

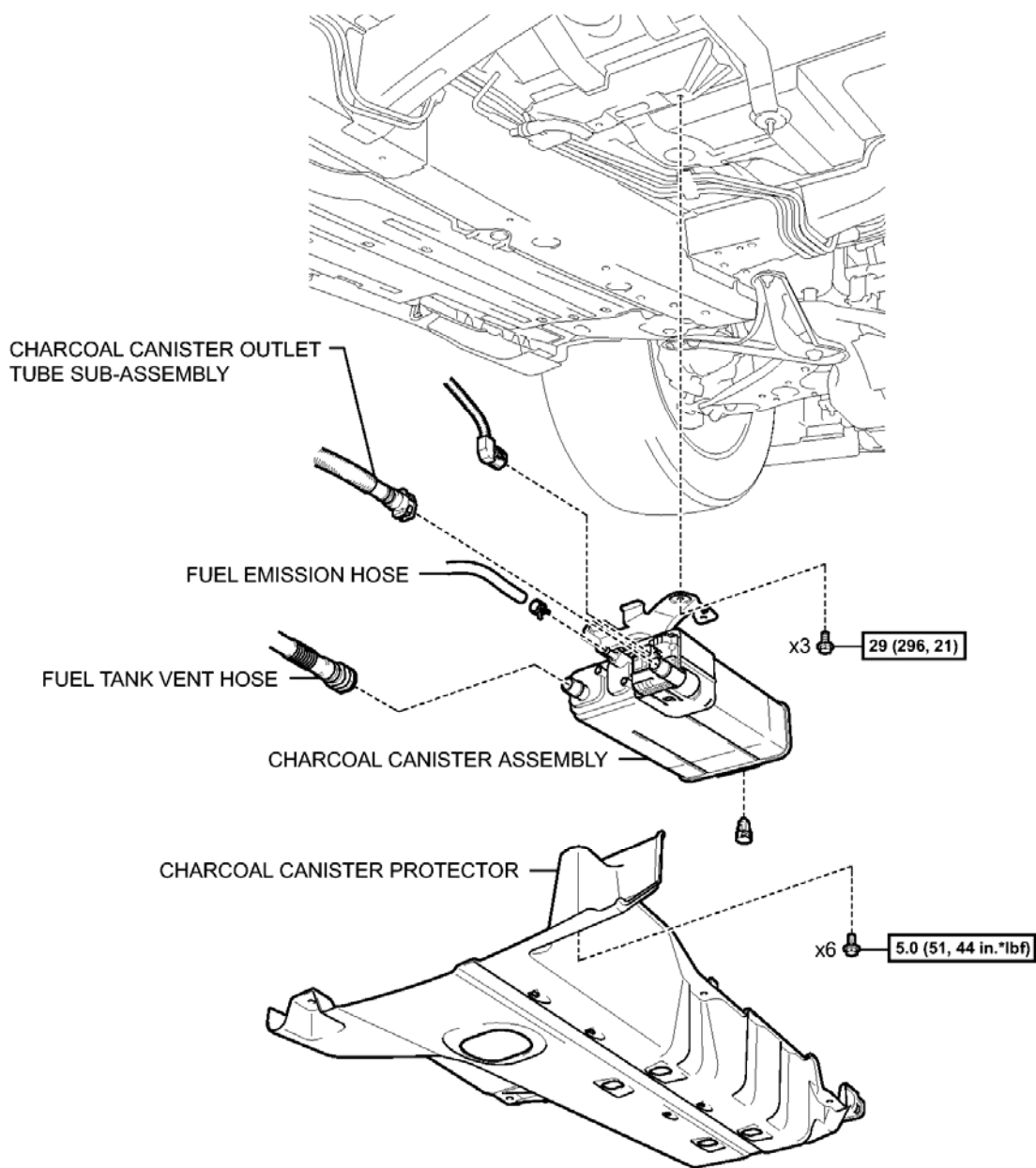
ENGINE PERFORMANCE

Emission Control System [1AR-FE] (Service Information) - Sienna

CANISTER

COMPONENTS

ILLUSTRATION

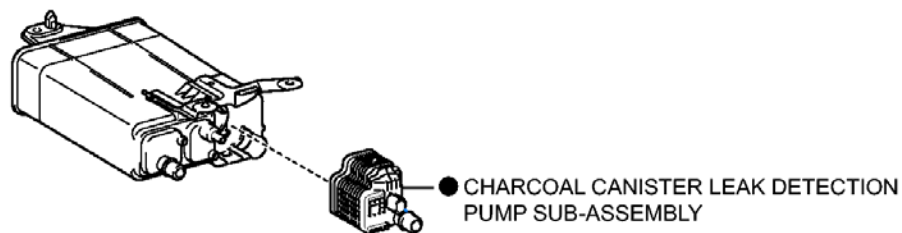


N*m (kgf*cm, ft.*lbf): Specified torque

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Fig. 1: Canister Replacement Components Location With Torque Specifications (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



● Non-reusable part

o

Fig. 2: Canister Replacement Components Location (2 Of 2)

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

REMOVAL

REMOVAL

1. REMOVE CHARCOAL CANISTER PROTECTOR

- a. Remove the 6 bolts.

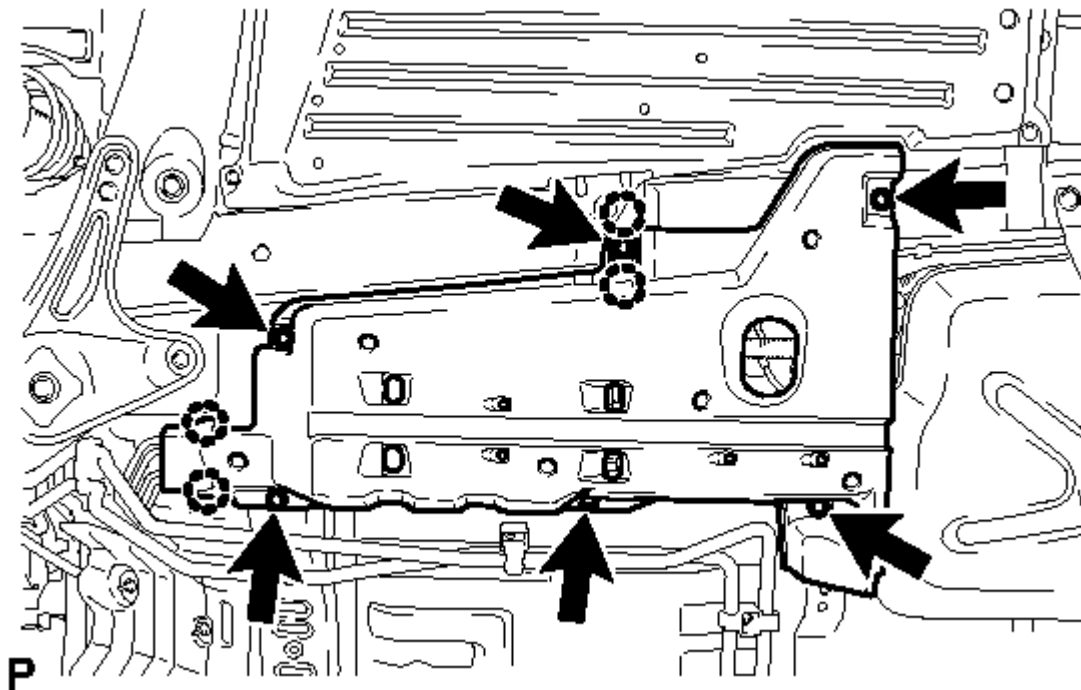


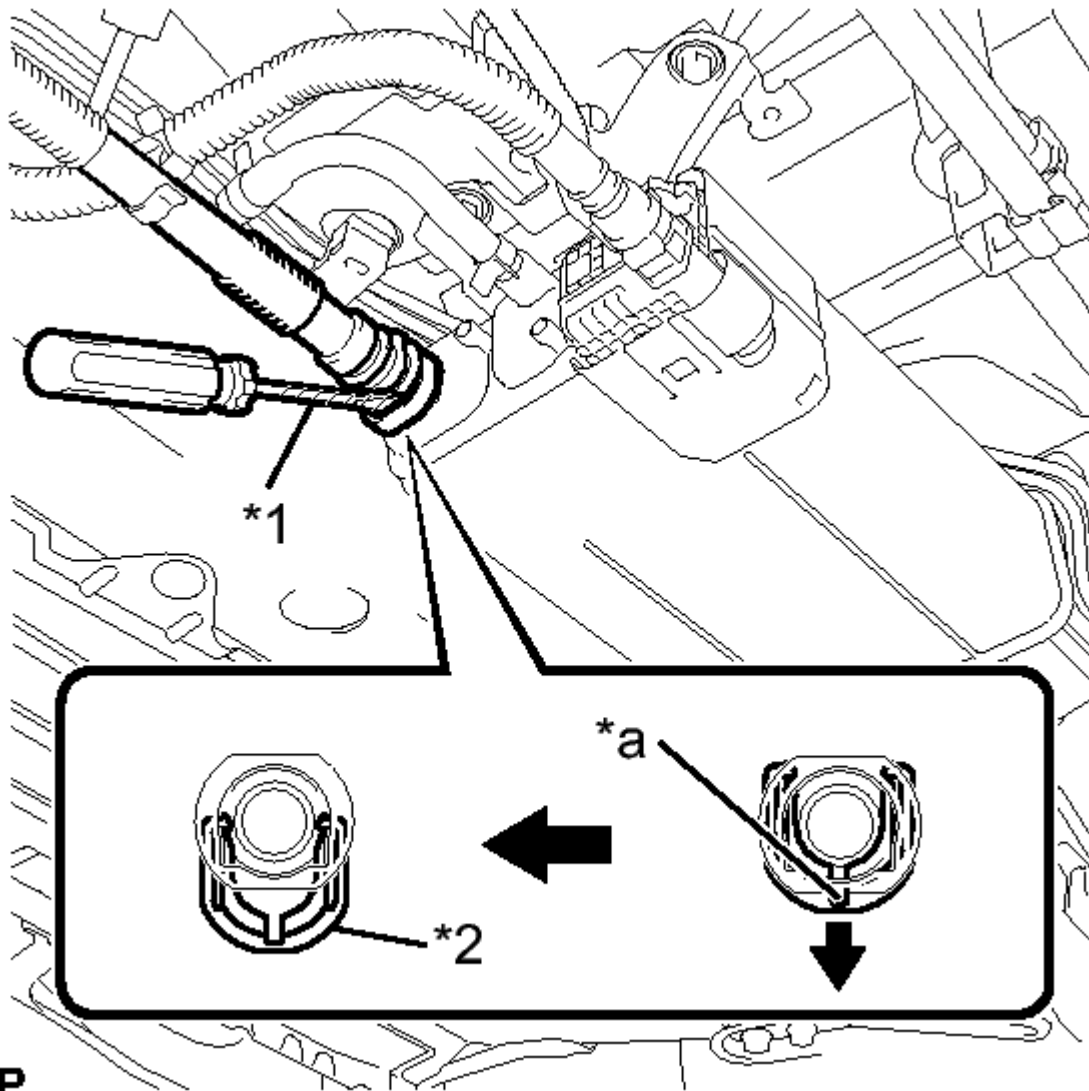
Fig. 3: Identifying Charcoal Canister Protector Bolts & Claws

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

- b. Disengage the 4 claws and remove the charcoal canister protector.

2. DISCONNECT FUEL TANK VENT HOSE

- a. Insert a screwdriver with its tip wrapped in protective tape into the quick connector cutout as shown in the illustration, pry up the retainer and disconnect the fuel tank vent hose.



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Fig. 4: Prying Fuel Tank Vent Hose Connector, Using Screwdriver
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Protective Tape
*2	Retainer
*a	Cutout

HINT:

Do not remove the retainer.

NOTE:

- Check for dirt or other foreign matter on the parts to be disconnected and clean them if necessary.
- The quick connector seals with an O-ring. Ensure that there is no damage or foreign matter on the contact surface.
- Do not bend or twist the tubes.
- Protect the contact surface by covering it with a plastic bag.
- If the connector is stuck, push and pull on the parts to separate them.

3. DISCONNECT CHARCOAL CANISTER OUTLET TUBE SUB-ASSEMBLY

- a. Disconnect the charcoal canister outlet tube. Refer to **PRECAUTION** .

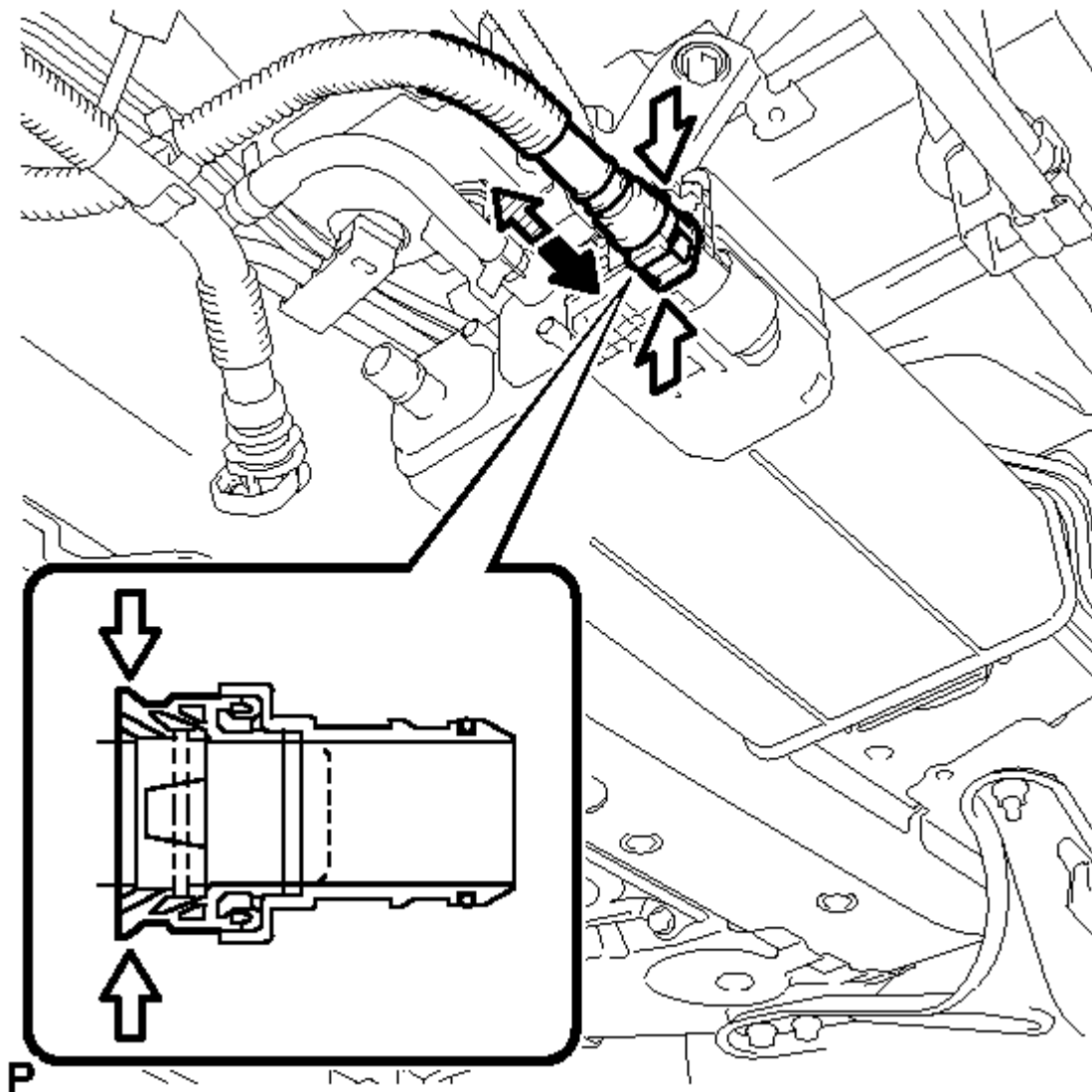


Fig. 5: Disconnecting Charcoal Canister Outlet Tube Sub-Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

Push
Pinch
Pull
Out

NOTE:

- Check for dirt or other foreign matter on the parts to be disconnected and clean them if necessary.
- The quick connector seals with an O-ring. Ensure that there is no damage or foreign matter on the contact surface.
- Do not use any tools.
- Do not bend or twist the tubes.
- Protect the contact surface by covering it with a plastic bag.
- If the connector is stuck, push and pull on the parts to separate them.

4. REMOVE CHARCOAL CANISTER ASSEMBLY

- a. Disconnect the fuel emission hose and connector.

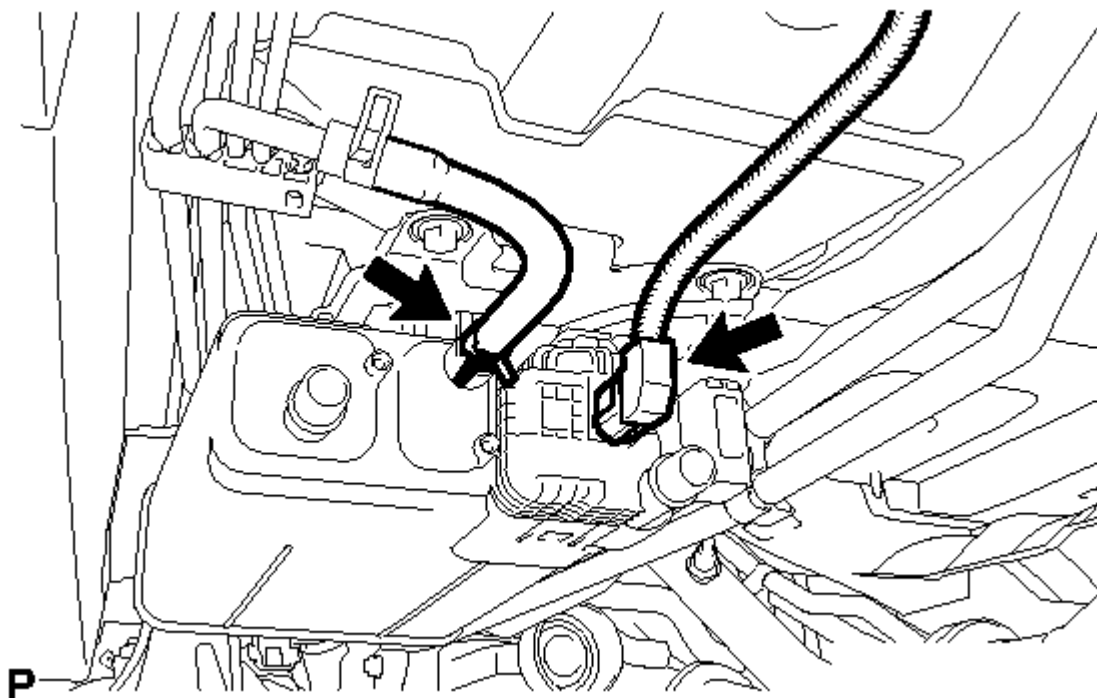
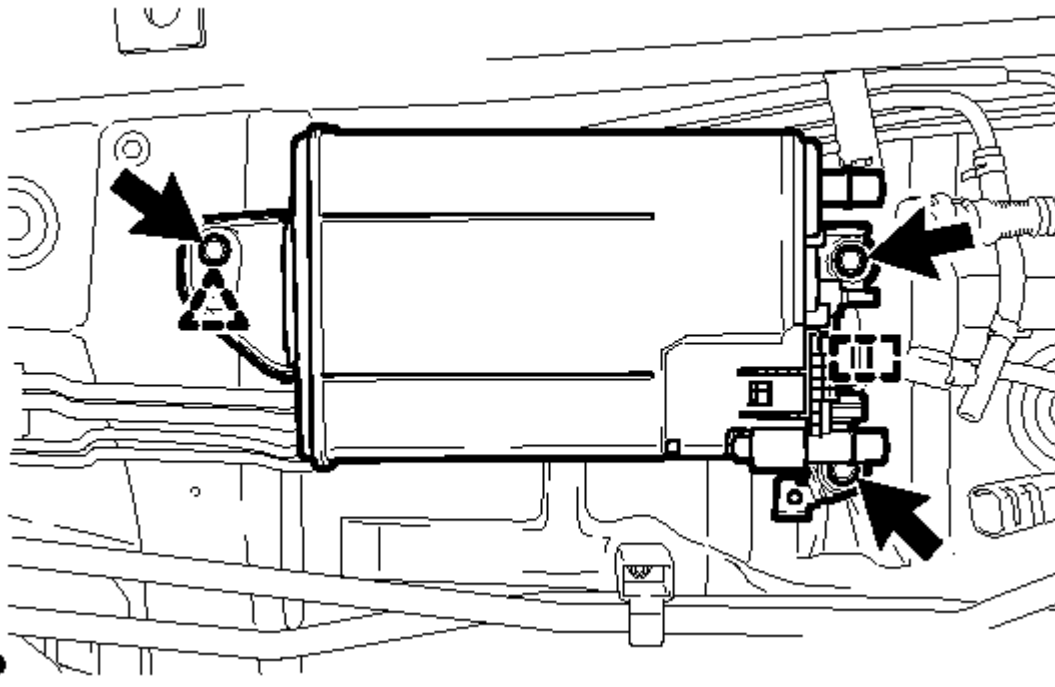


Fig. 6: Identifying Charcoal Canister Assembly Fuel Emission Hose & Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 3 bolts and clip.



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Fig. 7: Identifying Charcoal Canister Assembly Hook & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Disengage the hook and remove the charcoal canister assembly.

5. REMOVE CHARCOAL CANISTER LEAK DETECTION PUMP SUB-ASSEMBLY

- a. Before removing the charcoal canister leak detection pump sub-assembly, clean the canister by blowing air into it to ensure that the canister is free of foreign matter.

NOTE:

- Make sure to clean the canister using only air.
- Do not use gasoline, thinners or solvents.

- b. While disengaging the 2 claws as shown in the illustration, push the charcoal canister leak detection pump sub-assembly upwards using a screwdriver to remove it.

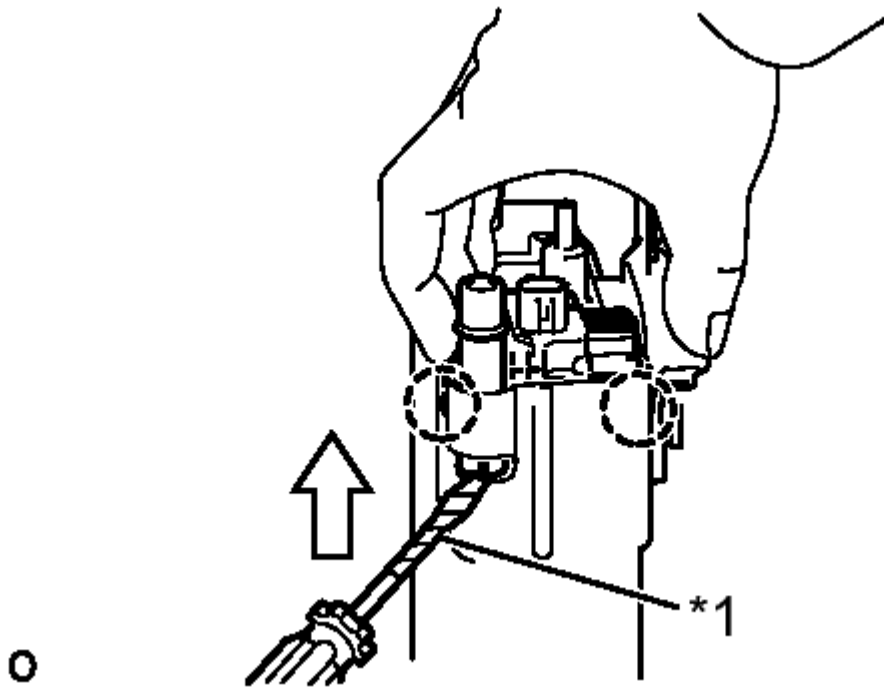


Fig. 8: Removing Charcoal Canister Leak Detection Pump Sub-Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Protective Tape
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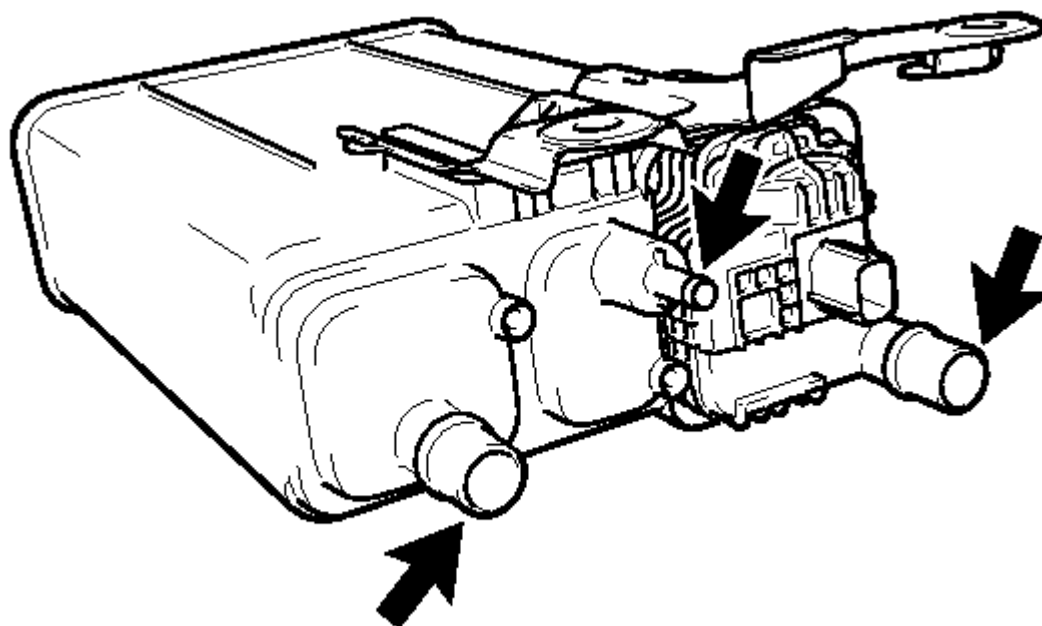
- c. Check if the canister contains foreign matter such as mud or water.
 - 1. Visually check that the inside of the canister is free of foreign matter.
 - 2. Hold the canister upside down to make sure that the canister is free of foreign matter. If the canister contains foreign matter, replace the canister.

INSPECTION

INSPECTION

1. INSPECT CHARCOAL CANISTER ASSEMBLY

- a. Visually check the charcoal canister assembly.
 - 1. Visually check the charcoal canister for cracks or damage.



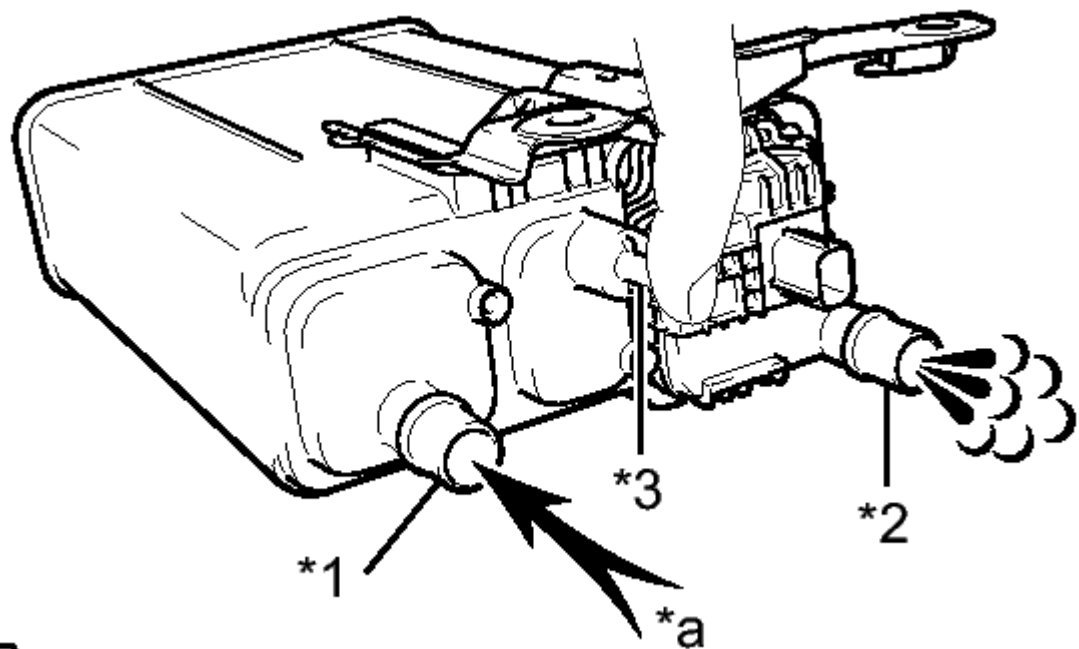
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Fig. 9: Inspecting Charcoal Canister Assembly Ports For Cracks & Damage
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If cracks or damage are found, replace the charcoal canister assembly.

b. Check canister operation.

1. With the purge port closed, blow 5 kPa (0.05 kgf/cm² , 0.7 psi) of air into the vent port, and check that air flows from the air inlet port.



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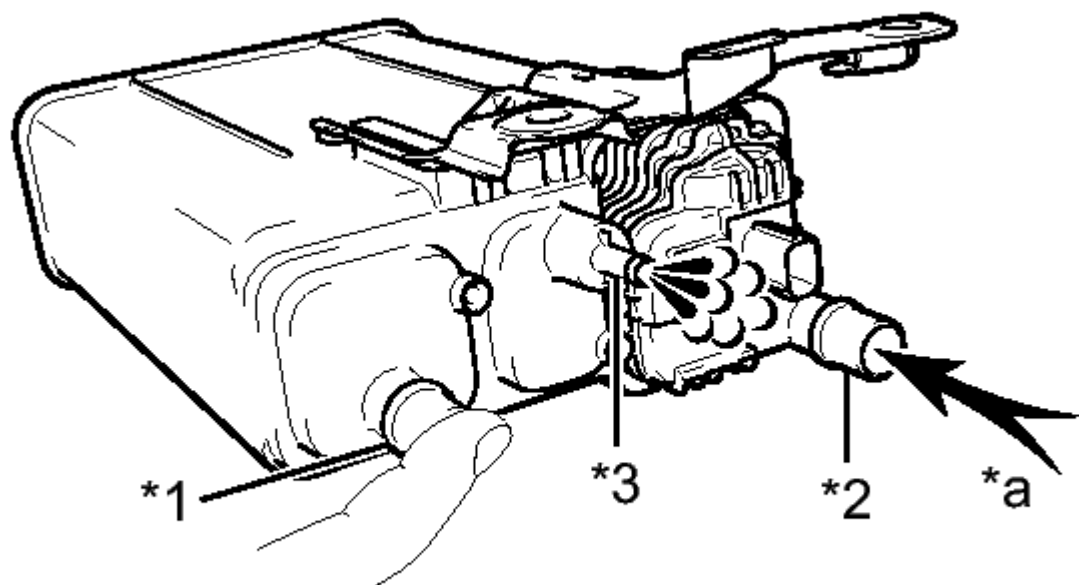
Fig. 10: Inspecting Charcoal Canister Assembly Operation (Purge Port Closed)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Vent Port
*2	Air Inlet Port
*3	Purge Port
*a	Air

If the result is not as specified, replace the charcoal canister assembly.

2. With the vent port closed, blow 5 kPa (0.05 kgf/cm² , 0.7 psi) of air into the air inlet port, and check that air flows from the purge port.



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Fig. 11: Inspecting Charcoal Canister Assembly Operation (Vent Port Closed)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

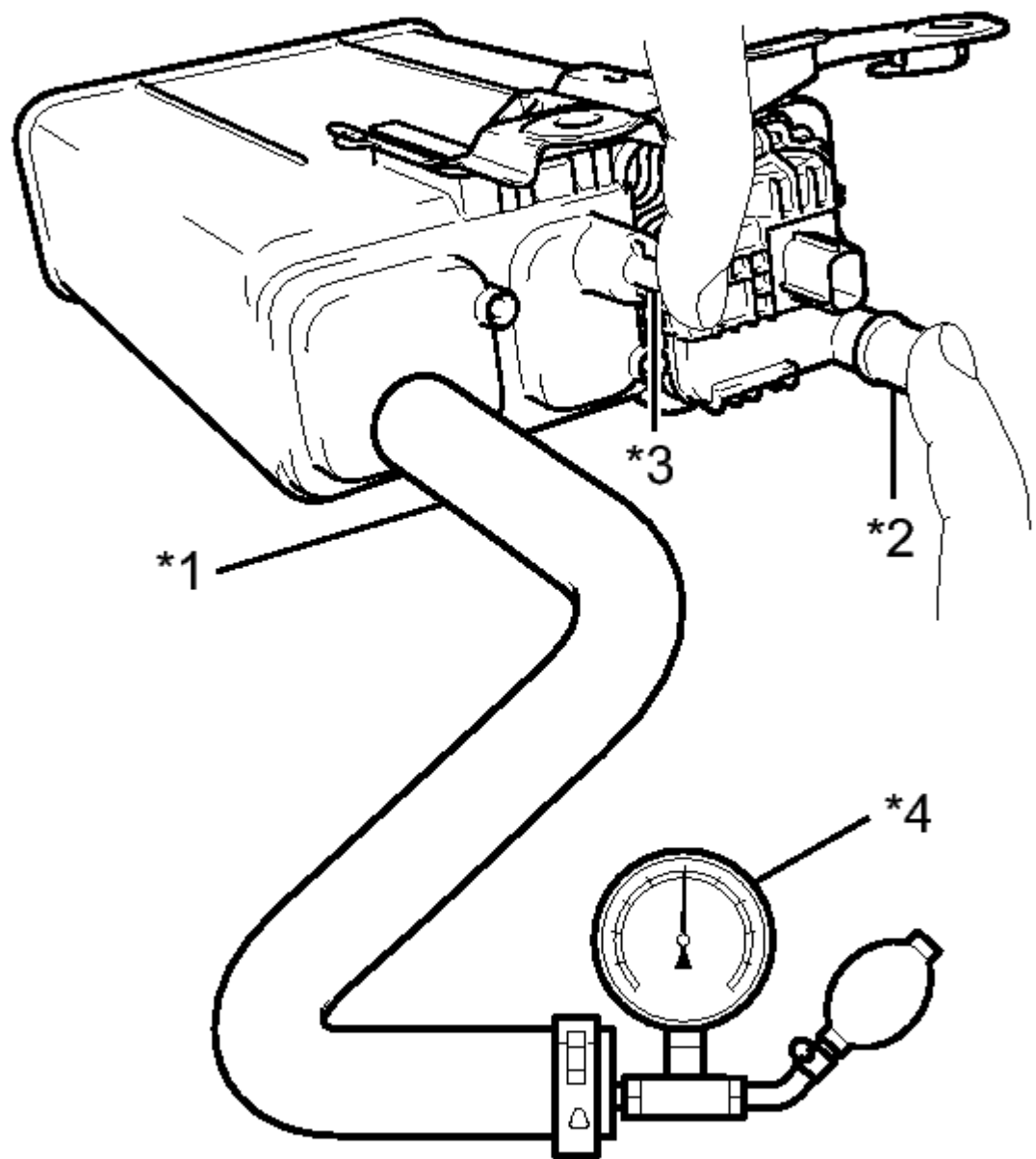
TEXT IN ILLUSTRATION

*1	Vent Port
*2	Air Inlet Port
*3	Purge Port
*a	Air

If the result is not as specified, replace the charcoal canister assembly.

c. Check for air leaks.

1. Connect a pressure gauge to the vent port of the charcoal canister.



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Fig. 12: Checking For Air Leakage

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

TEXT IN ILLUSTRATION

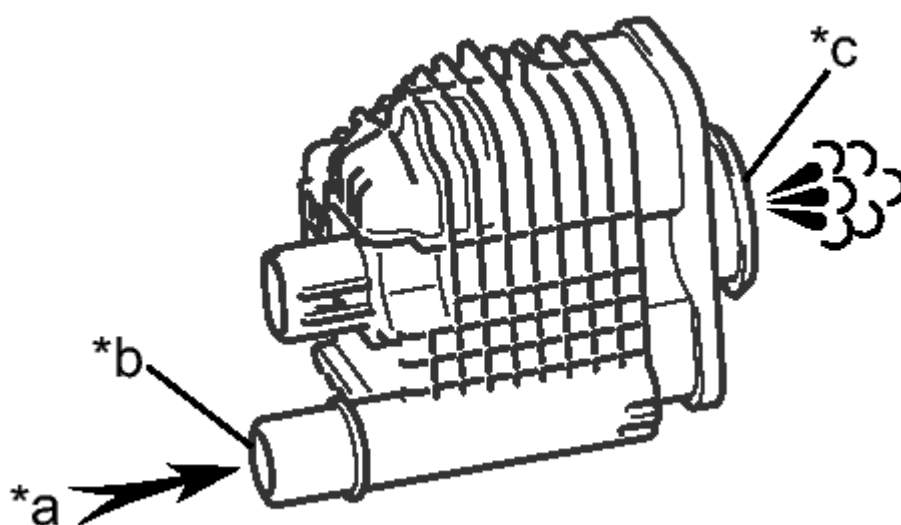
Vent

*1	Port
*2	Air Inlet Port
*3	Purge Port
*4	Pressure Gauge

2. With the purge port and the air inlet port closed, apply 20 kPa (150 mmHg, 5.91 in.Hg) of pressurized air into the vent port, then confirm that pressure is retained for 1 minute.

If the result is not as specified, replace the charcoal canister assembly.

2. INSPECT CHARCOAL CANISTER LEAK DETECTION PUMP SUB-ASSEMBLY



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Fig. 13: Inspecting Charcoal Canister Leak Detection Pump Sub-Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Check the charcoal canister leak detection pump sub-assembly.
 1. Check that air flows from port A to port B.

If the result is not as specified, charcoal canister leak detection pump sub-assembly.

TEXT IN ILLUSTRATION

*a	Air

*b	Port A
*c	Port B

2. Connect the positive (+) lead of the battery to terminal 5 and the negative (-) lead to terminal 1.

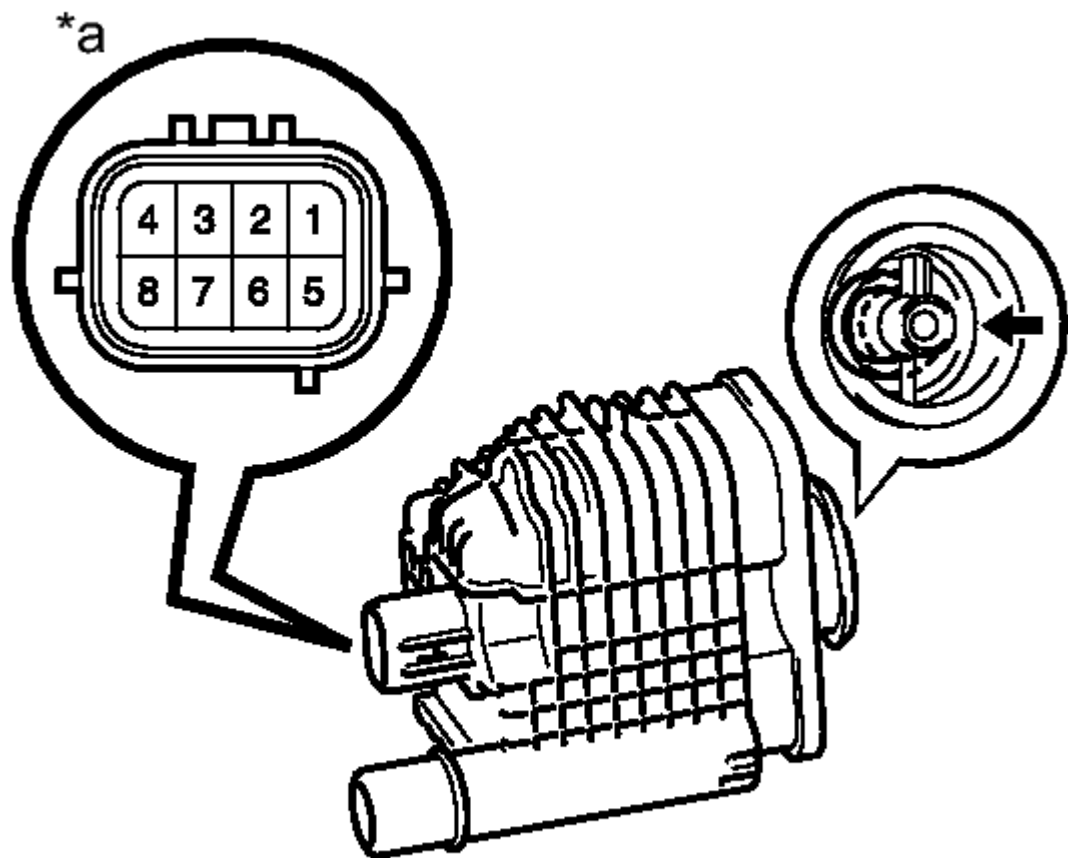


Fig. 14: Charcoal Canister Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Component without harness connected
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(Charcoal
Canister
Assembly)

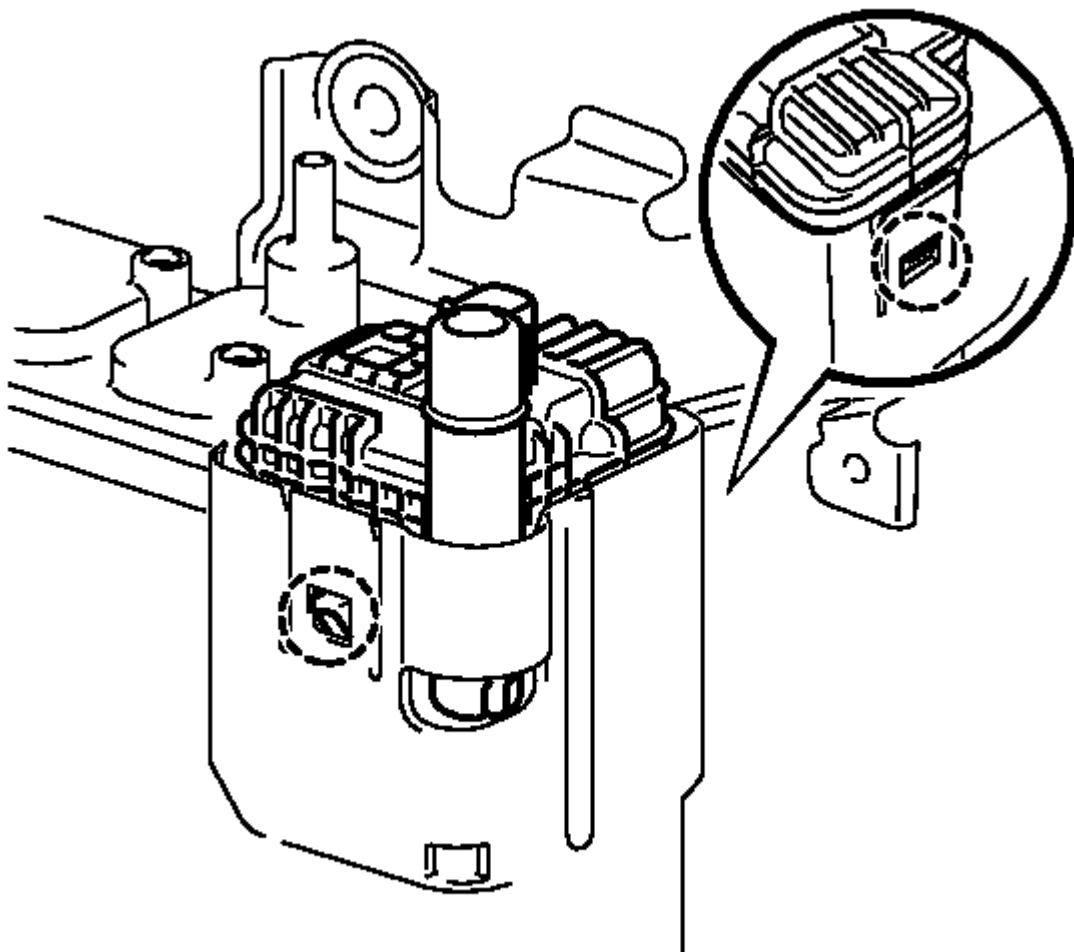
3. Check that the valve is closed.

If the result is not as specified, replace the charcoal canister leak detection pump subassembly.

INSTALLATION

INSTALLATION

1. **INSTALL CHARCOAL CANISTER LEAK DETECTION PUMP SUB-ASSEMBLY**



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Fig. 15: Installing Charcoal Canister Leak Detection Pump Sub-Assembly

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

- a. Engage the 2 claws to install a new charcoal canister leak detection pump sub-assembly to the canister.

NOTE:

- Do not allow foreign matter such as grease, oil or water to adhere to the O-rings.
- Ensure that the claws are engaged properly.

2. INSTALL CHARCOAL CANISTER ASSEMBLY

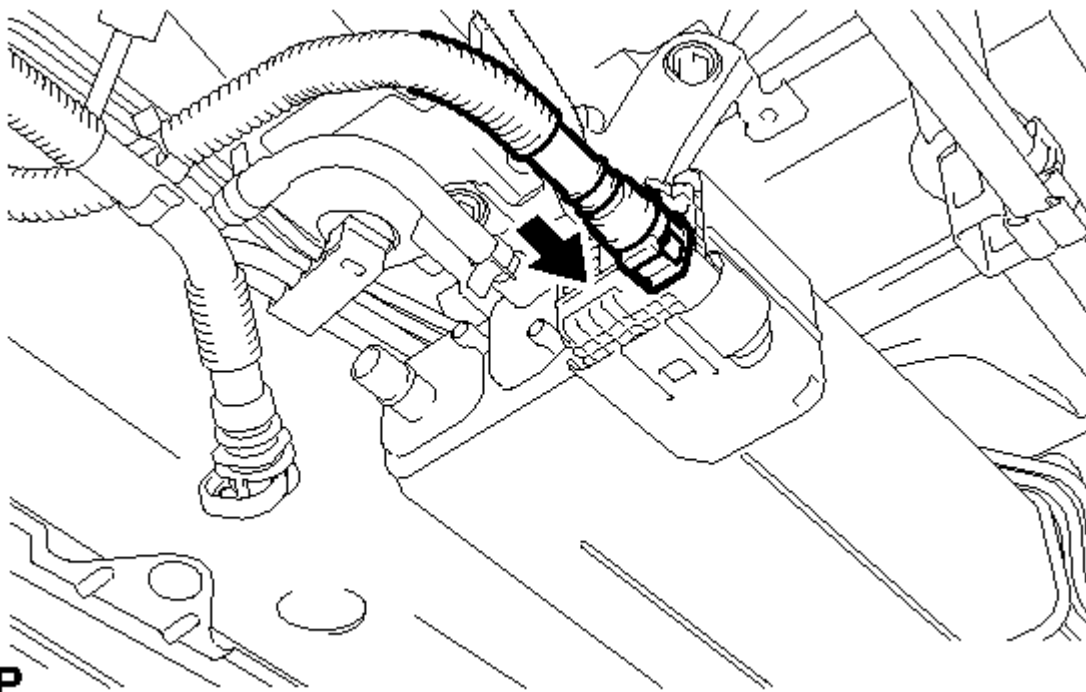
- a. Engage the hook.
- b. Install the charcoal canister assembly with the 3 bolts and clip.

Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)

- c. Connect the fuel emission hose and connector.

3. CONNECT CHARCOAL CANISTER OUTLET TUBE SUB-ASSEMBLY

- a. Connect the charcoal canister outlet tube. Refer to **PRECAUTION**.



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Fig. 16: Connecting Charcoal Canister Outlet Tube Sub-Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

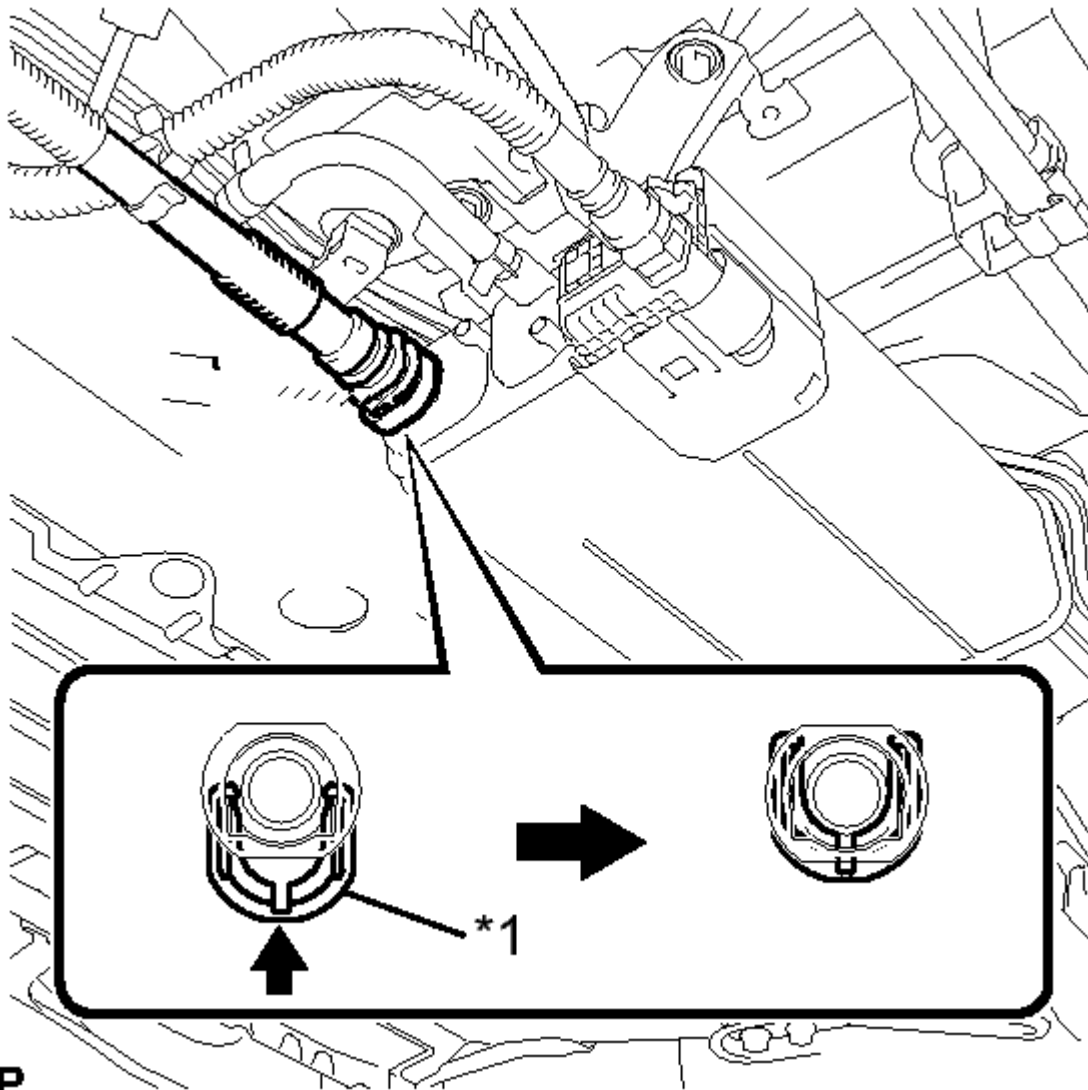
- Check that there are no scratches or foreign objects on the connecting part.
- Check that the charcoal canister outlet tube is inserted

securely.

- Check that the charcoal canister outlet tube is securely connected by pulling on it.

4. CONNECT FUEL TANK VENT HOSE

- a. Connect the fuel tank vent hose and lock it by pushing in the retainer as shown in the illustration.



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Fig. 17: Connecting Fuel Tank Vent Hose

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

TEXT IN ILLUSTRATION

*1 Retainer

NOTE:

- Check that there are no scratches or foreign objects on the

connecting part.

- Check that the fuel tank vent hose is inserted securely.
- After installing the retainer, check that the fuel tank vent hose is securely connected by pulling on it.

HINT:

- Insert the inlet tube until a "click" sound is heard.
- The quick connector cannot be locked when the tube is not inserted securely.

5. INSTALL CHARCOAL CANISTER PROTECTOR

- a. Engage the 4 claws.
- b. Install the charcoal canister protector with the 6 bolts.

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

PURGE VALVE

COMPONENTS

ILLUSTRATION

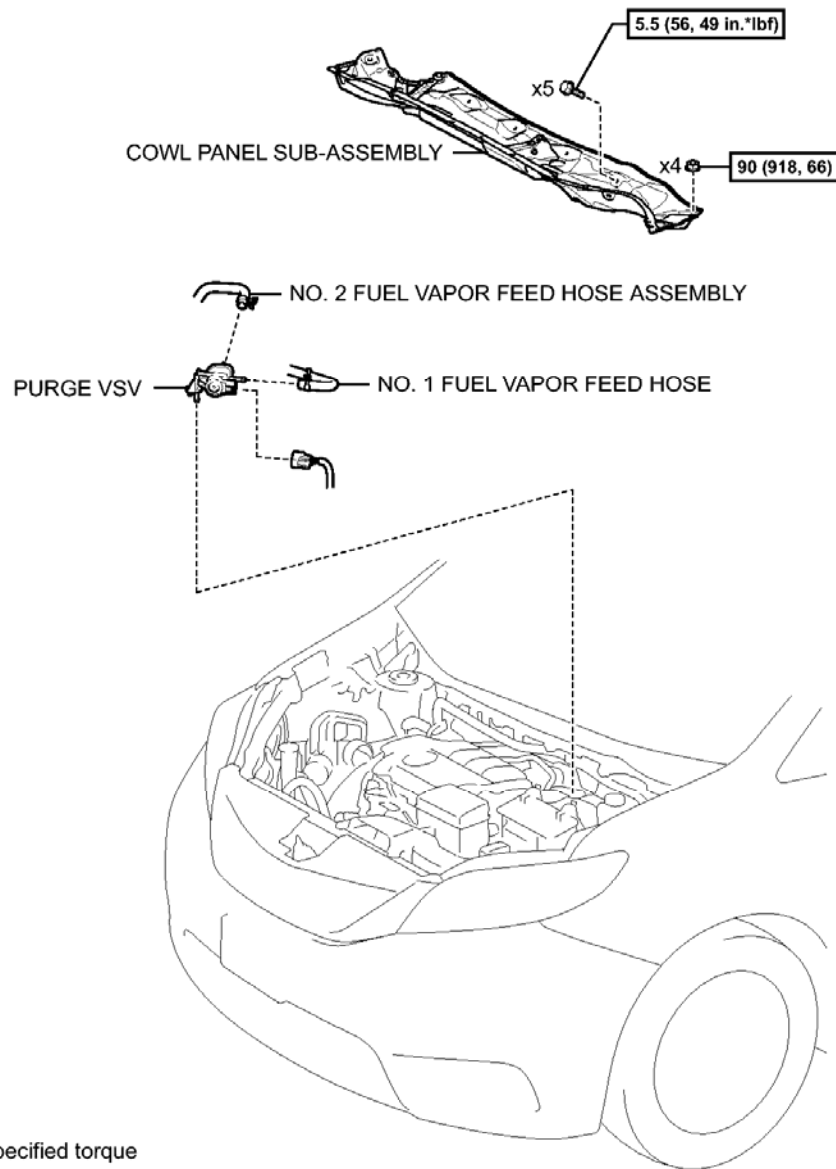


Fig. 18: Purge Valve Replacement Components With Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

REMOVAL

1. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY

Refer to **REMOVAL**

2. REMOVE COWL PANEL SUB-ASSEMBLY . Refer to **REMOVAL - Step 10**

3. REMOVE PURGE VSV

- a. Disconnect the connector.

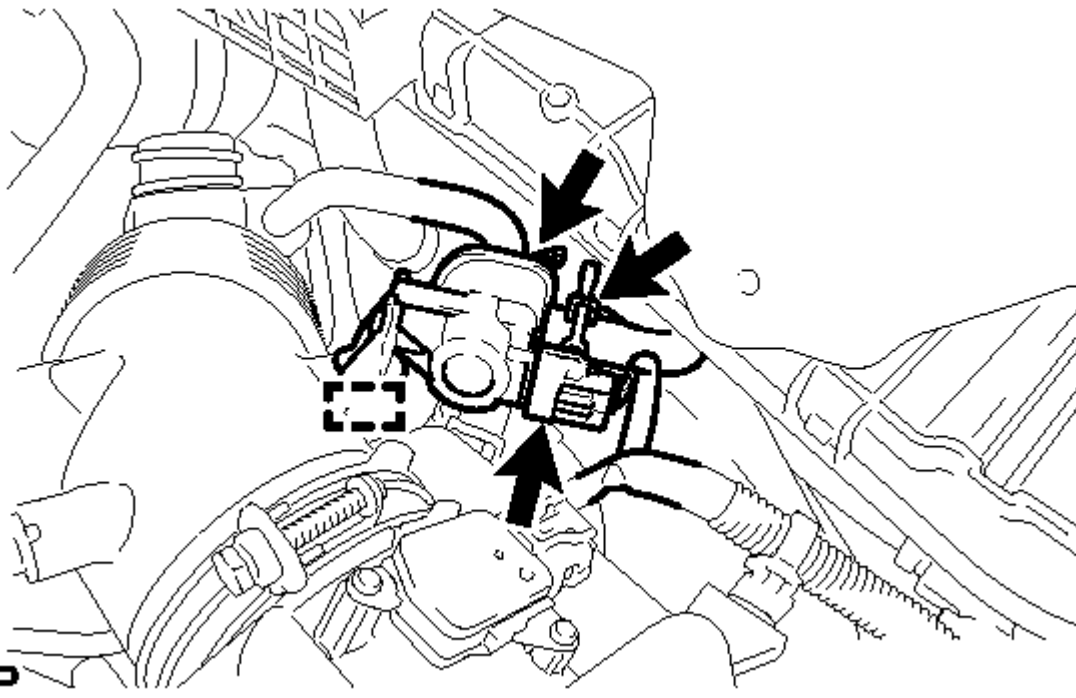


Fig. 19: Identifying Purge VSV Connector, No. 1 Fuel Vapor Feed Hose & No. 2 Fuel Vapor Hose Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the No. 1 fuel vapor feed hose and No. 2 fuel vapor feed hose assembly.
- c. Pull out the purge VSV from the air cleaner hose.

INSPECTION

INSPECTION

1. INSPECT PURGE VSV

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

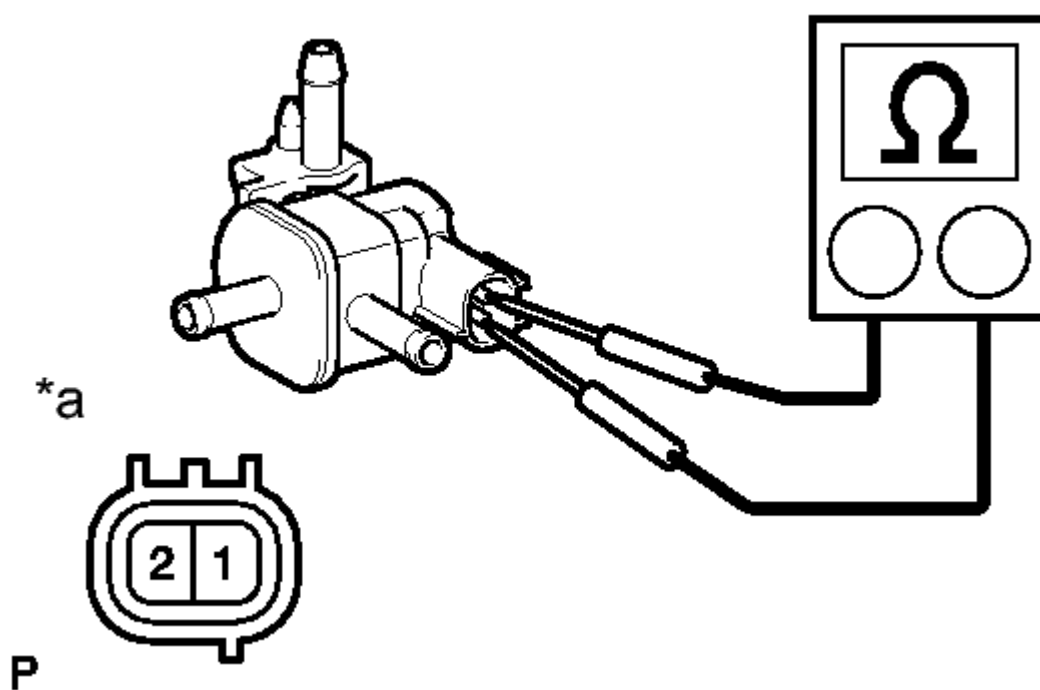


Fig. 20: Purge VSV Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

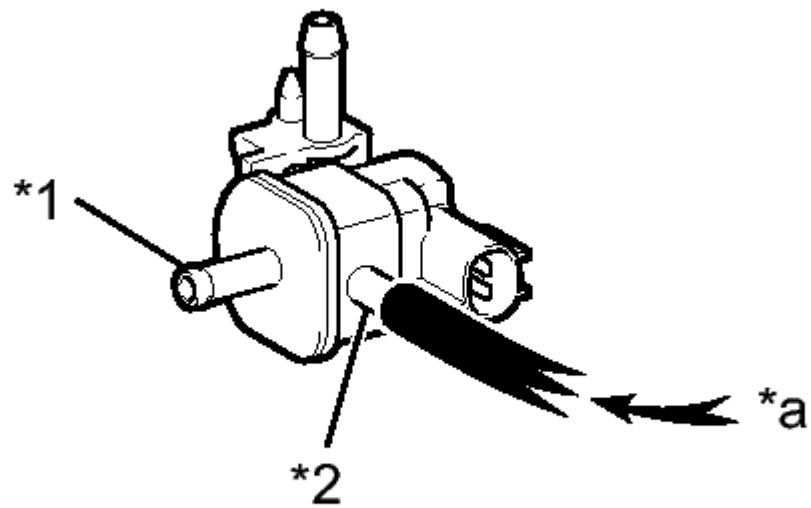
*a	Component without harness connected (Purge VSV)
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Standard Resistance

Tester Connection	Condition	Specified Condition
1 - 2	20°C (68° F)	23 to 26 ohms

If the result is not as specified, replace the purge VSV.

- b. Check the operation of the purge VSV.
 1. Check that air does not flow from port E to port F.



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Fig. 21: Checking Purge VSV Air Flow

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

TEXT IN ILLUSTRATION

*1	Port F
*2	Port E
*a	Air

2. Apply battery voltage across the terminals.

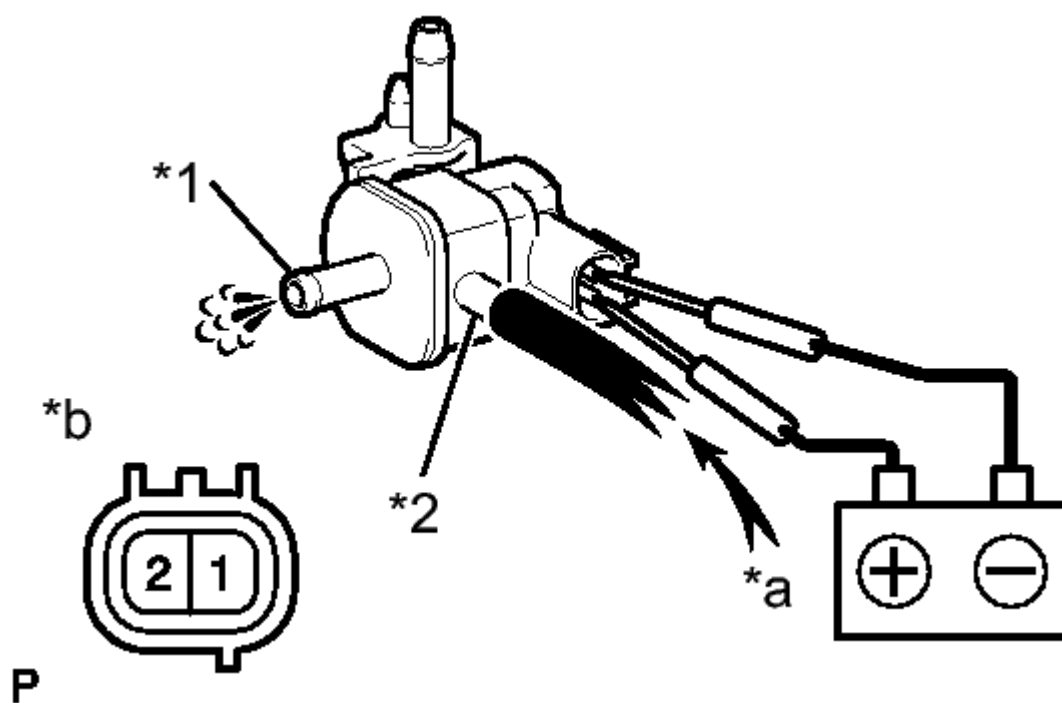


Fig. 22: Checking Purge VSV Air Flow With Battery Voltage Applied
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Port F
*2	Port E
*a	Air
*b	Component without harness connected (Purge VSV)

- a. Check that air flows from port E to port F.

OK

Measurement Condition	Specified Condition
Battery positive (+) --> Terminal 1	Air flows from port E to port F
Battery negative (-) --> Terminal 2	

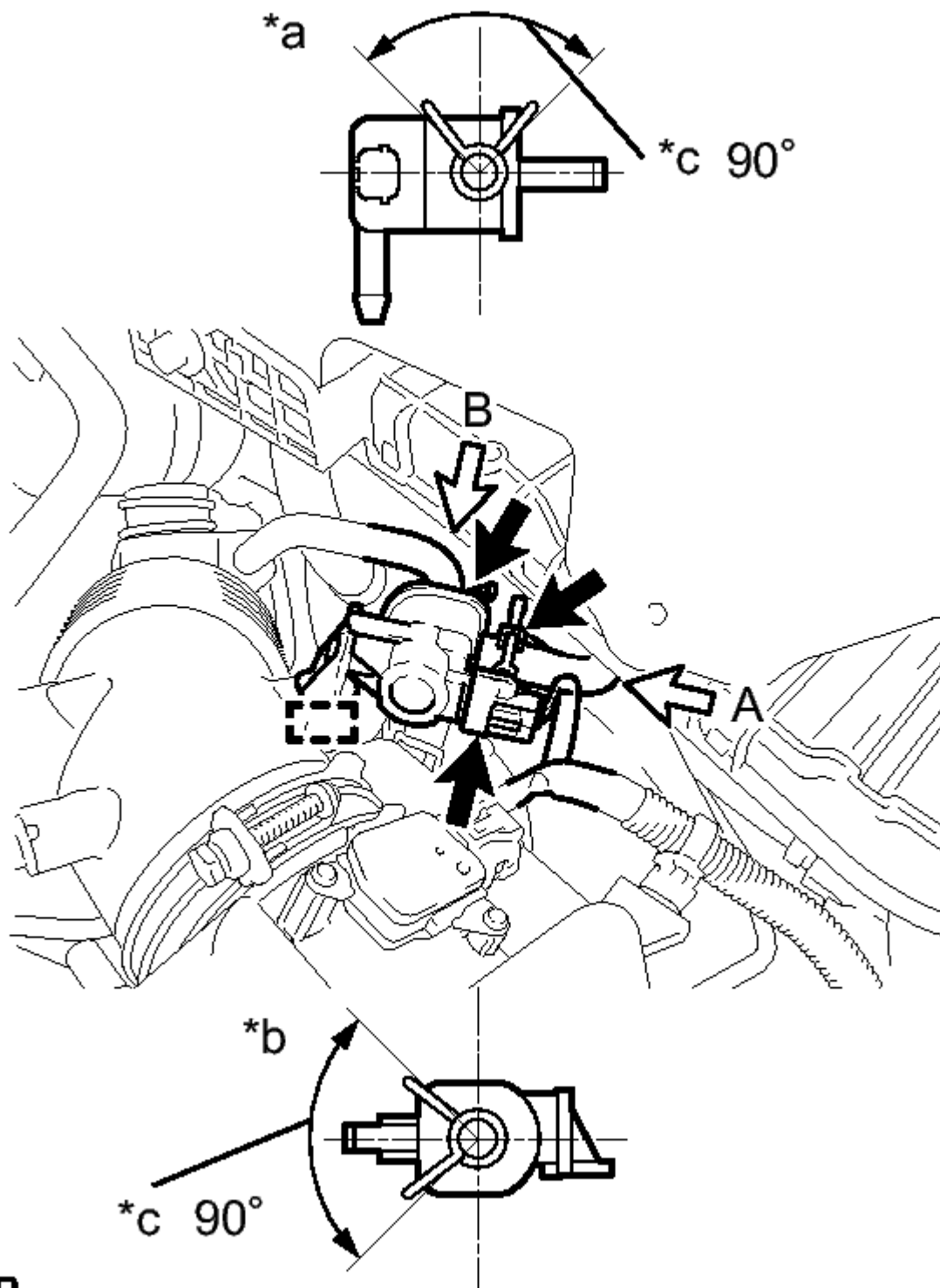
If the result is not as specified, replace the purge VSV.

INSTALLATION

INSTALLATION

1. INSTALL PURGE VSV

- a. Push the purge VSV into the air cleaner hose.



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Fig. 23: Identifying Purge VSV Position

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

TEXT IN ILLUSTRATION

*a	View A
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*b	View B
*c	Clip installation range

HINT:

Connect the hose so that the direction of the hose clip is as indicated in the illustration.

- b. Connect the No. 1 fuel vapor feed hose and No. 2 fuel vapor feed hose assembly.
- c. Connect the connector.
- 2. **INSTALL COWL PANEL SUB-ASSEMBLY** . Refer to **INSTALLATION - Step 12**
- 3. **INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY**

Refer to **INSTALLATION**

FUEL TANK CAP

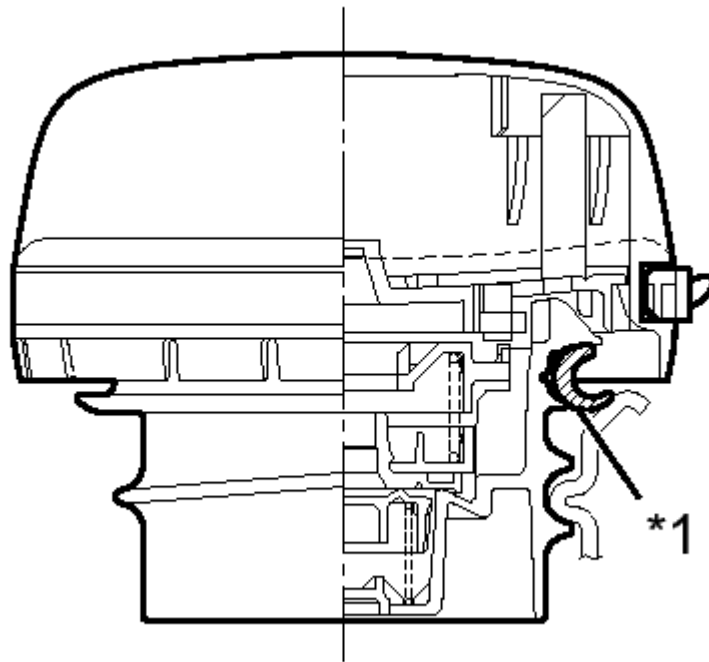
INSPECTION

INSPECTION

1. INSPECT FUEL TANK CAP ASSEMBLY

- a. Visually check that the cap and gasket are not deformed or damaged.

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



C

Fig. 24: Identifying Fuel Tank Cap Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

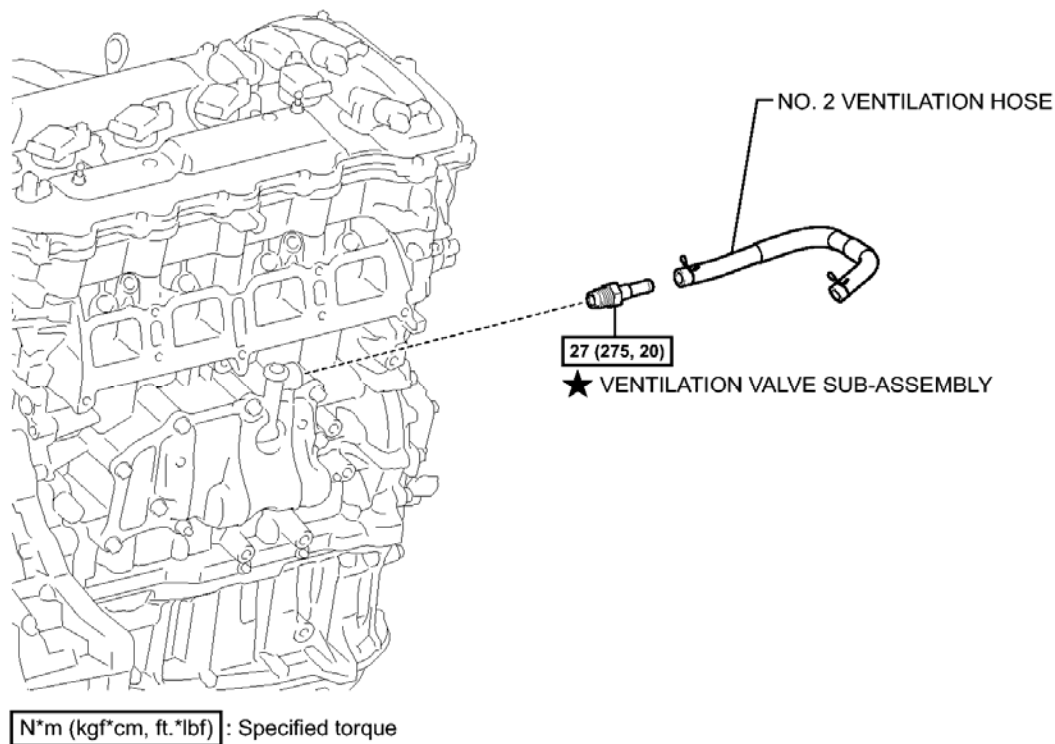
TEXT IN ILLUSTRATION

*1	Gasket
----	--------

PCV VALVE

COMPONENTS

ILLUSTRATION



★ Precoated part

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Fig. 25: PCV Valve Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

REMOVAL

1. REMOVE INTAKE MANIFOLD

Refer to **REMOVAL**

2. REMOVE VENTILATION VALVE SUB-ASSEMBLY

- Disconnect the No. 2 ventilation hose from the ventilation valve sub-assembly.

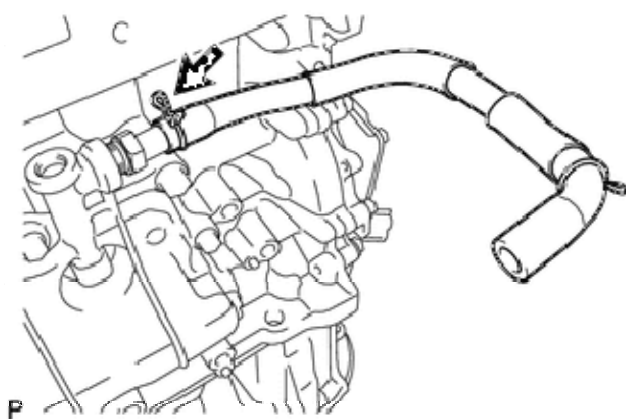


Fig. 26: Identifying No. 2 Ventilation Hose
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a 19 mm deep socket wrench, remove the ventilation valve sub-assembly.

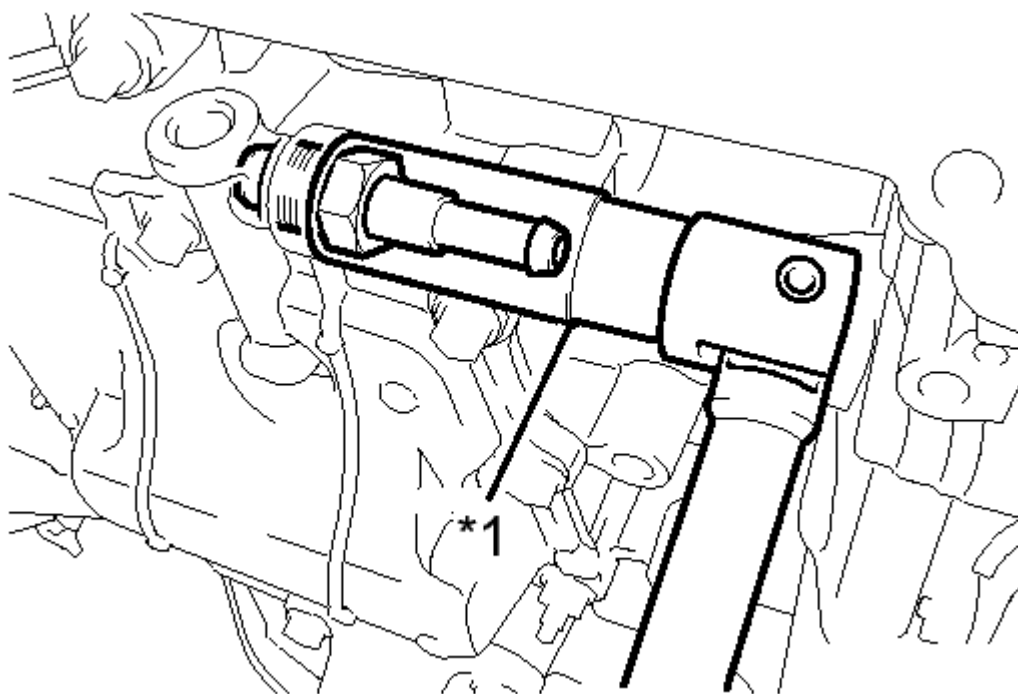


Fig. 27: Identifying Deep Socket Wrench For Ventilation Valve Sub-Assembly Removal
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

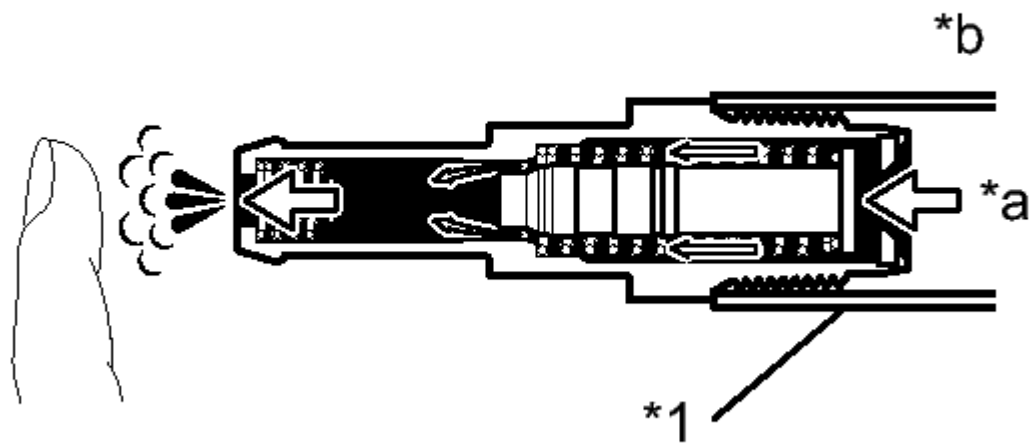
*1	19 mm Deep Socket Wrench
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INSPECTION

INSPECTION

1. INSPECT VENTILATION VALVE SUB-ASSEMBLY

- a. Install a clean hose to the ventilation valve sub-assembly.
- b. Check the ventilation valve sub-assembly operation.
 1. Blow air into the cylinder block side, and check that air passes through easily.



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Fig. 28: Checking Ventilation Valve Sub-Assembly Air Flow
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

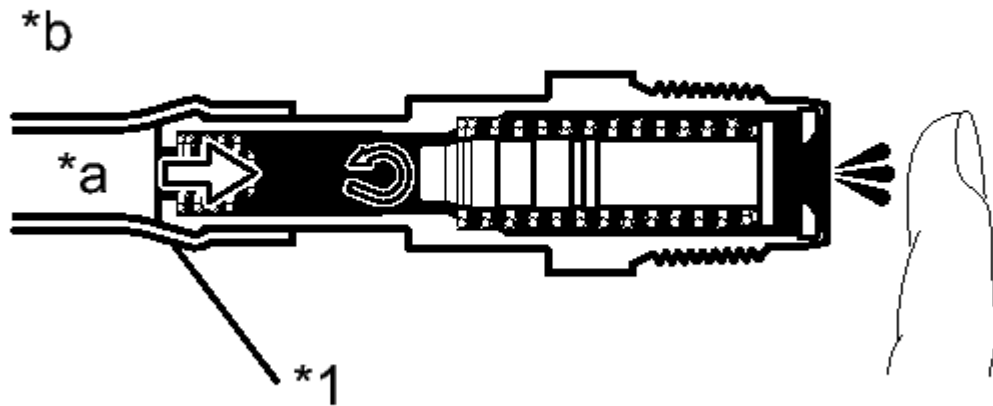
*1	Clean Hose
*a	Air
*b	Cylinder Block Side

WARNING: Do not suck air through the valve.

Petroleum substances inside the valve are hazardous to your health.

If the result is not as specified, replace the ventilation valve sub-assembly.

2. Blow air into the intake manifold side, and check that air passes through with difficulty.



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Fig. 29: Inspecting Ventilation Valve Sub-Assembly Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Clean Hose
*a	Air
*b	Intake Manifold Side

WARNING: Do not suck air through the valve.

Petroleum substances inside the valve are hazardous to your health.

If the result is not as specified, replace the ventilation valve sub-assembly.

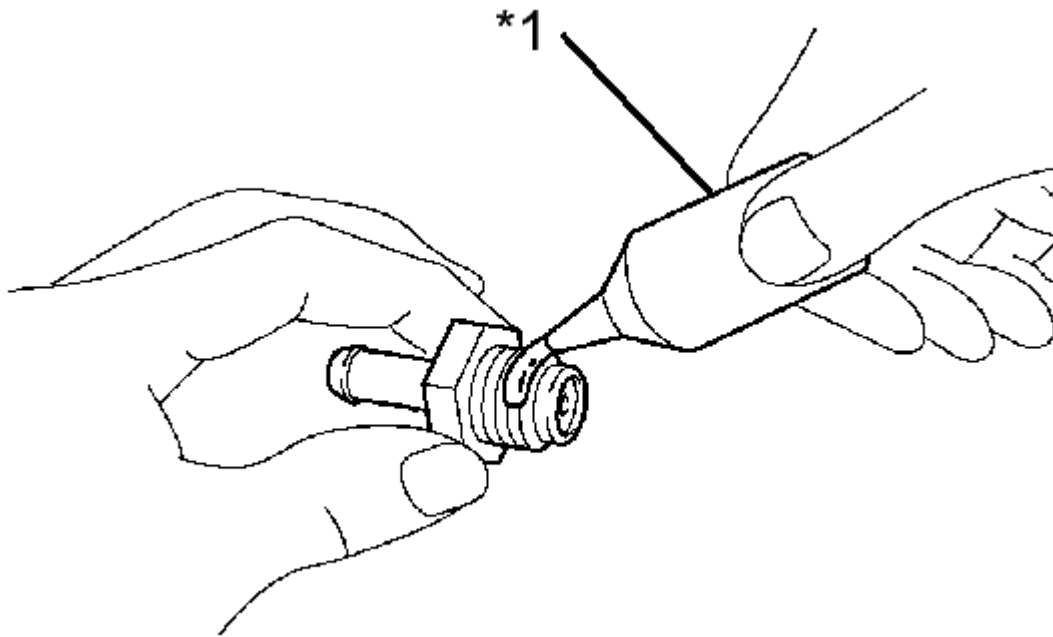
- c. Remove the clean hose from the ventilation valve sub-assembly.

INSTALLATION

INSTALLATION

1. INSTALL VENTILATION VALVE SUB-ASSEMBLY

- a. Apply adhesive to 2 or 3 threads of the ventilation valve sub-assembly.



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Fig. 30: Apply Adhesive To The Ventilation Valve Sub-Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Adhesive 1324
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Adhesive

Toyota genuine adhesive 1324, Three Bond 1324 or equivalent

- b. Using a 19 mm deep socket wrench, install the ventilation valve sub-assembly.

Torque: 27 N*m (275 kgf*cm, 20 ft.*lbf)

- c. Connect the No. 2 ventilation hose to the ventilation valve sub-assembly.

2. INSTALL INTAKE MANIFOLD

Refer to **INSTALLATION**