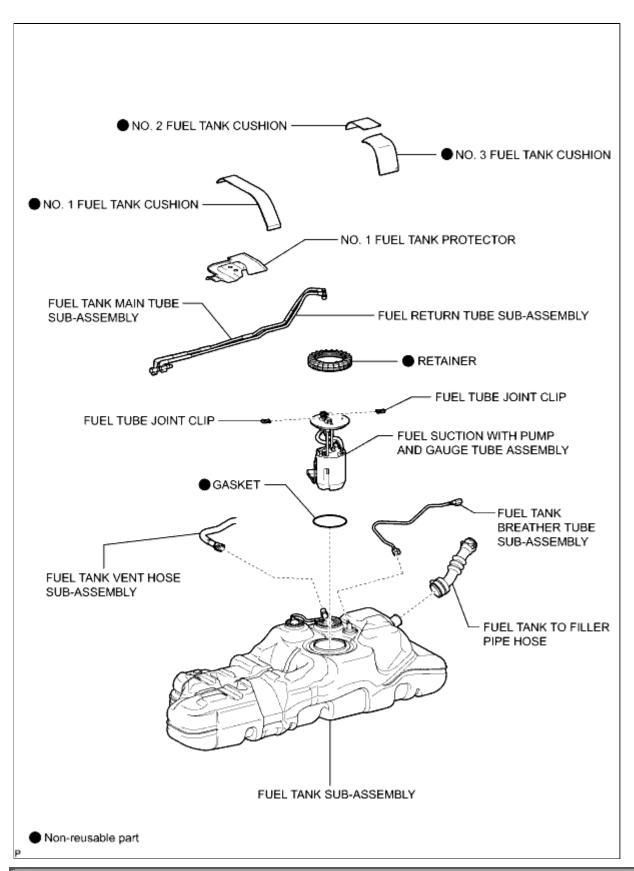
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045FC002X
Title: 1GR-FE FUEL: FUEL TANK: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



# **ILLUSTRATION**



ATOYOT (#)

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000045EZ003X
Title: 1GR-FE FUEL: FUEL TANK: REMOVAL (2010 4Runner)		

# **REMOVAL**

### 1. DISCHARGE FUEL SYSTEM PRESSURE

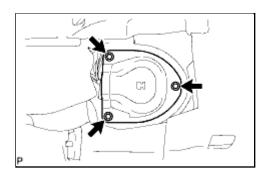
(a) Discharge the fuel system pressure

### 2. REMOVE REAR SEAT ASSEMBLY LH

(a) for 60/40 Split Double-folding Seat Type LH Side:

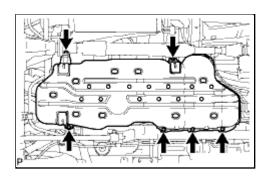
(b) for 60/40 Split Slide Walk-in Seat Type LH Side:

### 3. REMOVE REAR FLOOR SERVICE HOLE COVER



(a) Remove the 3 screws and rear floor service hole cover.

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

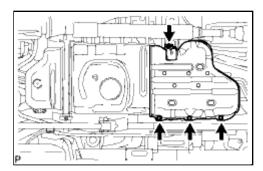


(a) for Standard Type:

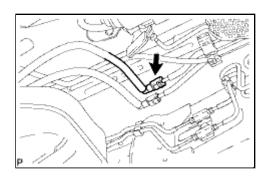
Remove the 6 bolts and No. 1 fuel tank protector.

(b) for Half Cover Type:

Remove the 4 bolts and No. 1 fuel tank protector.



### 5. DISCONNECT FUEL TANK MAIN TUBE SUB-ASSEMBLY



(a) Disconnect the fuel tank main tube

### 6. DRAIN FUEL

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

### **NOTICE:**

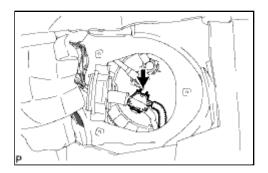
Do not start the engine.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- (e) O perate the fuel pump and drain the fuel from the fuel tank main tube.

### **CAUTION:**

- Do not smoke or be near an open flame when working on the fuel system.
- Secure good ventilation.
- Keep gasoline away from rubber or leather parts.

(f) Disconnect the fuel pump and sender gauge connector.



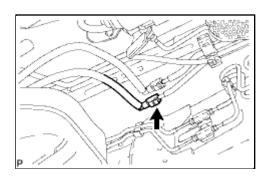
### 7. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

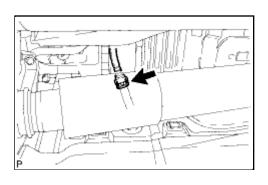


### 8. DISCONNECT FUEL RETURN TUBE SUB-ASSEMBLY



(a) Disconnect the fuel return tube

### 9. DISCONNECT FUEL TANK VENT HOSE SUB-ASSEMBLY

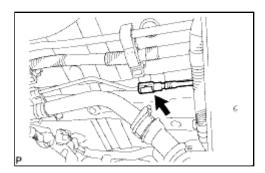


(a) Disconnect the fuel tank vent hose

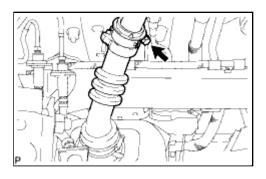
### 10. DISCONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY

(a) Disconnect the fuel tank breather tube





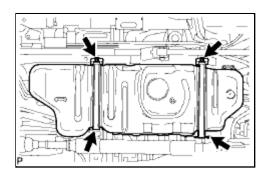
### 11. DISCONNECT FUEL TANK TO FILLER PIPE HOSE



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

### 12. REMOVE FUEL TANK SUB-ASSEMBLY

(a) Place a transmission jack under the fuel tank.



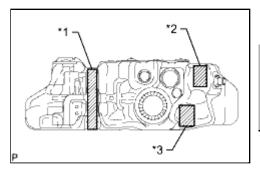
(b) Remove the 2 bolts, 2 clips, 2 pins and 2 fuel tank bands.

(c) Slowly lower the transmission jack slightly.

### 13. REMOVE FUEL TANK CUSHION

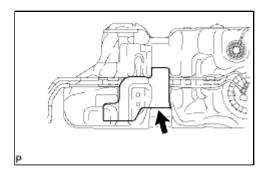
(a) Remove the No. 1, No. 2 and No. 3 fuel tank cushions from the fuel tank.

# **Text in Illustration**



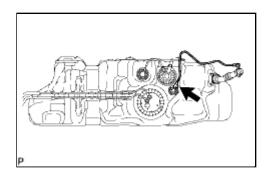
*1	No. 1 Fuel Tank Cushion
* 2	No. 2 Fuel Tank Cushion
*3	No. 3 Fuel Tank Cushion

### 14. REMOVE NO. 1 FUEL TANK PROTECTOR



(a) Remove the No. 1 fuel tank protector from the fuel tank.

### 15. REMOVE FUEL TANK BREATHER TUBE SUB-ASSEMBLY

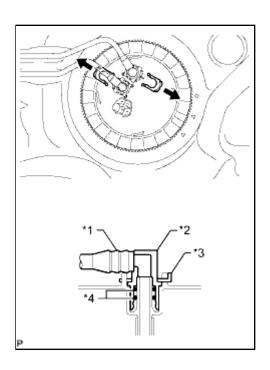


# 16. REMOVE FUEL TANK MAIN TUBE SUB-ASSEMBLY AND FUEL RETURN TUBE SUB-ASSEMBLY

(a) Remove the 2 fuel tube joint clips and pull out the fuel tank main tube and fuel return tube.

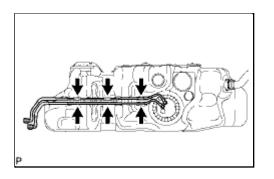
## **Text in Illustration**

* 1	Fuel Tube
* 2	Fuel Tube Joint
	) <del>-</del>



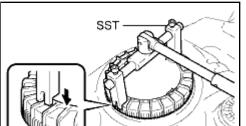
#### **NOTICE:**

- Remove any dirt and foreign matter on the fuel tube joint before performing this work.
- Do not allow any scratches or foreign matter on the parts when disconnecting them, as the fuel tube joint contains the O-rings that seal the plug.
- 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 plastic bag and tape after disconnecting the fuel tubes.



(b) Remove the fuel tank main tube and fuel return tube from the fuel tank.

### 17. REMOVE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY



(a) Using SST, loosen the retainer.

SST: 09808-14020

### HINT:

Fit the tips of SST onto the ribs of the retainer.

### NOTICE:

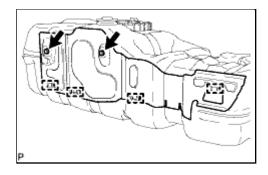
- When the retainer is loosened, be careful as the pump and gauge tube will spring upward from the force of the spring.
- Remove any foreign matter around the fuel suction with pump and gauge tube before this operation.
- (b) Remove the retainer.
- (c) Remove the fuel suction with pump and gauge tube assembly from the fuel tank.

### **NOTICE:**

Be careful not to bend the arm of the fuel sender gauge.

(d) Remove the gasket from the fuel tank.

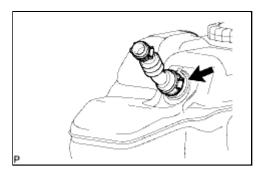
### 18. REMOVE NO. 3 FUEL TANK PROTECTOR



(a) Remove the 2 bolts.

(b) Detach the 4 clamps and remove the No. 3 fuel tank protector.

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



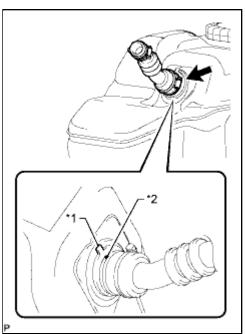
(a) Remove the fuel tank to filler pipe hose from the fuel tank.

- 42

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045EX003X
Title: 1GR-FE FUEL: FUEL TANK: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

### 1. INSTALL FUEL TANK TO FILLER PIPE HOSE



(a) Install the fuel tank to filler pipe hose to the fuel tank.

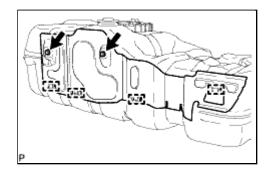
# **Text in Illustration**

*1	Fuel Tank Side Mark
*2	Hose Side Mark

### **HINT:**

Align the fuel tank side mark with the hose side mark when installing the hose.

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



(a) Install the No. 3 fuel tank protector and attach the 4 clamps.

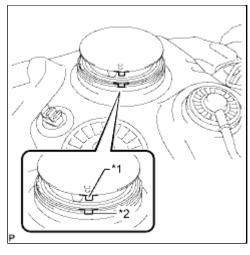
(b) Install the 2 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

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

(a) Apply a light coat of gasoline or grease to a new gasket and install the gasket to the fuel tank.

(b) Install the fuel suction with pump and gauge tube into the fuel tank.



# **Text in Illustration**

*1	Protrusion
* 2	Groove

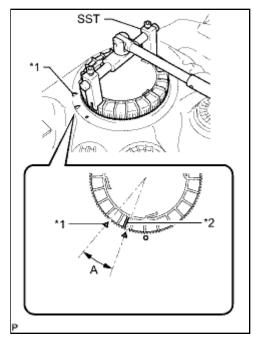
### **HINT:**

Align the protrusion of the fuel suction with pump and gauge tube with the groove of the fuel tank.

#### **NOTICE:**

Be careful not to bend the arm of the fuel sender gauge.

(c) Put the new retainer on the fuel tank. While holding the fuel suction with pump and gauge tube, tighten the retainer one complete turn by hand.



(d) Using SST, tighten the retainer until the mark on the retainer is within range A on the fuel tank, as shown in the illustration.

SST: 09808-14020

# **Text in Illustration**

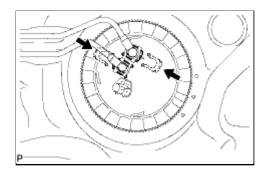
*1	Fuel Tank Side Mark
*2	Retainer Side Mark

### **HINT:**

Fit the tips of SST onto the ribs of the retainer.

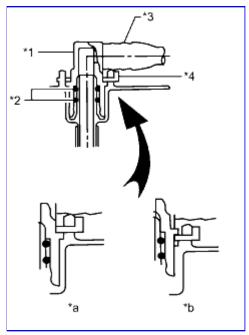
# 4. INSTALL FUEL TANK MAIN TUBE SUB-ASSEMBLY AND FUEL RETURN TUBE SUB-ASSEMBLY

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



### **NOTICE:**

• Check that there are no scratches or foreign objects on the connecting parts.

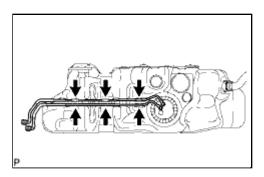


- Check that the fuel tube joints are inserted securely.
- Check that the fuel tube joint clips are on the collars of the fuel tube joints.
- After installing the fuel tube joint clips, check that the fuel tube joints cannot be pulled off.

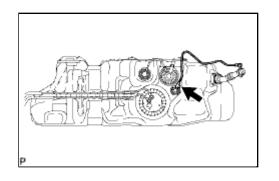
### **Text in Illustration**

*1	Fuel Tube Joint
*2	O-Ring
*3	Fuel Tube
*4	Fuel Tube Joint Clip
*a	CORRECT
* b	INCORRECT

(b) Install the fuel tank main tube and fuel return tube to the fuel tank.

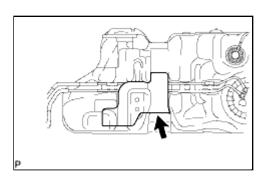


### 5. INSTALL FUEL TANK BREATHER TUBE SUB-ASSEMBLY



(a) Install the fuel tank breather tube

### 6. INSTALL NO. 1 FUEL TANK PROTECTOR



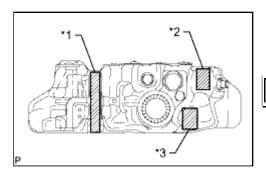
(a) Install the fuel tank protector to the fuel tank.

### 7. INSTALL FUEL TANK CUSHION

(a) Install 3 new fuel tank cushions to the fuel tank.

## **Text in Illustration**

*1	No. 1 Fuel Tank Cushion
* 2	No. 2 Fuel Tank Cushion



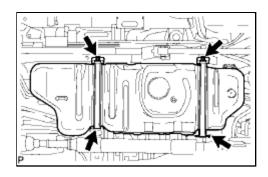
\*3 No. 3 Fuel Tank Cushion

### 8. INSTALL FUEL TANK SUB-ASSEMBLY

(a) Set the fuel tank on a transmission jack and lift up the transmission jack.

#### **NOTICE:**

Do not allow the fuel tank to contact the vehicle, especially the differential.



(b) Install the 2 fuel tank bands with the 2 pins and 2 clips.

(c) Connect the 2 fuel tank bands with the 2 bolts.

Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

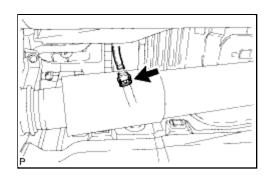
### 9. CONNECT FUEL TANK TO FILLER PIPE HOSE

(a) Connect the fuel tank to filler pipe hose to the filler pipe.

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

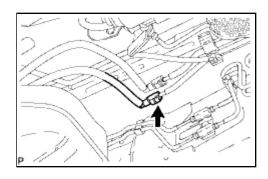
(a) Connect the fuel tank breather tube

### 11. CONNECT FUEL TANK VENT HOSE SUB-ASSEMBLY



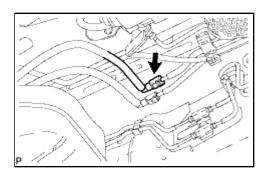
(a) Connect the fuel tank breather tube

### 12. CONNECT FUEL RETURN TUBE SUB-ASSEMBLY



(a) Connect the fuel return tube

### 13. CONNECT FUEL TANK MAIN TUBE SUB-ASSEMBLY



(a) Connect the fuel tank main tube

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

(a) for Half Cover Type:

Install the No. 1 fuel tank protector with the 4 bolts.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

(b) for Standard Type:

Install the No. 1 fuel tank protector with the 6 bolts.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

### 15. INSTALL REAR FLOOR SERVICE HOLE COVER

- (a) Connect the fuel pump and fuel sender gauge connector.
- (b) Install the rear floor service hole cover with the 3 screws.

### 16. INSTALL REAR SEAT ASSEMBLY LH

(a) for 60/40 Split Double-folding Seat Type LH Side:

(b) for 60/40 Split Slide Walk-in Seat Type LH Side:

Install the rear seat assembly LH \_\_\_\_\_.

### 17. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

When disconnecting the cable, some systems need to be initialized after the cable is reconnected



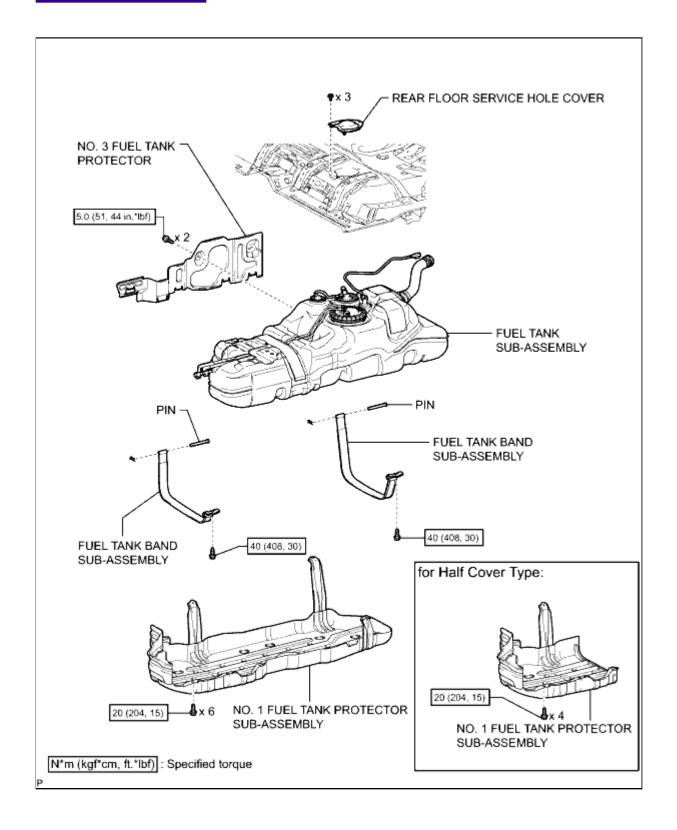
18. INSPECT FOR FUEL LEAK NFO



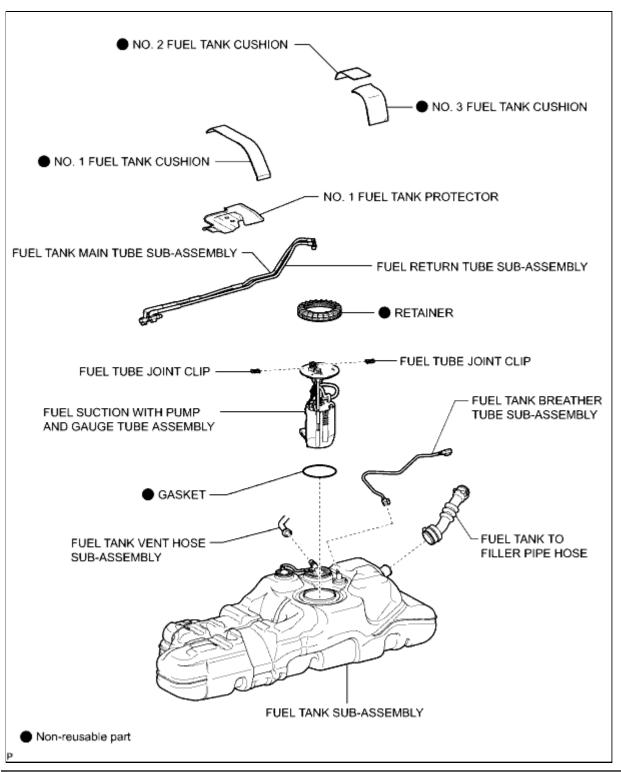
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045FC003X
Title: 2TR-FE FUEL: FUEL TANK: COMPONENTS (2010 4Runner)		

# **COMPONENTS**

# **ILLUSTRATION**



# **ILLUSTRATION**



; ⊕ ⊕ toyota :

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000045EZ005X
Title: 2TR-FE FUEL: FUEL TANK: REMOVAL (2010 4Runner)		

# **REMOVAL**

### 1. DISCHARGE FUEL SYSTEM PRESSURE

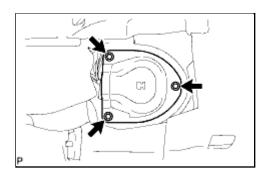
(a) Discharge the fuel system pressure

### 2. REMOVE REAR SEAT ASSEMBLY LH

(a) for 60/40 Split Double-folding Seat Type LH Side:

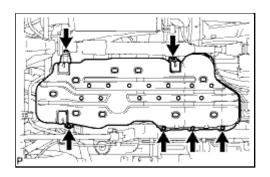
(b) for 60/40 Split Slide Walk-in Seat Type LH Side:

### 3. REMOVE REAR FLOOR SERVICE HOLE COVER



(a) Remove the 3 screws and rear floor service hole cover.

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

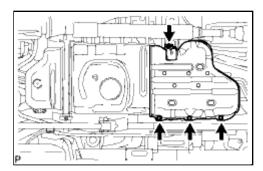


(a) for Standard Type:

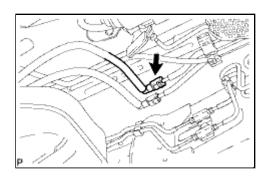
Remove the 6 bolts and No. 1 fuel tank protector.

(b) for Half Cover Type:

Remove the 4 bolts and No. 1 fuel tank protector.



### 5. DISCONNECT FUEL TANK MAIN TUBE SUB-ASSEMBLY



(a) Disconnect the fuel tank main tube

### 6. DRAIN FUEL

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

### **NOTICE:**

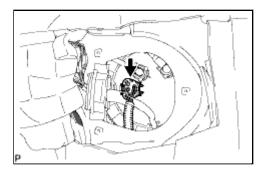
Do not start the engine.

- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- (e) O perate the fuel pump and drain the fuel from the fuel tank main tube.

### **CAUTION:**

- Do not smoke or be near an open flame when working on the fuel system.
- Secure good ventilation.
- Keep gasoline away from rubber or leather parts.

(f) Disconnect the fuel pump and sender gauge connector.



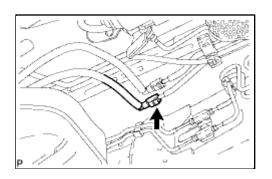
### 7. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

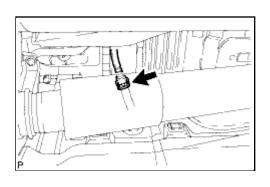


### 8. DISCONNECT FUEL RETURN TUBE SUB-ASSEMBLY



(a) Disconnect the fuel return tube

### 9. DISCONNECT FUEL TANK VENT HOSE SUB-ASSEMBLY

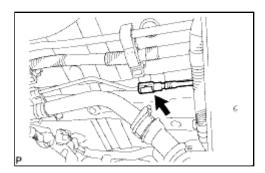


(a) Disconnect the fuel tank vent hose

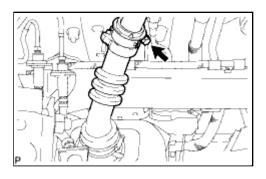
### 10. DISCONNECT FUEL TANK BREATHER TUBE SUB-ASSEMBLY

(a) Disconnect the fuel tank breather tube





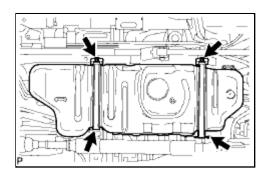
### 11. DISCONNECT FUEL TANK TO FILLER PIPE HOSE



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

### 12. REMOVE FUEL TANK SUB-ASSEMBLY

(a) Place a transmission jack under the fuel tank.



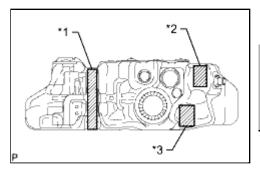
(b) Remove the 2 bolts, 2 clips, 2 pins and 2 fuel tank bands.

(c) Slowly lower the transmission jack slightly.

### 13. REMOVE FUEL TANK CUSHION

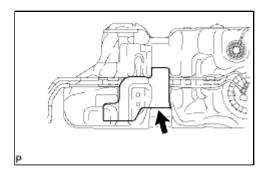
(a) Remove the No. 1, No. 2 and No. 3 fuel tank cushions from the fuel tank.

# **Text in Illustration**



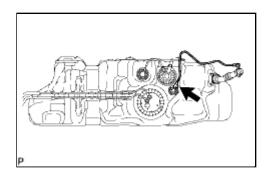
*1	No. 1 Fuel Tank Cushion
* 2	No. 2 Fuel Tank Cushion
*3	No. 3 Fuel Tank Cushion

### 14. REMOVE NO. 1 FUEL TANK PROTECTOR



(a) Remove the No. 1 fuel tank protector from the fuel tank.

### 15. REMOVE FUEL TANK BREATHER TUBE SUB-ASSEMBLY

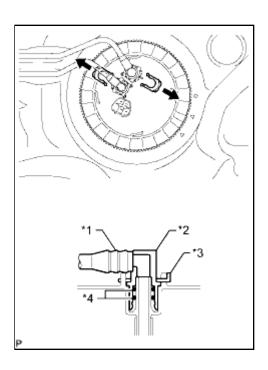


# 16. REMOVE FUEL TANK MAIN TUBE SUB-ASSEMBLY AND FUEL RETURN TUBE SUB-ASSEMBLY

(a) Remove the 2 fuel tube joint clips and pull out the fuel tank main tube and fuel return tube.

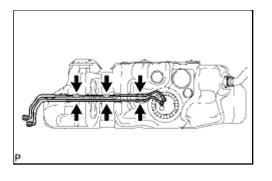
## **Text in Illustration**

* 1	Fuel Tube
* 2	Fuel Tube Joint
	) <del>-</del>



#### **NOTICE:**

- Remove any dirt and foreign matter on the fuel tube joint before performing this work.
- Do not allow any scratches or foreign matter on the parts when disconnecting them, as the fuel tube joint contains the O-rings that seal the plug.
- 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 plastic bag and tape after disconnecting the fuel tubes.

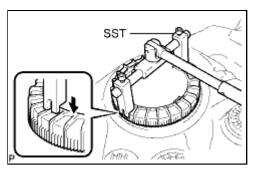


(b) Remove the fuel tank main tube and fuel return tube from the fuel tank.

### 17. REMOVE FUEL SUCTION WITH PUMP AND GAUGE TUBE ASSEMBLY

(a) Using SST, loosen the retainer.





### HINT:

Fit the tips of SST onto the ribs of the retainer.

### **NOTICE:**

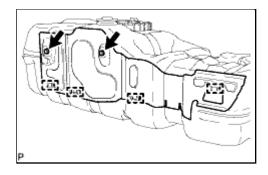
- When the retainer is loosened, be careful as the fuel suction with pump and gauge tube will spring upward from the force of the spring.
- Remove any foreign matter around the fuel suction with pump and gauge tube before this operation.
- (b) Remove the retainer.
- (c) Remove the fuel suction with pump and gauge tube assembly from the fuel tank.

### **NOTICE:**

Be careful not to bend the arm of the fuel sender gauge.

(d) Remove the gasket from the fuel tank.

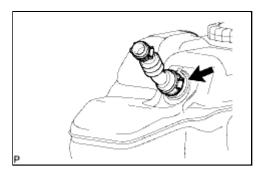
### 18. REMOVE NO. 3 FUEL TANK PROTECTOR



(a) Remove the 2 bolts.

(b) Detach the 4 clamps and remove the No. 3 fuel tank protector.

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



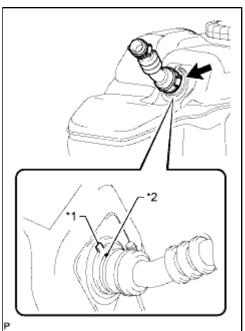
(a) Remove the fuel tank to filler pipe hose from the fuel tank.

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Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	<b>Doc ID:</b> RM0000045EX005X
Title: 2TR-FE FUEL: FUEL TANK: INSTALLATION (2010 4Runner)		

# **INSTALLATION**

### 1. INSTALL FUEL TANK TO FILLER PIPE HOSE



(a) Install the fuel tank to filler pipe hose to the fuel tank.

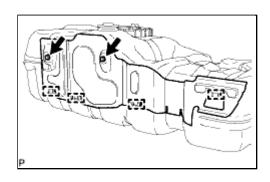
# **Text in Illustration**

*1	Fuel Tank Side Mark
*2	Hose Side Mark

### **HINT:**

Align the fuel tank side mark with the hose side mark when installing the hose.

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



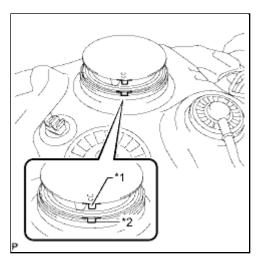
(a) Install the No. 3 fuel tank protector and attach the 4 clamps.

(b) Install the 2 bolts.

Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

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

(a) Apply a light coat of gasoline or grease to a new gasket and install the gasket to the fuel tank.



(b) A lign the protrusion of the fuel suction with pump and gauge tube with the groove of the fuel tank.

## **Text in Illustration**

*1	Protrusion
*2	Groove

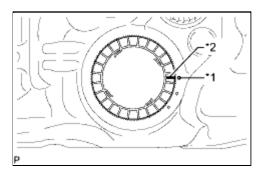
### **NOTICE:**

Be careful not to bend the arm of the fuel sender gauge.

- (c) Install the fuel suction with pump and gauge tube to the fuel tank.
- (d) Put a new retainer on the fuel tank. While holding the fuel suction with pump and gauge tube, tighten the retainer one complete turn by hand.

### HINT:

Make sure the start marks on the retainer and fuel tank are aligned and then tighten the retainer.



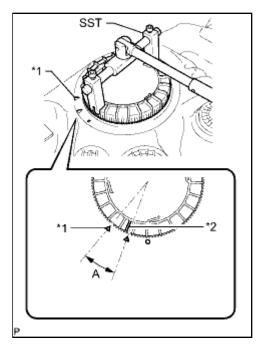
### **Text in Illustration**

*1	Start Mark (Fuel Tank Side)
* 2	Start Mark (Retainer Side)

(e) Using SST, tighten the retainer until the mark on the retainer is within range A on the fuel tank as shown in the illustration.

SST: 09808-14020

## **Text in Illustration**



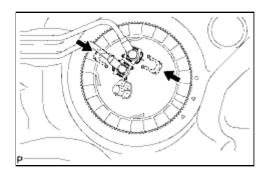
*1	Fuel Tank Side Mark
* 2	Retainer Side Mark

### **HINT:**

Fit the tips of SST onto the ribs of the retainer.

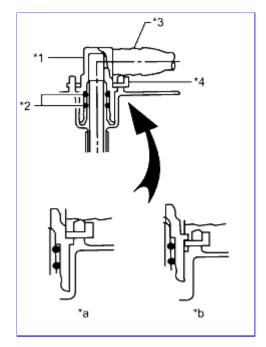
# 4. INSTALL FUEL TANK MAIN TUBE SUB-ASSEMBLY AND FUEL RETURN TUBE SUB-ASSEMBLY

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



### **NOTICE:**

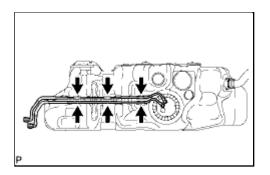
• Check that there are no scratches or foreign objects on the connecting parts.



- Check that the fuel tube joints are inserted securely.
- Check that the fuel tube joint clips are on the collars of the fuel tube joints.
- After installing the fuel tube joint clips, check that the fuel tube joints cannot be pulled off.

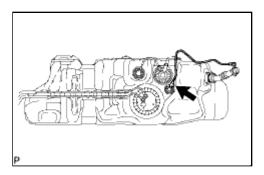
### **Text in Illustration**

* 1	Fuel Tube Joint
* 2	O-ring
* 3	Fuel Tube
*4	Fuel Tube Joint Clip
* a	CORRECT
* b	INCORRECT

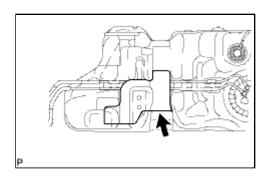


(b) Install the fuel tank main tube and fuel return tube to the fuel tank.

### 5. INSTALL FUEL TANK BREATHER TUBE SUB-ASSEMBLY

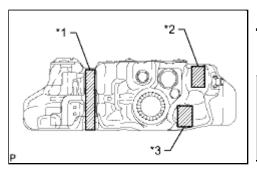


### 6. INSTALL NO. 1 FUEL TANK PROTECTOR



(a) Install the fuel tank protector to the fuel tank.

### 7. INSTALL FUEL TANK CUSHION



(a) Install 3 new fuel tank cushions to the fuel tank.

# **Text in Illustration**

*1	No. 1 Fuel Tank Cushion
* 2	No. 2 Fuel Tank Cushion
*3	No. 3 Fuel Tank Cushion

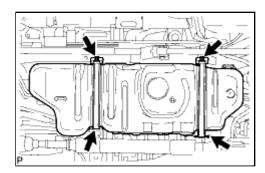
### 8. INSTALL FUEL TANK SUB-ASSEMBLY

(a) Set the fuel tank on a transmission jack and lift up the transmission jack.

### **NOTICE:**

Do not allow the fuel tank to contact the vehicle, especially the differential.

(b) Install the 2 fuel tank bands with the 2 pins and 2 clips.



(c) Connect the 2 fuel tank bands with the 2 bolts.

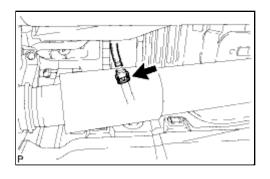
Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

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

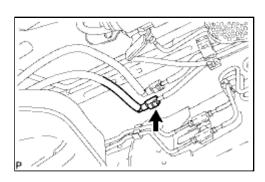
(a) Connect the fuel tank to filler pipe hose to the filler pipe.

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

### 11. CONNECT FUEL TANK VENT HOSE SUB-ASSEMBLY

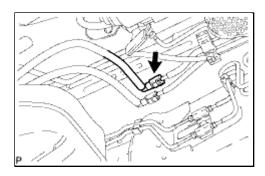


### 12. CONNECT FUEL RETURN TUBE SUB-ASSEMBLY



(a) Connect the fuel return tube

### 13. CONNECT FUEL TANK MAIN TUBE SUB-ASSEMBLY



(a) Connect the fuel tank main tube

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

(a) for Half Cover Type:

Install the No. 1 fuel tank protector with the 4 bolts.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

(b) for Standard Type:

Install the No. 1 fuel tank protector with the 6 bolts.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

### 15. INSTALL REAR FLOOR SERVICE HOLE COVER

- (a) Connect the fuel pump and fuel sender gauge connector.
- (b) Install the rear floor service hole cover with the 3 screws.

### 16. INSTALL REAR SEAT ASSEMBLY LH

(a) for 60/40 Split Double-folding Seat Type LH Side:

(b) for 60/40 Split Slide Walk-in Seat Type LH Side:

Install the rear seat assembly LH 🔤 .

### 17. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

### **NOTICE:**

When disconnecting the cable, some systems need to be initialized after the cable is reconnected

18. INSPECT FOR FUEL LEAK MFO

 $\square$