

EMISSION CONTROL SYSTEM

EC039-05

PURPOSE

The emission control systems are installed to reduce the amount of HC, CO and NOx exhausted from the engine ((3), (4) and (5)), to prevent the atmospheric release of blow-by gas-containing HC (1) and evaporated fuel containing HC being released from the fuel tank (2).

The function of each system is shown in the following table.

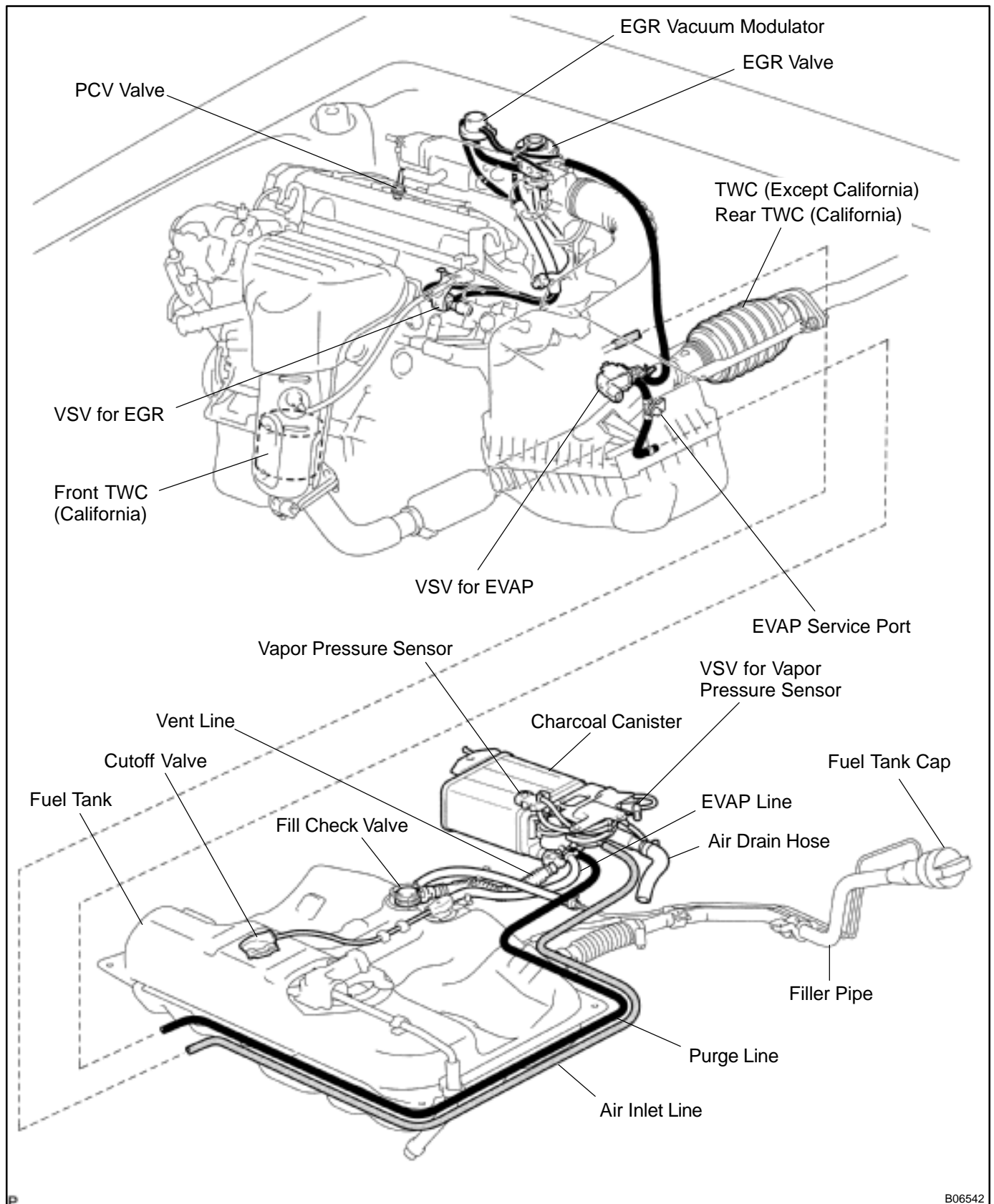
System	Abbreviation	Function
(1) Positive Crankcase Ventilation	PCV	Reduces HC
(2) Evaporative Emission Control	EVAP	Reduces evaporated HC
(3) Exhaust Gas Recirculation	EGR	Reduces NOx
(4) Three-Way Catalytic Converter	TWC	Reduces HC, CO and NOx
(5) Sequential Multiport Fuel Injection*	SFI	Injects a precisely timed, optimum amount of fuel for reduced exhaust emissions

Remark: * For inspection and repair of the SFI system, refer to the SFI section in this manual.

PARTS LAYOUT AND SCHEMATIC DRAWING

LOCATION

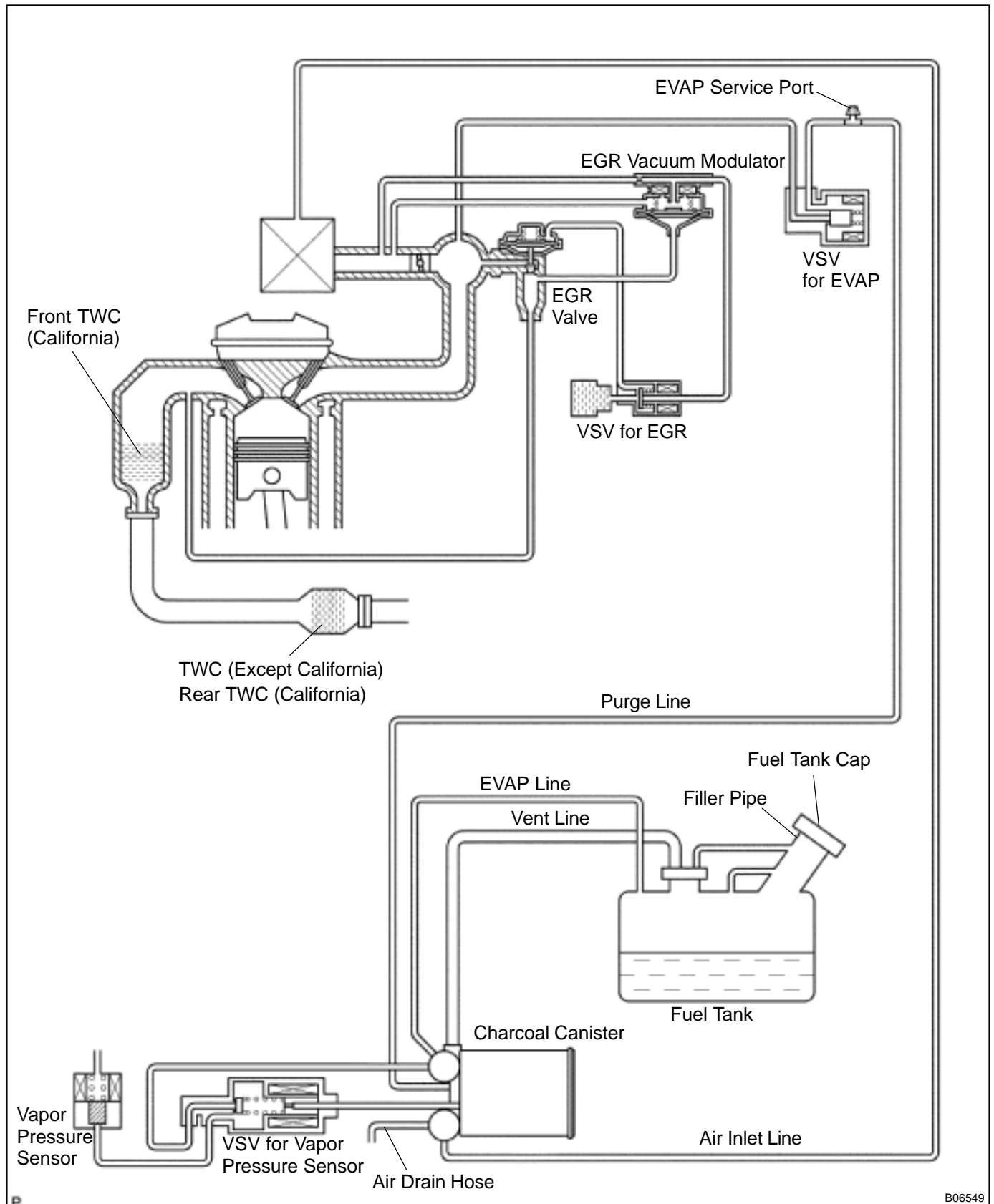
EC03A-03



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DRAWING

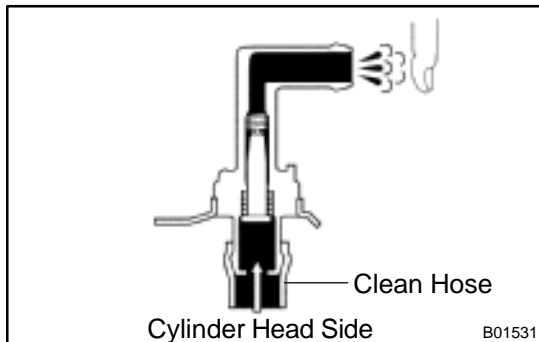


POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM INSPECTION

EC03C-05

1. INSPECT PCV VALVE

- (a) Remove the PCV valve.



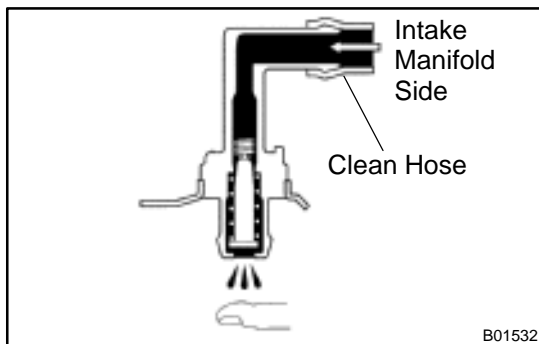
- (b) Install a clean hose to the PCV valve.

- (c) Inspect the PCV valve operation.

- (1) Blow air into the cylinder head side, and check that air passes through easily.

CAUTION:

Do not suck air through the valve. Petroleum substances inside the valve are harmful.

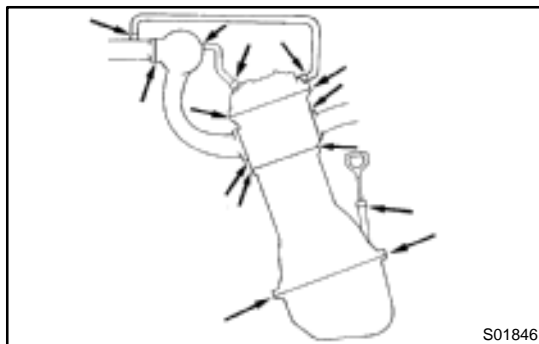


- (2) Blow air into the intake manifold side, and check that air passes through with difficulty.

If operation is not as specified, replace the PCV valve.

- (d) Remove the clean hose from the PCV valve.

- (e) Reinstall the PCV valve.

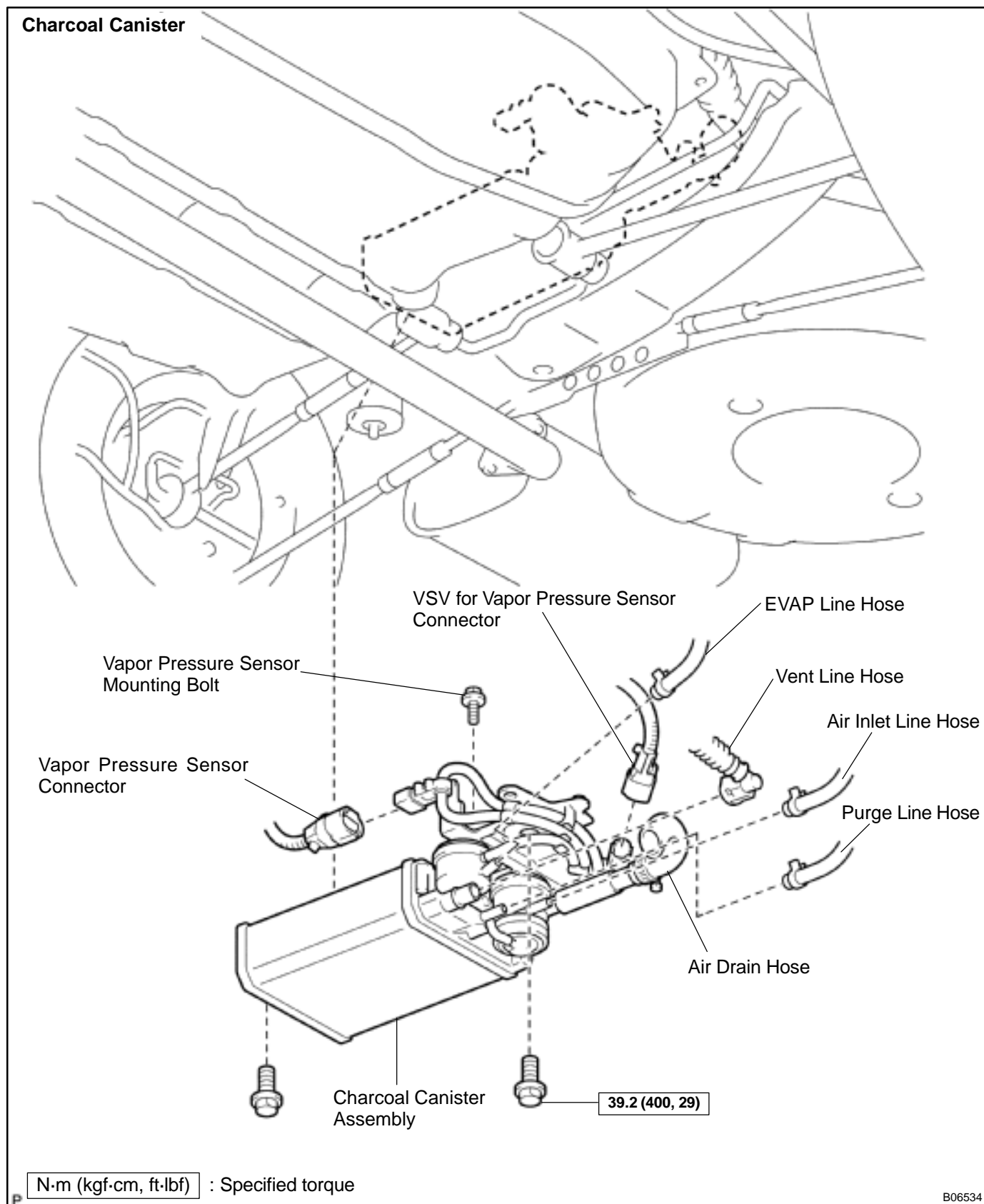


2. INSPECT HOSES, CONNECTIONS AND GASKETS

Visually check for cracks, leaks or damage.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM COMPONENTS

EC03D-05



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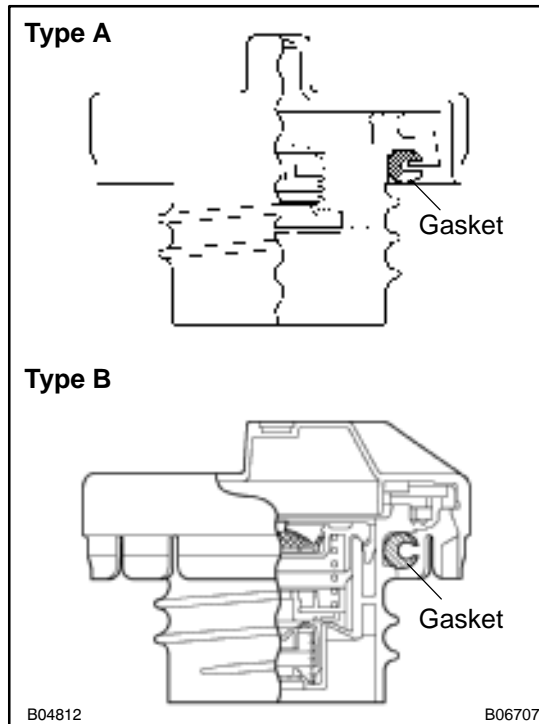
INSPECTION

1. INSPECT LINES AND CONNECTORS

Visually check for loose connections, sharp bends or damage.

2. INSPECT FUEL TANK FILLER PIPE

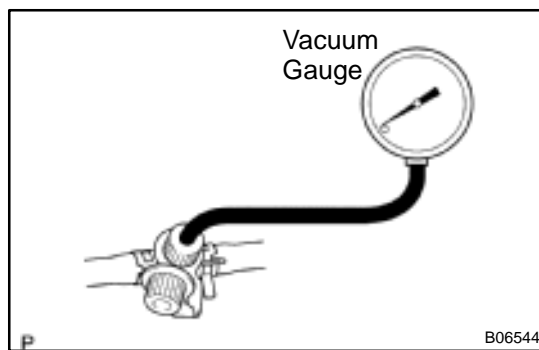
Visually check for deformation, cracks or fuel leakage.



3. INSPECT FUEL TANK CAP

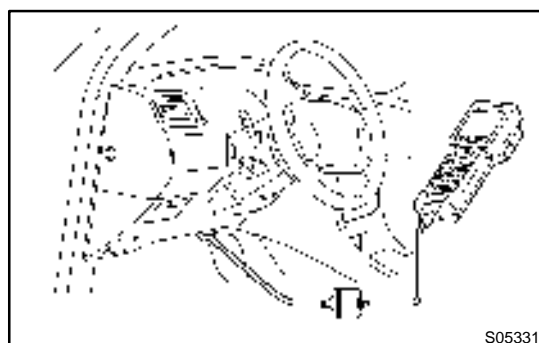
Visually check if the cap and/or gasket are deformed or damaged.

If necessary, repair or replace the cap.

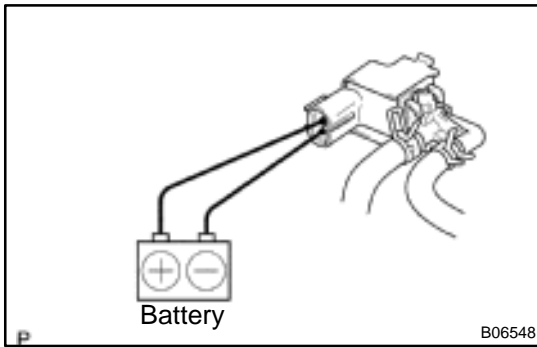


4. INSPECT EVAP SYSTEM LINE

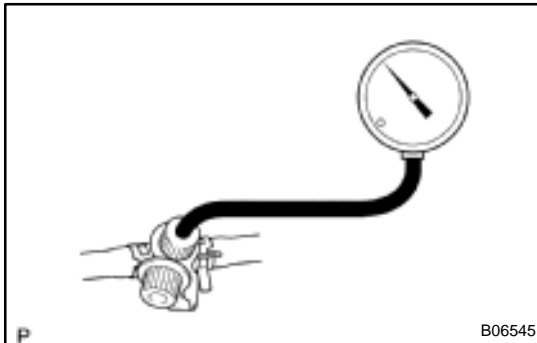
- (a) Warm up the engine and stop the engine.
Allow the engine to warm up to normal operating temperature.
- (b) Install a vacuum gauge (EVAP control system test equipment vacuum gauge) to the EVAP service port on the purge line.



- (c) TOYOTA Hand-Held Tester:
Forced driving of the VSV for the EVAP.
 - (1) Connect a TOYOTA hand-held tester to the DLC3.
 - (2) Start the engine.
 - (3) Push the TOYOTA hand-held tester main switch ON.
 - (4) Use the ACTIVE TEST mode on the TOYOTA hand-held tester to operate the VSV for the EVAP.



- (d) If you have no TOYOTA Hand-Held Tester:
Forced driving of the VSV for the EVAP.
- (1) Disconnect the VSV connector for the EVAP.
 - (2) Connect the positive (+) and negative (–) leads from the battery to the VSV terminals for the EVAP.
 - (3) Start the engine.

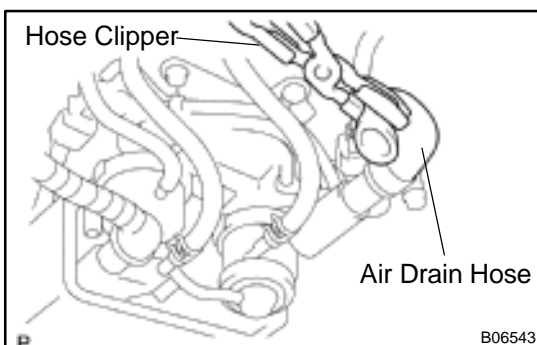


- (e) Check the vacuum at idle.
Vacuum:
Maintain at 0.368 – 19.713 in.Hg (5 – 268 in.Aq) for over 5 seconds

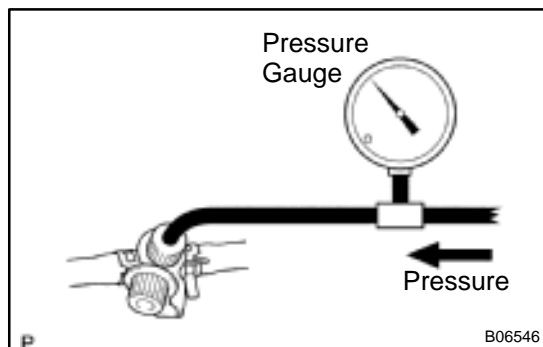
HINT:

If the vacuum does not change, you can conclude that the hose connecting the VSV to the service port has come loose or is blocked, or the VSV is malfunctioning.

- (f) TOYOTA Hand-Held Tester:
Conclude forced driving of the VSV for the EVAP.
- (1) Stop the engine.
 - (2) Disconnect the TOYOTA hand-held tester from the DLC3.
- (g) If you have no TOYOTA Hand-Held Tester:
Conclude forced driving of the VSV for the EVAP.
- (1) Stop the engine.
 - (2) Disconnect the positive (+) and negative (–) leads from the battery from the VSV terminals for the EVAP.
 - (3) Connect the VSV connector for the EVAP.
- (h) Disconnect the vacuum gauge from the EVAP service port on the purge line.
- (i) Connect a pressure gauge to the EVAP service port on the purge line.



- (j) Check the pressure.
- (1) Close off the air drain hose at the marked position of the canister with a hose clipper or similar instrument.



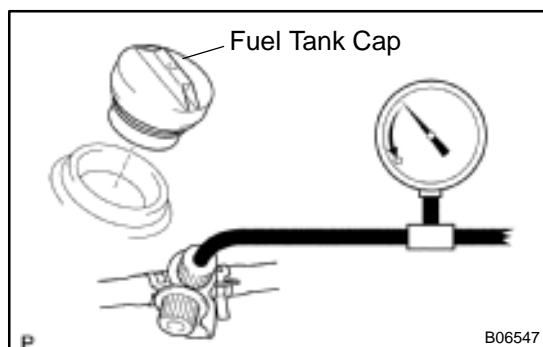
- (2) Add the pressure (13.5 – 15.5 in.Aq) from the EVAP service port.

Pressure:

2 minutes after the pressure is added, the gauge should be over 7.7 – 8.8 in.Aq.

HINT:

If you can't add pressure, you can conclude that the hose connecting the VSV~canister~fuel tank has slipped off or the VSV is open.

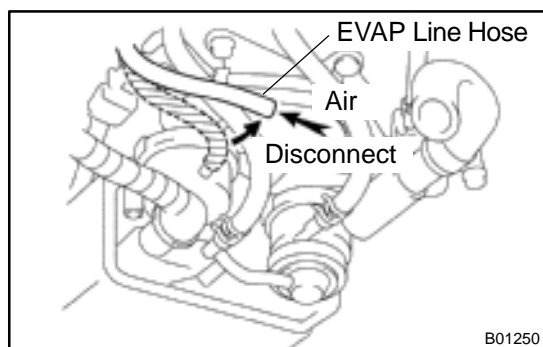


- (3) Check if the pressure decreases when the fuel tank cap is removed while adding pressure.

HINT:

If the pressure does not decrease when the filler cap is removed, then you can conclude that the hose connecting the service port to the fuel tank is blocked, etc.

- (k) Disconnect the pressure gauge from the EVAP service port on the purge line.

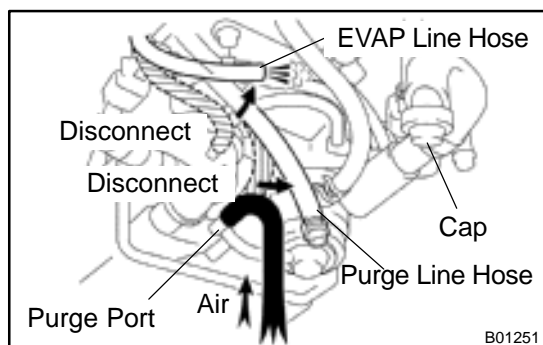


5. CHECK AIRTIGHTNESS IN FUEL TANK AND FILLER PIPE

- Disconnect the EVAP line hose from the charcoal canister side and then pressurize and make the internal pressure in the fuel tank 4 kPa (41 gf/cm², 0.58 psi).
- Check that the internal pressure of the fuel tank can be hold for 1 minute.
- Check the connected portions of each hose and pipe.
- Check the installed parts on the fuel tank.

If there is no abnormality, replace the fuel tank and filler pipe.

- (e) Reconnect the EVAP line hose to the charcoal canister.



6. INSPECT FUEL CUTOFF VALVE AND FILL CHECK VALVE

- Disconnect the purge line hose and EVAP line hose from the charcoal canister.
- Plug the cap to the air drain hose.
- Pressurize 4 kPa (41 gf/cm², 0.58 psi) to the purge port and check that there is ventilation through the EVAP line hose.

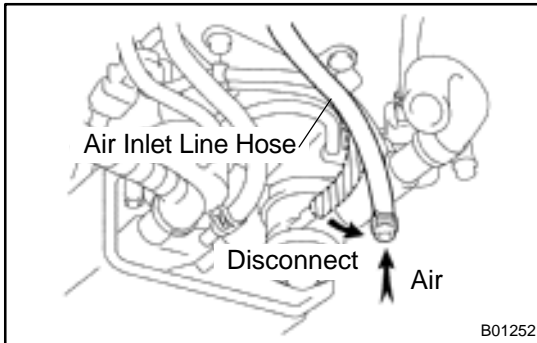
HINT:

In the condition that the fuel tank is full, as the float valve of the fuel tank is closed and has no ventilation, it is necessary to check the fuel amount (volume).

- (d) Check if there is any stuck in the vent line hose and EVAP line hose.

If there is no stuck in hoses, replace the fuel cutoff valve and fill check valve.

- (e) Reconnect the purge line hose and EVAP line hose to the charcoal canister.

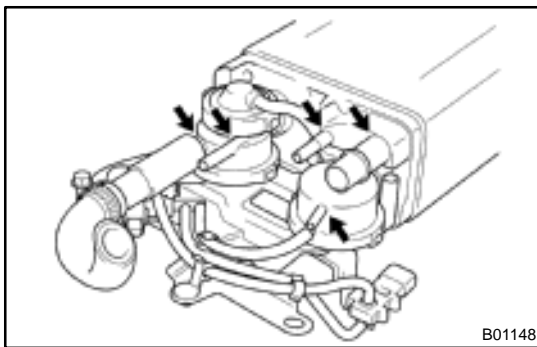
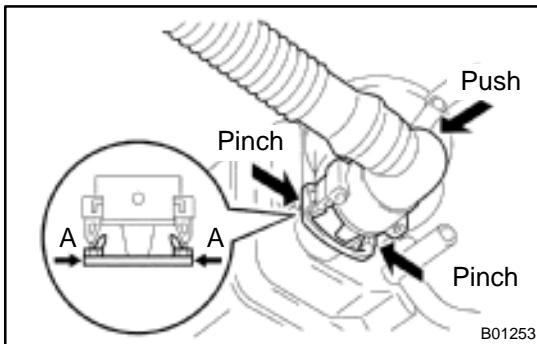


7. CHECK AIR INLET LINE

- (a) Disconnect the air inlet line hose from the charcoal canister.
- (b) Check that there is ventilation in the air inlet line.
- (c) Reconnect the air inlet line hose to the charcoal canister.

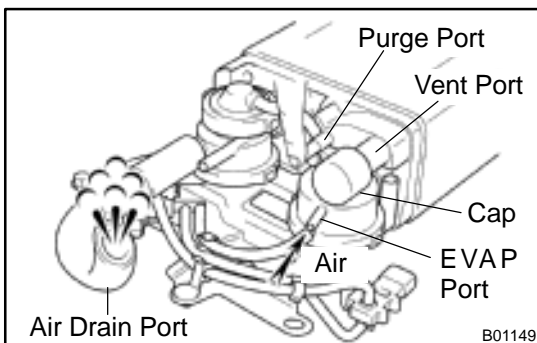
8. REMOVE CHARCOAL CANISTER ASSEMBLY

- (a) Disconnect the VSV connector.
- (b) Disconnect the vapor pressure sensor connector.
- (c) Disconnect the purge line hose, EVAP line hose and air inlet line hose from the charcoal canister.
- (d) Disconnect the vent line hose from the charcoal canister.
 - (1) Push the connector deep inside.
 - (2) Pinch portion A.
 - (3) Pull out the connector.
- (e) Remove the 2 charcoal canister mounting bolts.
- (f) Remove the vapor pressure sensor mounting bolt.
- (g) Remove the charcoal canister assembly.

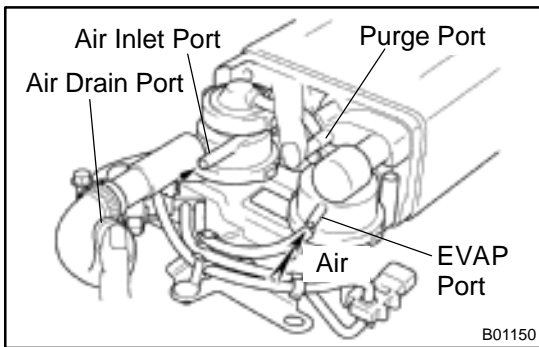


9. INSPECT CHARCOAL CANISTER

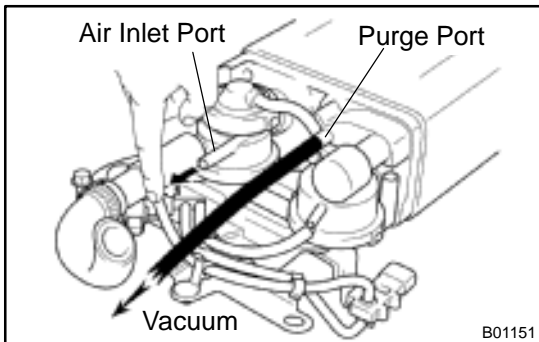
- (a) Visually check the charcoal canister for cracks or damage.



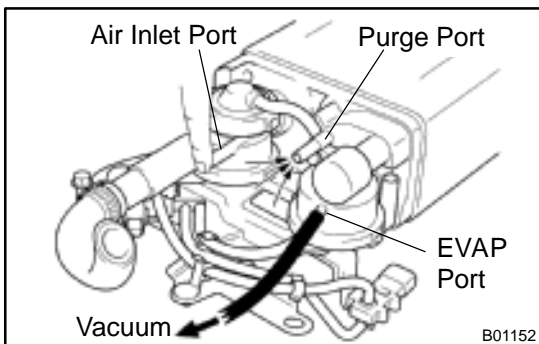
- (b) Inspect the charcoal canister operation.
 - (1) Plug the vent port with a cap.
 - (2) While holding the purge port closed, blow air (1.76 kPa, 18 gf/cm², 0.26 psi) into the EVAP port and check that air flows from the air drain port.



- (3) While holding the purge port and the air drain port closed, blow air (1.76 kPa, 18 gf/cm², 0.26 psi) into the EVAP port and check that air does not flow from the air inlet port.



- (4) Apply vacuum (3.43 kPa, 25.7 mmHg, 1.01 in.Hg) to the purge port, check that the vacuum does not decrease when the air inlet port is closed, and check that the vacuum decreases when the air inlet port is released.



- (5) While holding the air inlet port closed, apply vacuum (3.43 kPa, 25.7 mmHg, 1.01 in.Hg) to the EVAP port and check that air flows into the purge port.

If operation is not as specified, replace the charcoal canister.

- (6) Remove the cap from the vent port.

10. INSPECT VSV FOR EVAP (See page SF-45)

11. INSPECT VSV FOR VAPOR PRESSURE SENSOR (See page SF-47)

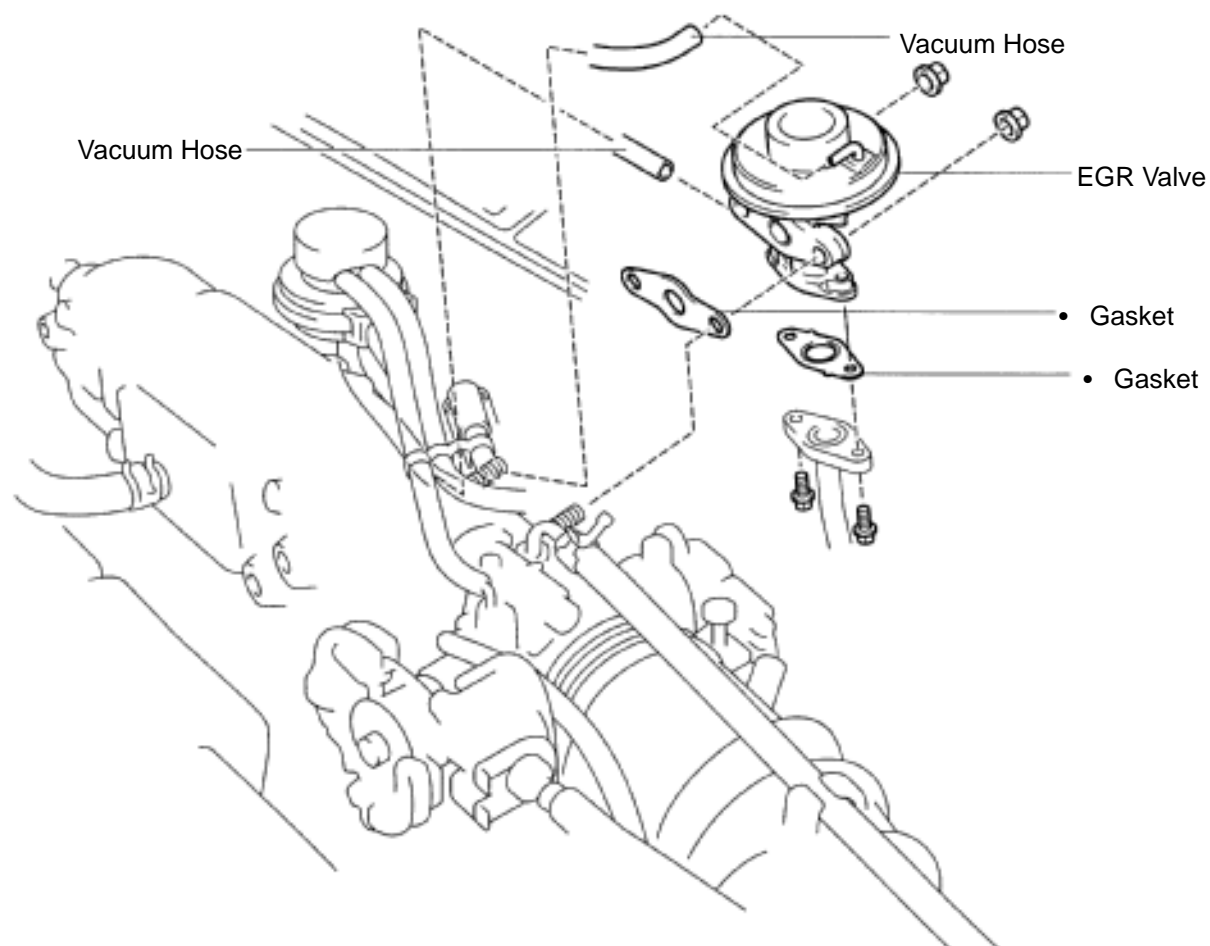
12. INSPECT VAPOR PRESSURE SENSOR (See page SF-55)

13. REINSTALL CHARCOAL CANISTER ASSEMBLY

EXHAUST GAS RECIRCULATION (EGR) SYSTEM COMPONENTS

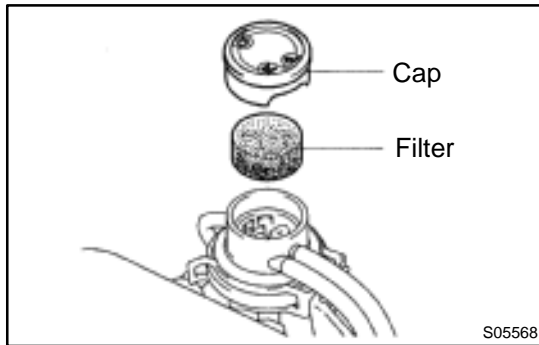
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EGR Valve



- Non-reusable part

S05556



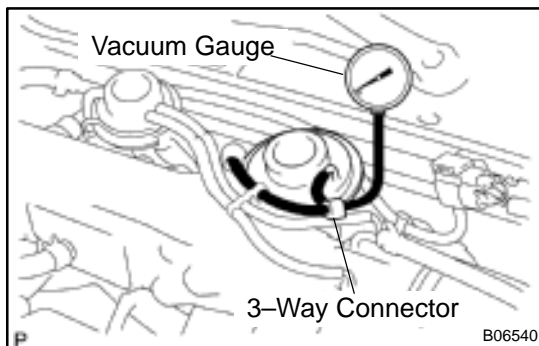
INSPECTION

1. INSPECT EGR SYSTEM

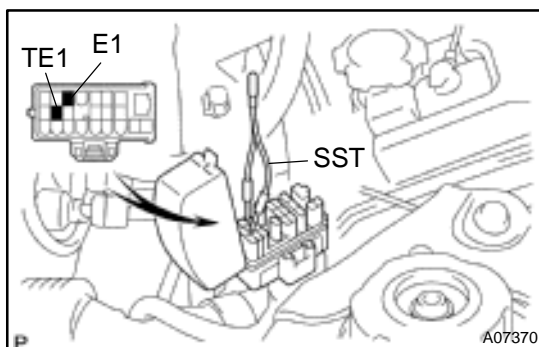
- (a) Inspect and clean the filter in the EGR vacuum modulator.
 - (1) Remove the cap and filter.
 - (2) Check the filter for contamination or damage.
 - (3) Using compressed air, clean the filter.
 - (4) Reinstall the filter and cap.

HINT:

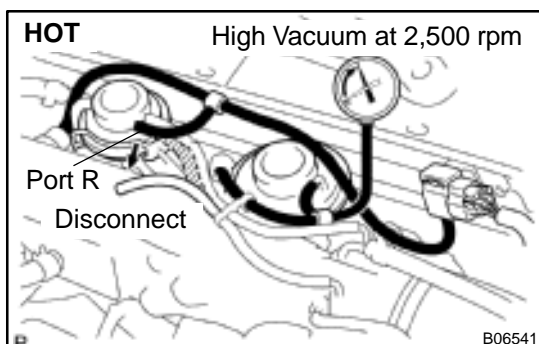
Install the filter with the coarser surface facing the atmospheric side (outward).



- (b) Using a 3-way connector, connect a vacuum gauge to the hose between the EGR valve and VSV.
- (c) Inspect seating of the EGR valve.
Start the engine and check that the engine starts and runs at idle.



- (d) Using SST, connect terminals TE1 and E1 of the DLC1.
SST 09843-18020
- (e) Inspect the VSV operation with the cold engine.
 - (1) The engine coolant temperature should be below 55°C (131°F).
 - (2) Check that the vacuum gauge indicates zero at 2,500 rpm.

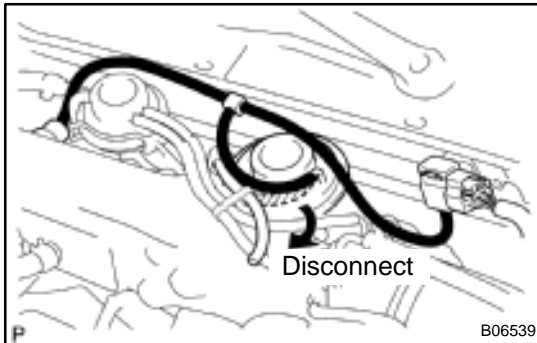


- (f) Inspect the operation of the VSV and EGR vacuum modulator with the hot engine.
 - (1) Warm up the engine to above 60°C (140°F).
 - (2) Check that the vacuum gauge indicates low vacuum at 2,500 rpm.
 - (3) Disconnect the vacuum hose port R of the EGR vacuum modulator and connect port R directly to the intake manifold with another hose.
 - (4) Check that the vacuum gauge indicates high vacuum at 2,500 rpm.

HINT:

As a large amount of exhaust gas enters, the engine will misfire slightly.

- (g) Remove the vacuum gauge, and reconnect the vacuum hoses to the proper locations.



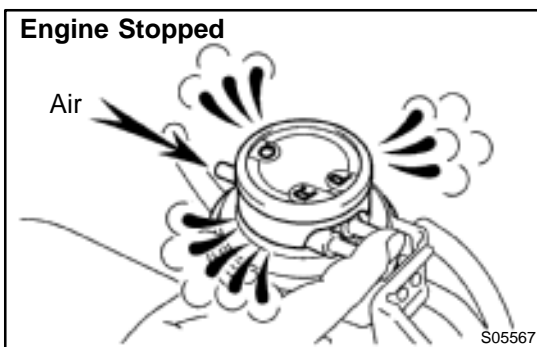
- (h) Inspect the EGR valve.

- (1) Apply vacuum directly to the EGR valve with the engine idling.
- (2) Check that the engine runs rough or dies.
- (3) Reconnect the vacuum hoses to the proper locations.

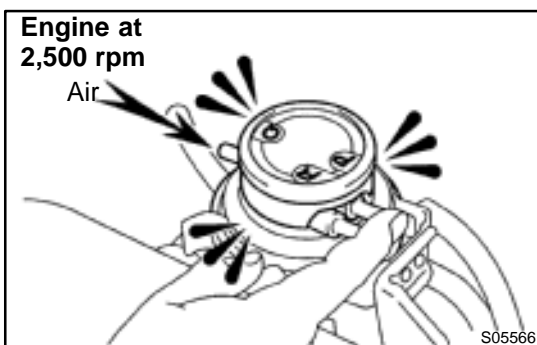
HINT:

As exhaust gas is increasingly recirculated, the engine will start to misfire.

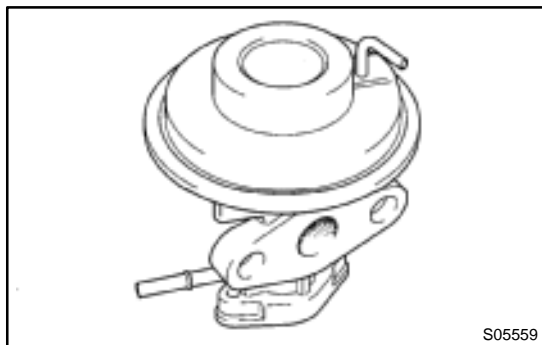
- (i) Remove the SST from the DLC1.
SST 09843-18020

**2. INSPECT EGR VACUUM MODULATOR**

- (a) Disconnect the vacuum hoses from ports P, Q and R of the EGR vacuum modulator.
- (b) Block ports P and R with your finger.
- (c) Blow air into port Q, and check that the air passes through to the air filter side freely.



- (d) Start the engine, and maintain speed at 2,500 rpm.
- (e) Repeat the above test. Check that there is a strong resistance to air flow.
- (f) Reconnect the vacuum hoses to the proper locations.

**3. INSPECT EGR VALVE**

- (a) Remove the EGR valve.
 - (1) Disconnect the 2 vacuum hoses from the EGR valve.
 - (2) Remove the 2 bolts, 2 nuts, EGR valve and 2 gaskets.
- (b) Check the EGR valve for sticking and heavy carbon deposits.

If a problem is found, replace the valve.

- (c) Reinstall the EGR valve.
 - (1) Temporarily 2 new gasket and the EGR valve with the 2 nuts and 2 bolts.
 - (2) Tighten the nuts.
Torque: 13.3 N·m (136 kgf-cm, 10 ft-lbf)
 - (3) Tighten the bolts.
Torque: 10 N·m (102 kgf-cm, 7 ft-lbf)
 - (4) Connect the 2 vacuum hoses to the EGR valve.

4. INSPECT VSV FOR EGR (See page SF-43)

THREE-WAY CATALYTIC CONVERTER (TWC) SYSTEM ON-VEHICLE INSPECTION

EC03H-03

1. INSPECT EXHAUST PIPE ASSEMBLY

- (a) Check the connections for looseness or damage.
- (b) Check the clamps for weakness, cracks or damage.

2. INSPECT REAR TWC

Check for dents or damage.

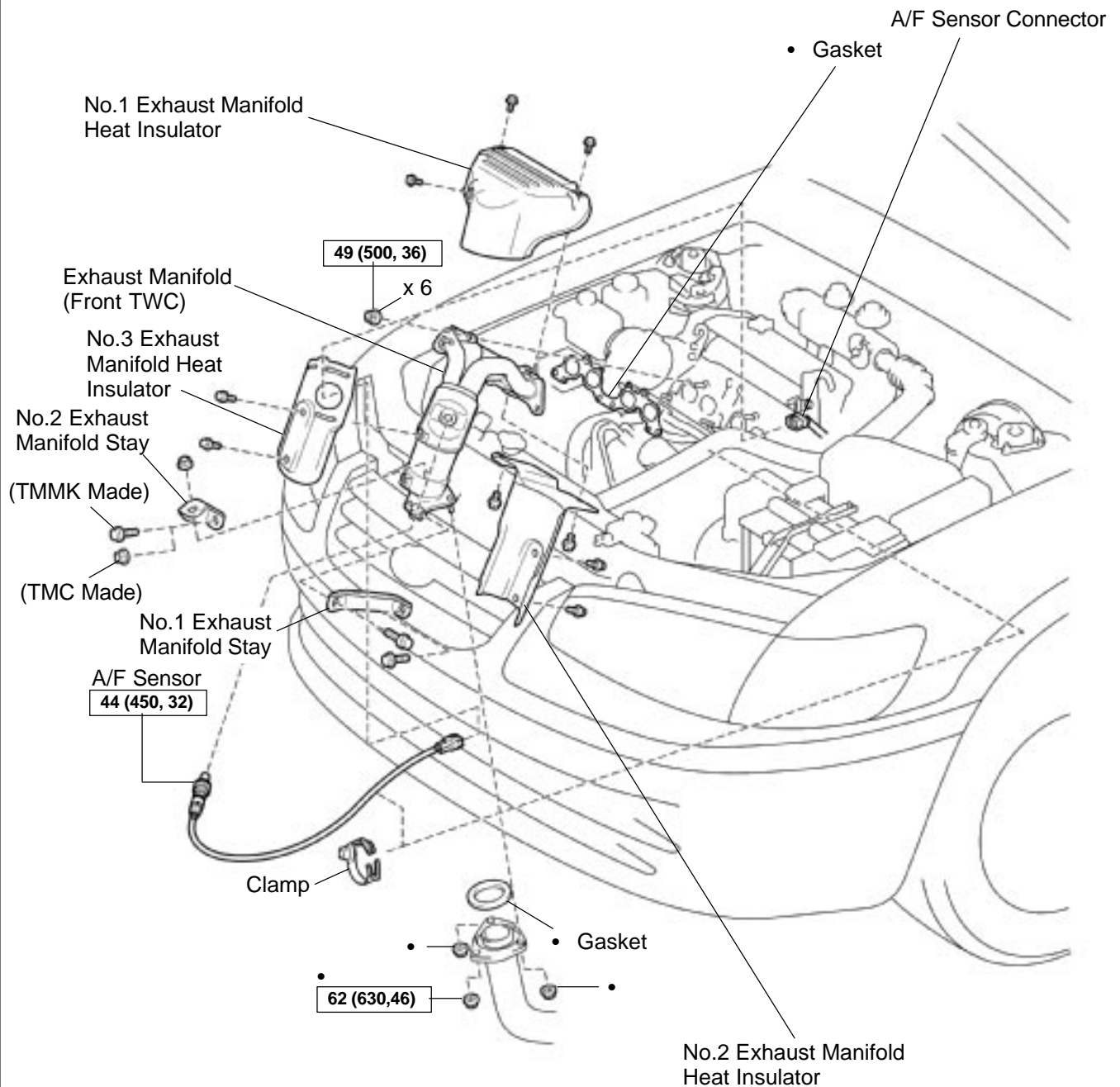
If any part of the protector is damaged or dented to the extent that it contacts the TWC, repair or replace it.

3. INSPECT REAR TWC HEAT INSULATOR

- (a) Check the heat insulator for damage.
- (b) Check for adequate clearance between the catalytic converter and heat insulator.

COMPONENTS

Front TWC (California)



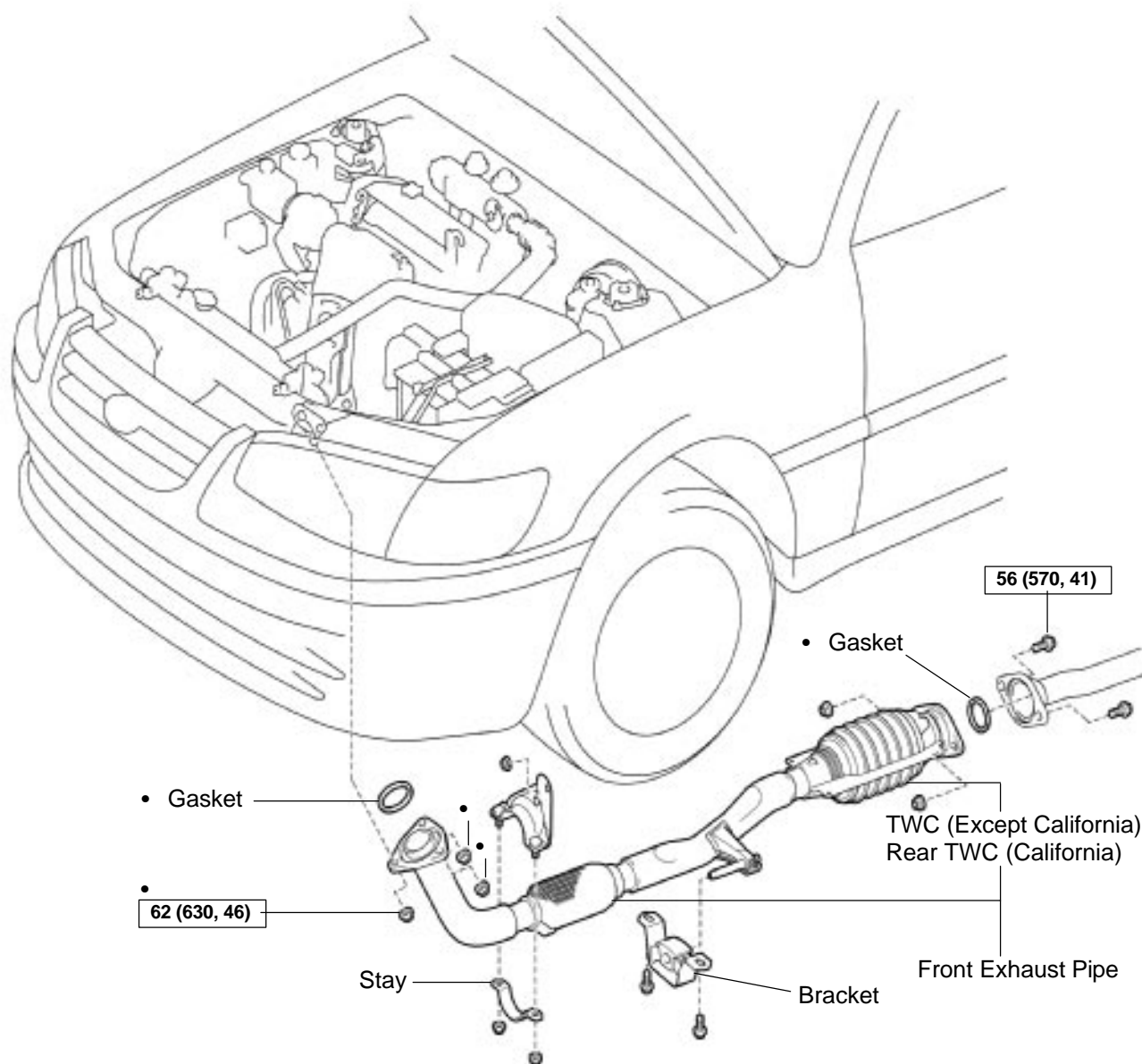
N·m (kgf·cm, ft·lbf) : Specified torque

- Non-reusable part

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**TWC (Except California)
Rear TWC (California)**



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

• Non-reusable part

B06538

EMISSION CONTROL SYSTEM

EC01U-03

PURPOSE

The emission control systems are installed to reduce the amount of CO, HC and NOx exhausted from the engine ((3), (4), (5) and (6)), to prevent the atmospheric release of blow-by gas-containing HC (1) and evaporated fuel containing HC being released from the fuel tank (2).

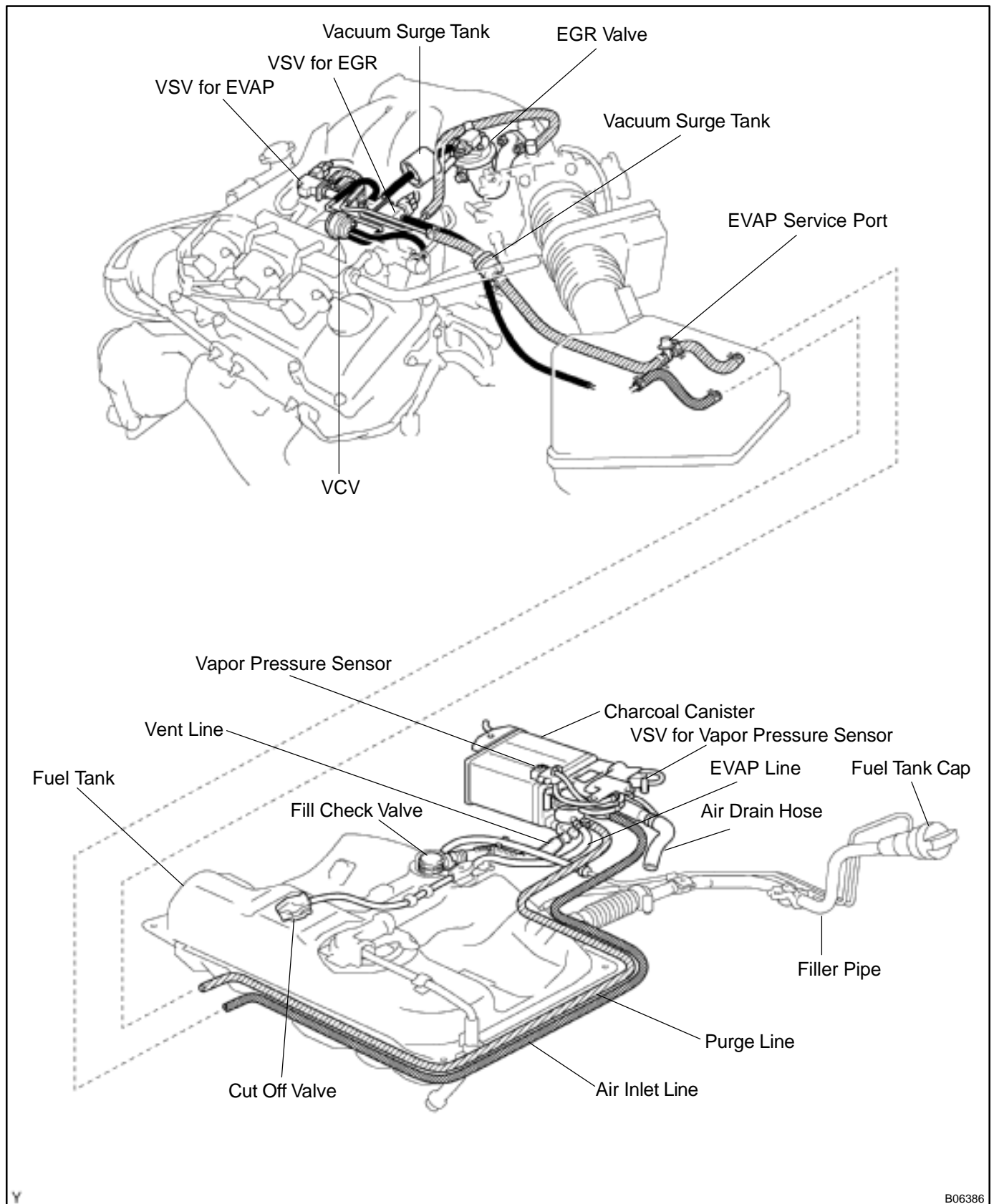
The function of each system is shown in these table.

System	Abbreviation	Function
(1) Positive Crankcase Ventilation	PCV	Reduces HC
(2) Evaporative Emission Control	EVAP	Reduces evaporated HC
(3) Exhaust Gas Recirculation	EGR	Reduces NOx
(4) Warm Up Three-Way Catalytic Converter	WU-TWC	Reduces HC, CO and NOx
(5) Three-Way Catalytic Converter	TWC	Reduces HC, CO and NOx
(6) Sequential Multiport Fuel Injection*	SFI	Injects a precisely timed, optimum amount of fuel for reduced exhaust emissions

Remark: * For inspection and repair of the SFI system, refer to the SF section of this manual.

PARTS LAYOUT AND SCHEMATIC DRAWING LOCATION

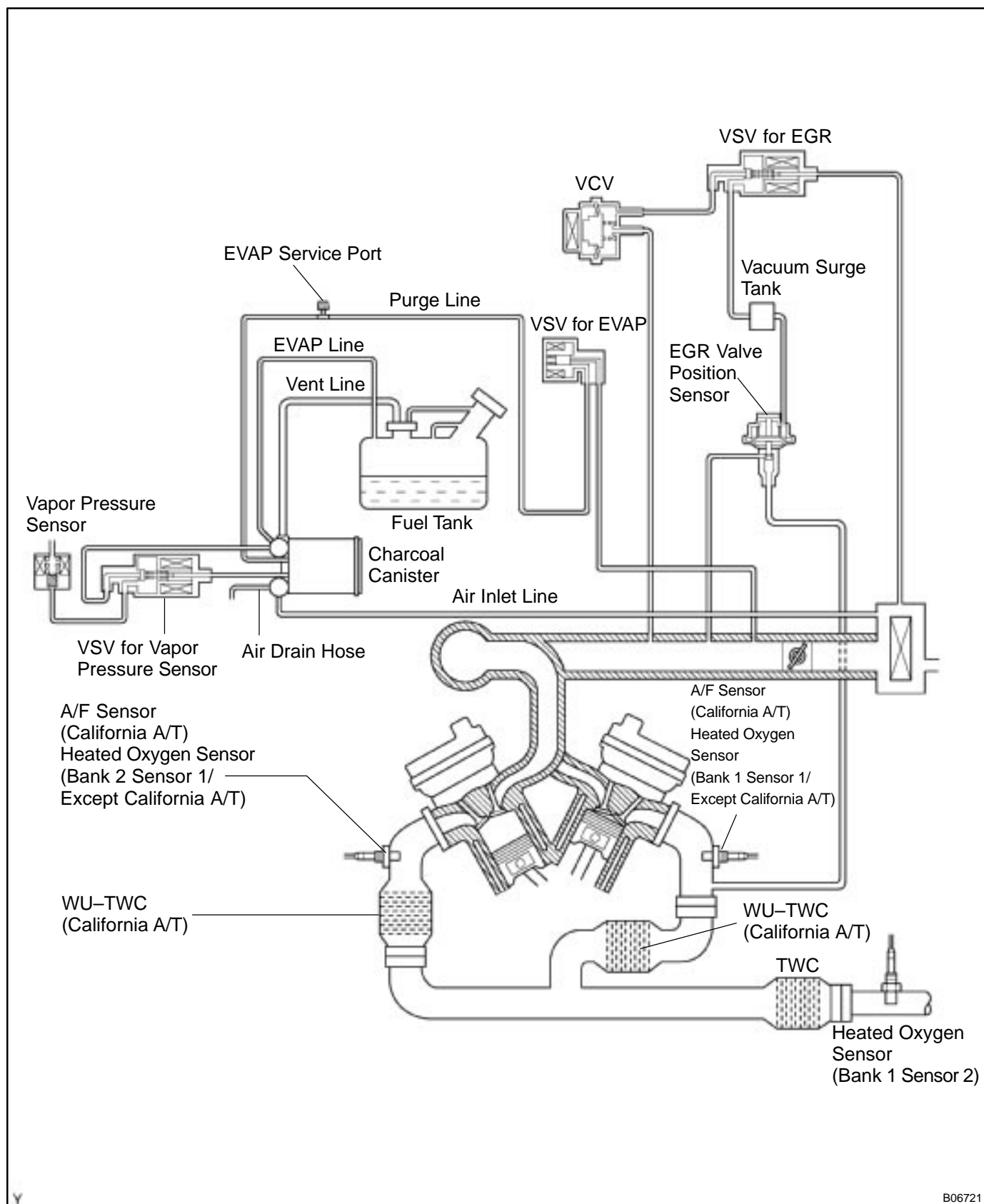
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DRAWING



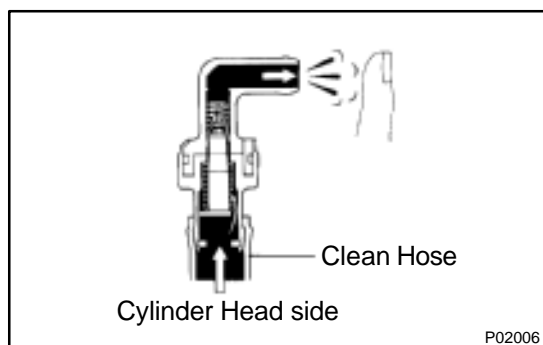
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POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM INSPECTION

EC01X-03

1. INSPECT PCV VALVE

- (a) Remove the PCV valve.



- (b) Install clean hose to the PCV valve.

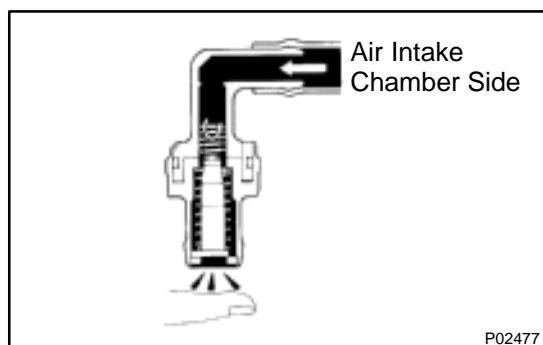
- (c) Inspect the PCV valve operation.

- (1) Blow air into the cylinder head side, and check that air passes through easily.

CAUTION:

Do not suck air through the valve.

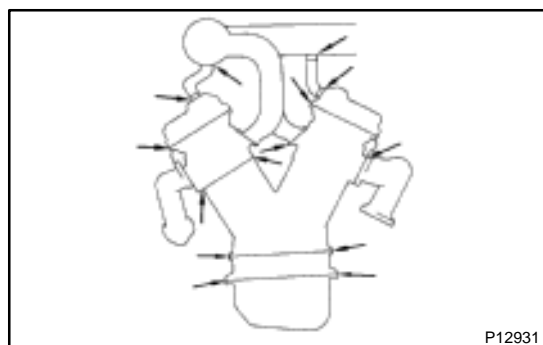
Petroleum substances inside the valve are harmful.



- (2) Blow air into the air intake chamber side, and check that air passes through with difficulty.

If operation is not as specified, replace the PCV valve.

- (d) Remove clean hose from the PCV valve.
(e) Reinstall the PCV valve.

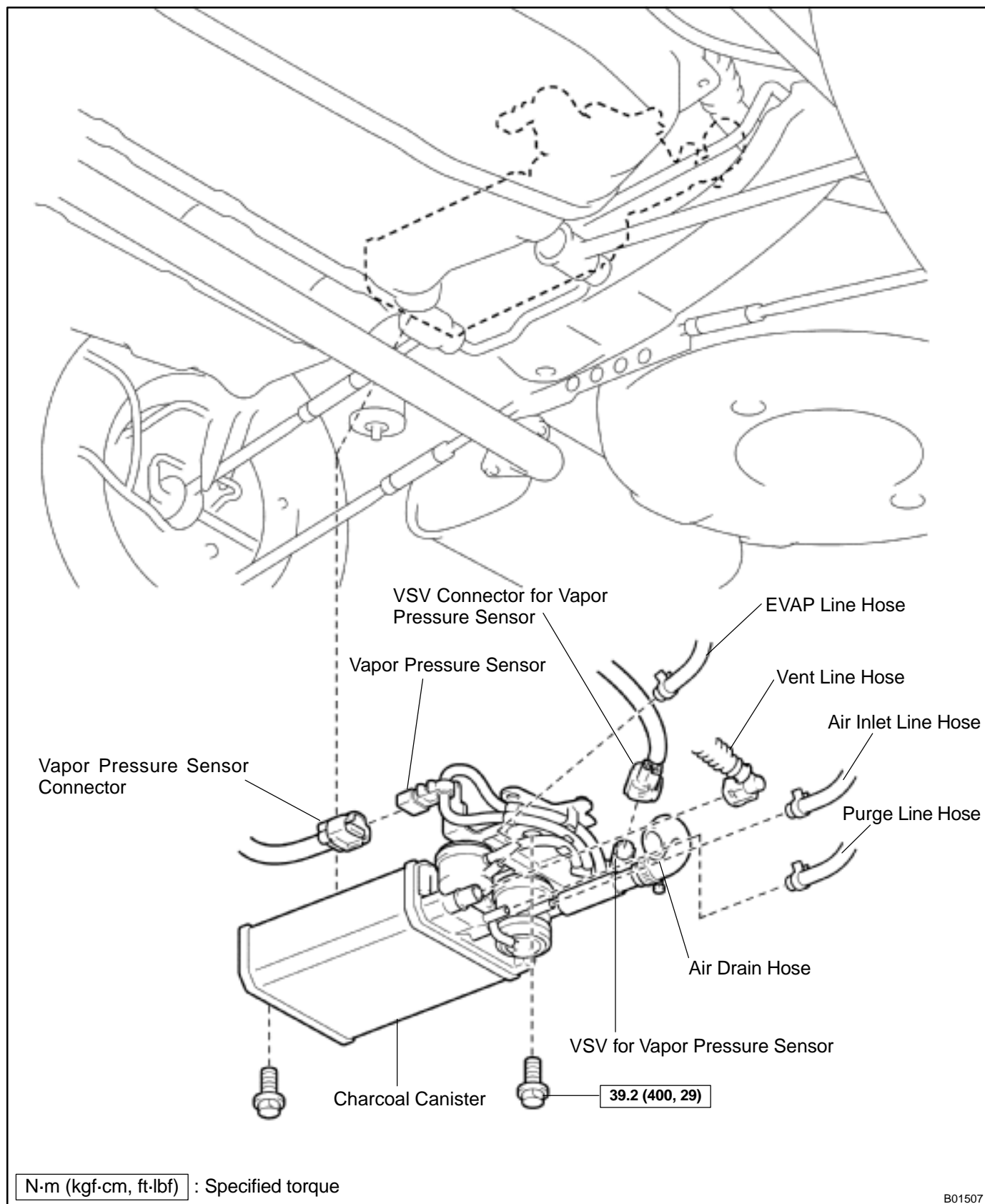


2. INSPECT HOSES, CONNECTIONS AND GASKETS

Visually check for cracks, leaks or damage.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM COMPONENTS

EC0AU-01



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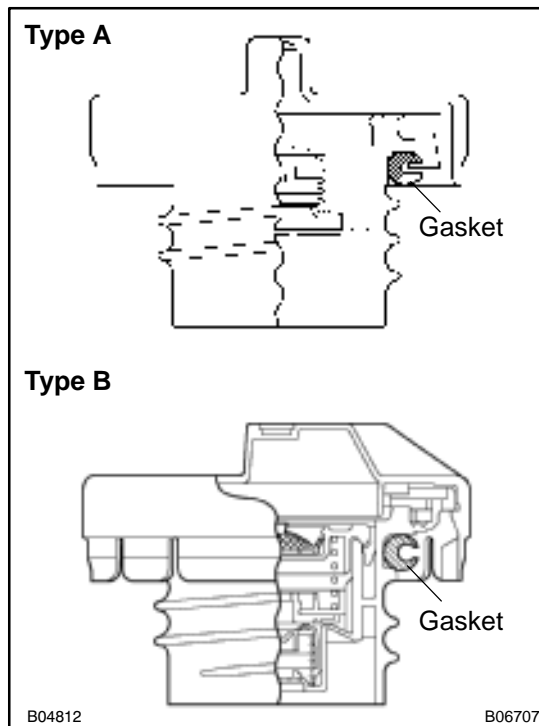
INSPECTION

1. INSPECT LINES AND CONNECTORS

Visually check for loose connections, sharp bends or damage.

2. INSPECT FUEL TANK FILLER PIPE

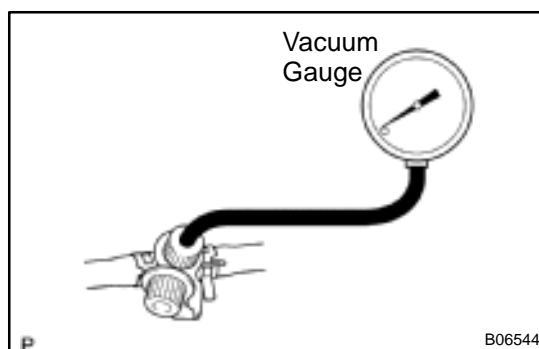
Visually check for deformation, cracks or fuel leakage.



3. INSPECT FUEL TANK CAP

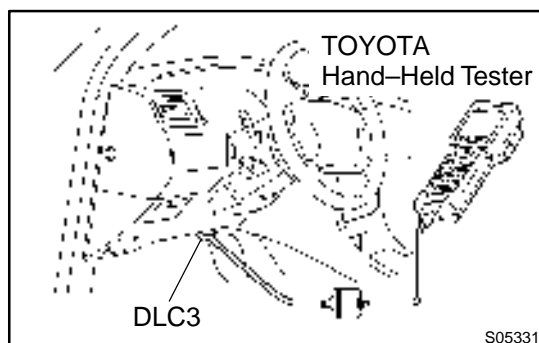
Visually check if the cap and/or gasket are deformed or damaged.

If necessary, repair or replace the cap.

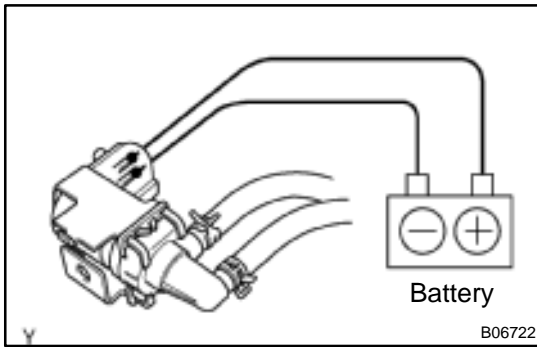


4. INSPECT EVAP SYSTEM LINE

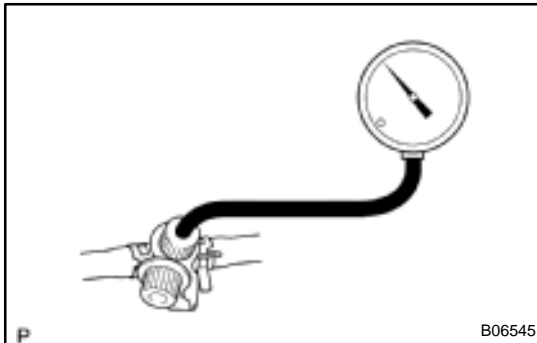
- (a) Warm up the engine and stop the engine.
Allow the engine to warm up to normal operating temperature.
- (b) Install a vacuum gauge (EVAP control system test equipment vacuum gauge) to the EVAP service port on the purge line.



- (c) TOYOTA Hand-Held Tester:
Forced driving of the VSV for the EVAP.
 - (1) Connect a TOYOTA hand-held tester to the DLC3.
 - (2) Start the engine.
 - (3) Push the TOYOTA hand-held tester main switch ON.
 - (4) Use the ACTIVE TEST mode on the TOYOTA hand-held tester to operate the VSV for the EVAP.



- (d) If you have no TOYOTA Hand-Held Tester:
Forced driving of the VSV for the EVAP.
- (1) Disconnect the VSV connector for the EVAP.
 - (2) Connect the positive (+) and negative (–) leads from the battery to the VSV terminals for the EVAP.
 - (3) Start the engine.

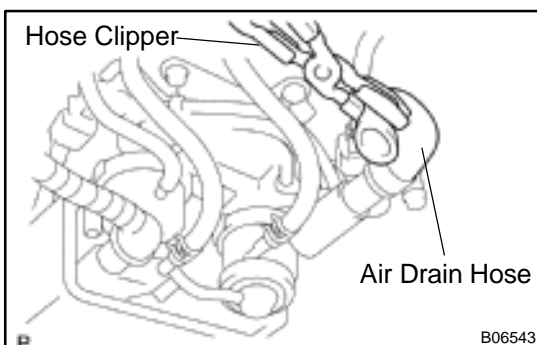


- (e) Check the vacuum at idle.
Vacuum:
Maintain at 0.368 – 19.713 in.Hg (5 – 268 in.Aq) for over 5 seconds

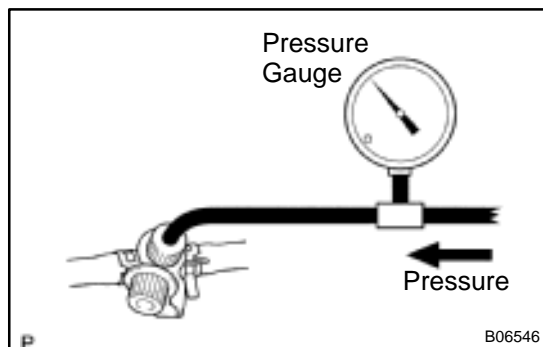
HINT:

If the vacuum does not change, you can conclude that the hose connecting the VSV to the service port has come loose or is blocked, or the VSV is malfunctioning.

- (f) TOYOTA Hand-Held Tester:
Conclude forced driving of the VSV for the EVAP.
- (1) Stop the engine.
 - (2) Disconnect the TOYOTA hand-held tester from the DLC3.
- (g) If you have no TOYOTA Hand-Held Tester:
Conclude forced driving of the VSV for the EVAP.
- (1) Stop the engine.
 - (2) Disconnect the positive (+) and negative (–) leads from the battery from the VSV terminals for the EVAP.
 - (3) Connect the VSV connector for the EVAP.
- (h) Disconnect the vacuum gauge from the EVAP service port on the purge line.
- (i) Connect a pressure gauge to the EVAP service port on the purge line.



- (j) Check the pressure.
- (1) Close off the air drain hose at the marked position of the canister with a hose clipper or similar instrument.



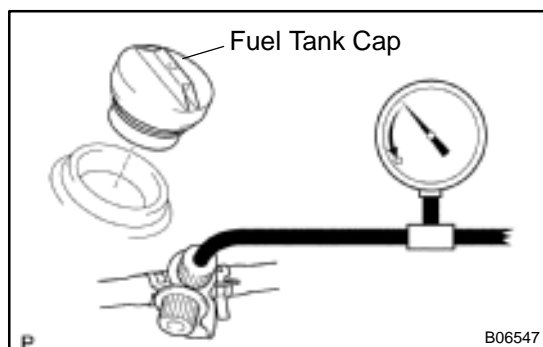
- (2) Add the pressure (13.5 – 15.5 in.Aq) from the EVAP service port.

Pressure:

2 minutes after the pressure is added, the gauge should be over 7.7 – 8.8 in.Aq.

HINT:

If you can't add pressure, you can conclude that the hose connecting the VSV~canister~fuel tank has slipped off or the VSV is open.

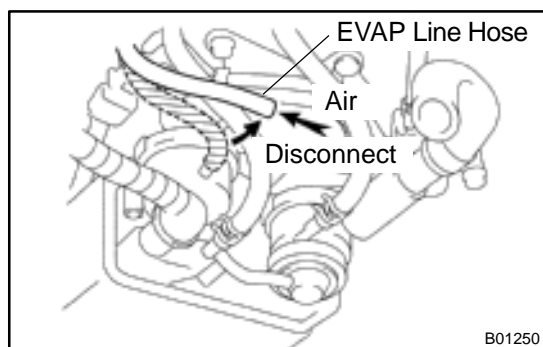


- (3) Check if the pressure decreases when the fuel tank cap is removed while adding pressure.

HINT:

If the pressure does not decrease when the filler cap is removed, then you can conclude that the hose connecting the service port to the fuel tank is blocked, etc.

- (k) Disconnect the pressure gauge from the EVAP service port on the purge line.

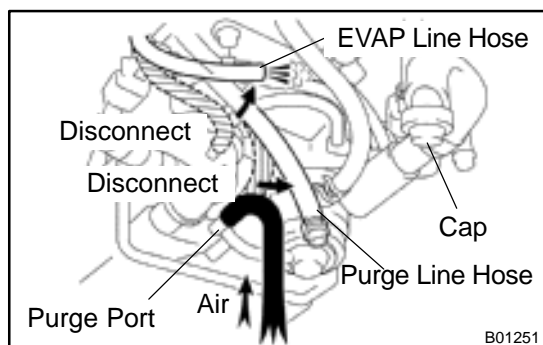


5. CHECK AIRTIGHTNESS IN FUEL TANK AND FILLER PIPE

- Disconnect the EVAP line hose from the charcoal canister side and then pressurize and make the internal pressure in the fuel tank 4 kPa (41 gf/cm², 0.58 psi).
- Check that the internal pressure of the fuel tank can be hold for 1 minute.
- Check the connected portions of each hose and pipe.
- Check the installed parts on the fuel tank.

If there is no abnormality, replace the fuel tank and filler pipe.

- Reconnect the EVAP line hose to the charcoal canister.



6. INSPECT FUEL CUTOFF VALVE AND FILL CHECK VALVE

- Disconnect the purge line hose and EVAP line hose from the charcoal canister.
- Plug the cap to the air drain hose.
- Pressurize 4 kPa (41 gf/cm², 0.58 psi) to the purge port and check that there is ventilation through the EVAP line hose.

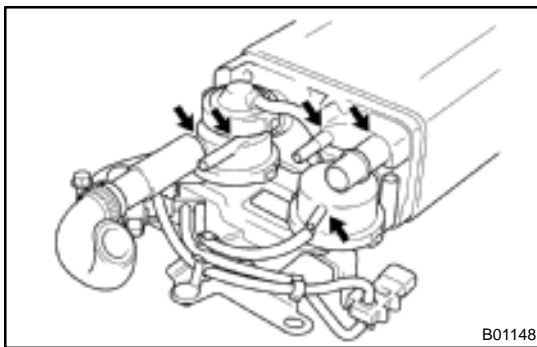
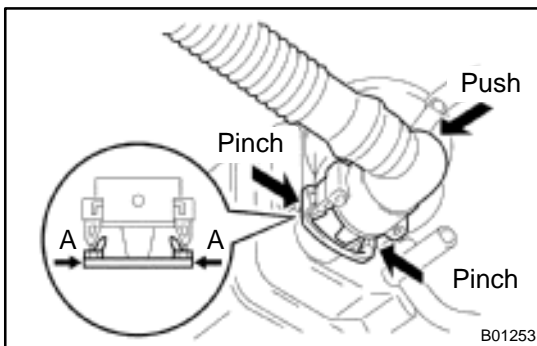
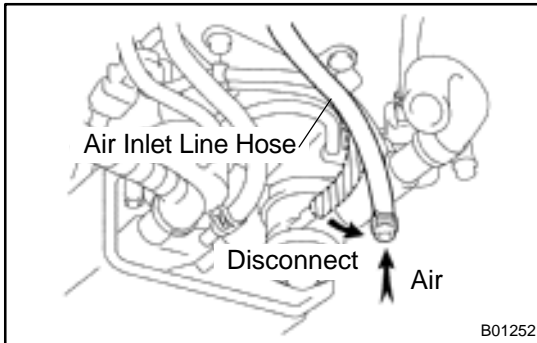
HINT:

In the condition that the fuel tank is full, as the float valve of the fuel tank is closed and has no ventilation, it is necessary to check the fuel amount (volume).

- (d) Check if there is any stuck in the vent line hose and EVAP line hose.

If there is no stuck in hoses, replace the fuel cutoff valve and fill check valve.

- (e) Reconnect the purge line hose and EVAP line hose to the charcoal canister.

**7. CHECK AIR INLET LINE**

- (a) Disconnect the air inlet line hose from the charcoal canister.

- (b) Check that there is ventilation in the air inlet line.

- (c) Reconnect the air inlet line hose to the charcoal canister.

8. REMOVE CHARCOAL CANISTER ASSEMBLY

- (a) Disconnect the VSV connector.

- (b) Disconnect the vapor pressure sensor connector.

- (c) Disconnect the purge line hose, EVAP line hose and air inlet line hose from the charcoal canister.

- (d) Disconnect the vent line hose from the charcoal canister.

- (1) Push the connector deep inside.

- (2) Pinch portion A.

- (3) Pull out the connector.

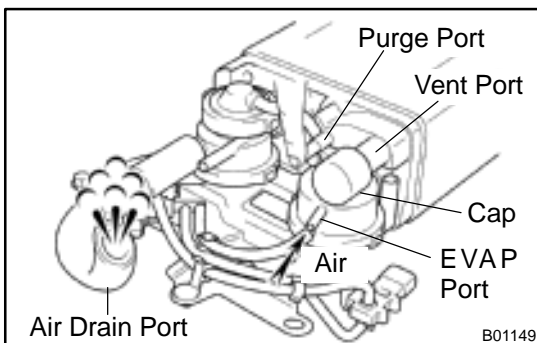
- (e) Remove the 2 charcoal canister mounting bolts.

- (f) Remove the vapor pressure sensor mounting bolt.

- (g) Remove the charcoal canister assembly.

9. INSPECT CHARCOAL CANISTER

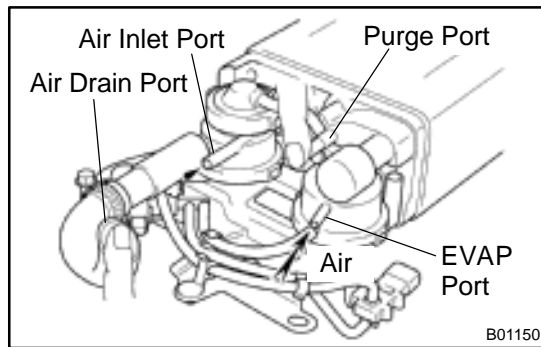
- (a) Visually check the charcoal canister for cracks or damage.



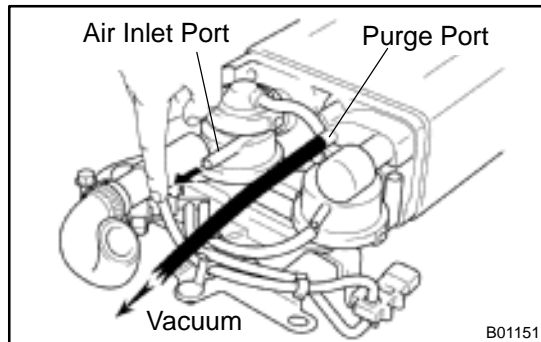
- (b) Inspect the charcoal canister operation.

- (1) Plug the vent port with a cap.

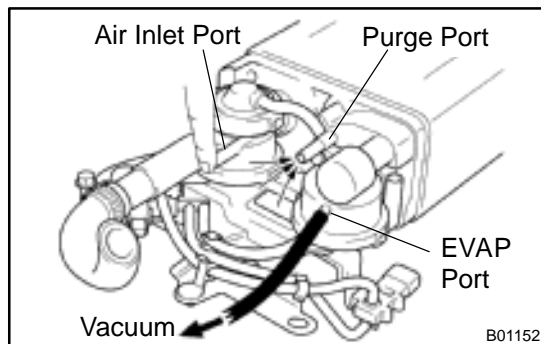
- (2) While holding the purge port closed, blow air (1.76 kPa, 18 gf/cm², 0.26 psi) into the EVAP port and check that air flows from the air drain port.



- (3) While holding the purge port and the air drain port closed, blow air (1.76 kPa, 18 gf/cm², 0.26 psi) into the EVAP port and check that air does not flow from the air inlet port.



- (4) Apply vacuum (3.43 kPa, 25.7 mmHg, 1.01 in.Hg) to the purge port, check that the vacuum does not decrease when the air inlet port is closed, and check that the vacuum decreases when the air inlet port is released.



- (5) While holding the air inlet port closed, apply vacuum (3.43 kPa, 25.7 mmHg, 1.01 in.Hg) to the EVAP port and check that air flows into the purge port.

If operation is not as specified, replace the charcoal canister.

- (6) Remove the cap from the vent port.

10. INSPECT VSV FOR EVAP (See page SF-58)

11. INSPECT VSV FOR VAPOR PRESSURE SENSOR (See page SF-62)

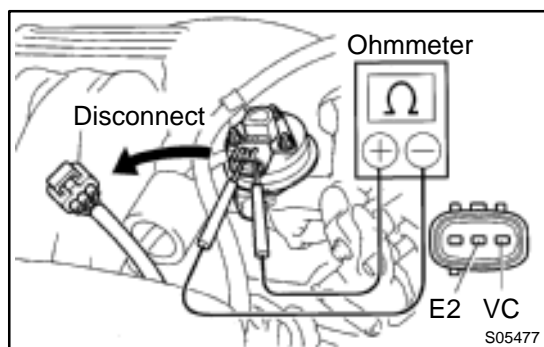
12. INSPECT VAPOR PRESSURE SENSOR (See page SF-65)

13. REINSTALL CHARCOAL CANISTER ASSEMBLY

EXHAUST GAS RECIRCULATION (EGR) SYSTEM INSPECTION

EC0AW-01

1. INSPECT EGR SYSTEM (See page DI-358)



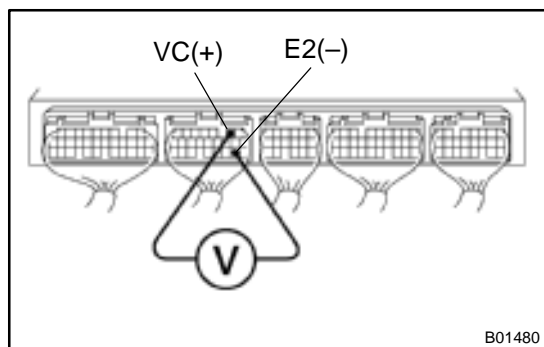
2. INSPECT EGR VALVE POSITION SENSOR

- (a) Inspect the resistance of the EGR valve position sensor.
- (1) Disconnect the EGR valve position sensor connector.
 - (2) Using an ohmmeter, measure the resistance between the terminals VC and E2.

Resistance: 1.5 – 4.3 kΩ

If the resistance is not as specified, replace the EGR valve position sensor.

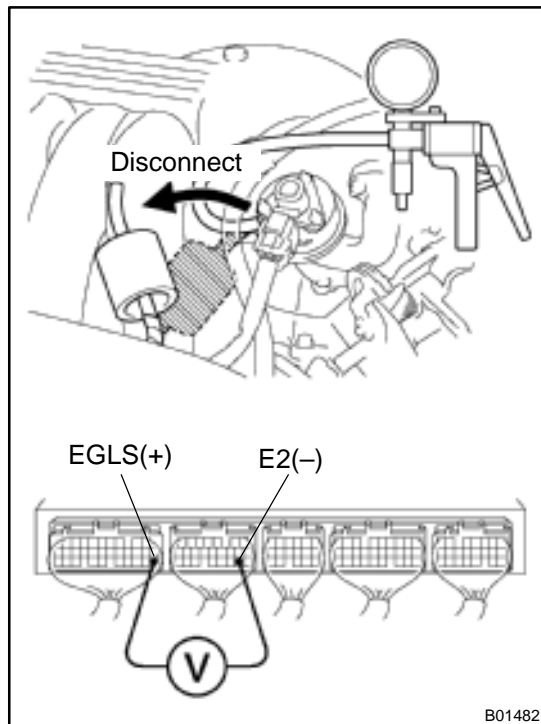
- (3) Reconnect the EGR valve position sensor connector.



- (b) Inspect the power output voltage of the EGR valve position sensor.

- (1) Disconnect the vacuum hose from the EGR valve.
- (2) Turn the ignition switch ON.
- (3) Connect a voltmeter to terminals VC and E2 of the ECM, and measure the power source voltage.

Voltage: 4.5 – 5.5 V



- (4) Connect a voltmeter to terminals EGLS and E2 of the ECM, and measure the power outlet voltage under the following conditions:

- Using a MITYVAC (Hand-Held Vacuum Pump), apply a vacuum (17.3 kPa, 130 mmHg, 5.1 in.Hg) to the EGR valve.

Voltage: 3.2 – 5.1 V

- Release the vacuum from the EGR valve.

Voltage: 0.4 – 1.6 V

If the voltage is not as specified, replace the EGR valve position sensor.

- (5) Reconnect the vacuum hose to the EGR valve.

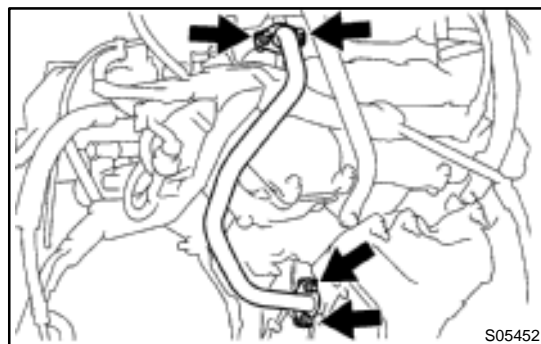
3. REMOVE EGR POSITION SENSOR

Remove the 3 nuts and EGR valve position sensor from the EGR valve.

Torque: 2 N·m (20 kgf·cm, 17 in.-lbf)

4. REINSTALL EGR POSITION SENSOR

Installation is the reverse order of removal.



5. REMOVE EGR VALVE

- (a) Remove the EGR pipe.

- Remove the 4 nuts, EGR pipe and 2 gaskets.

HINT:

At the time of installation, please refer to the following items.
Install 2 new gaskets.

Torque: 12 N·m (120 kgf·cm, 9 ft-lbf)

- (b) Disconnect the EGR gas temperature sensor connector and clamp.

- (c) Remove the EGR valve.

- Disconnect the EVAP hose from the EGR valve hook.
- Disconnect the vacuum hose from the EGR valve.
- Disconnect the EGR valve position sensor connector.

- (d) Remove the 3 nuts, EGR valve and gasket.

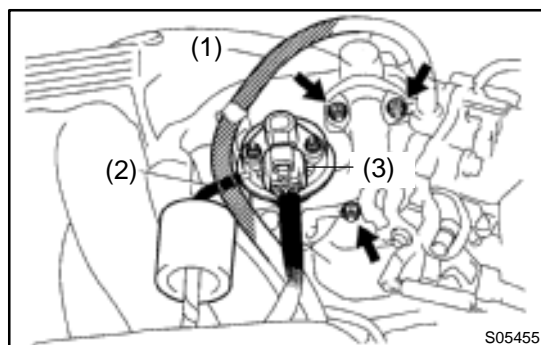
HINT:

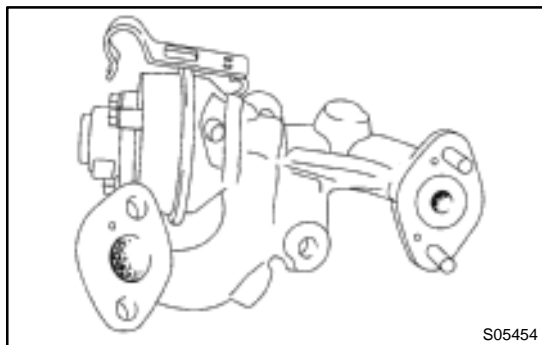
At the time of installation, please refer to the following items.
Install a new gasket.

Torque: 12 N·m (120 kgf·cm, 9 ft-lbf)

- (e) Remove the EGR gas temperature sensor.

Torque: 20 N·m (200 kgf·cm, 14 ft-lbf)

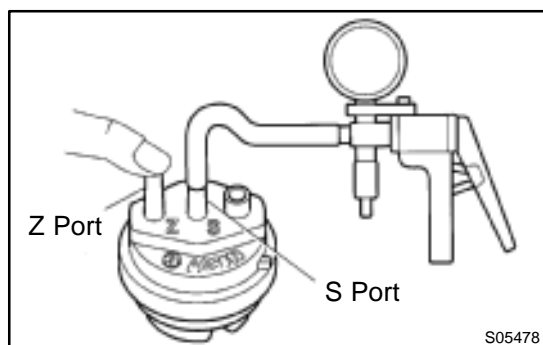


**6. INSPECT EGR VALVE**

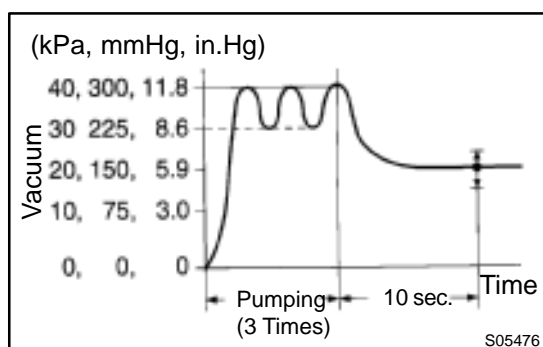
Check for sticking and heavy carbon deposits.
If a problem is found, replace the EGR valve.

7. REINSTALL EGR VALVE

Installation is the reverse order of removal.

8. REMOVE VCV**9. INSPECT VCV**

- (a) Connect the MITYVAC (Hand-Held Vacuum Pump) to port S of the VCV.
- (b) Plug port Z completely with fingers.



- (c) Perform pumping 3 times and apply vacuum as shown in the illustration.
- (d) Stop the performing pumping and check the indicated value of the MITYVAC after about 10 seconds.

Standard value:

15 – 24 kPa (112 – 180 mmHg, 4.4 – 7.1 in.Hg)

If the indicated value is not as specified, replace the VCV.

10. REINSTALL VCV**11. INSPECT VSV FOR EGR (See page SF-56)**

WARM UP THREE-WAY CATALYTIC CONVERTER (WU-TWC) SYSTEM (California A/T)

EC020-04

ON-VEHICLE INSPECTION

1. INSPECT EXHAUST PIPE ASSEMBLY

- (a) Check the connections for looseness or damage.
- (b) Check the clamps for weakness, cracks or damage.

2. INSPECT WU-TWC

Check for dents or damage.

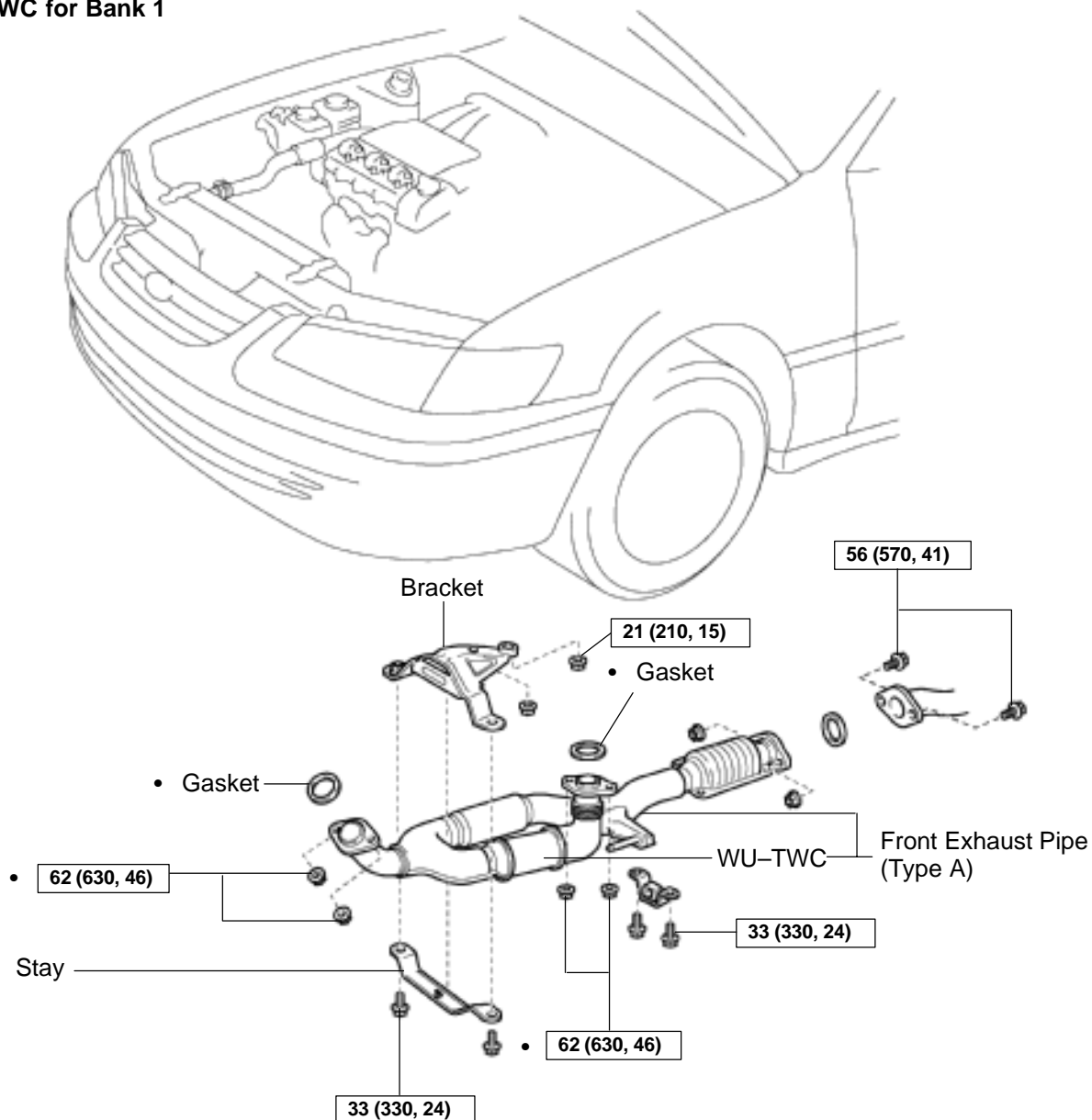
If any part of the protector is damaged or dented to the extent that it contacts the WU-TWC, repair or replace it.

3. INSPECT WU-TWC HEAT INSULATOR

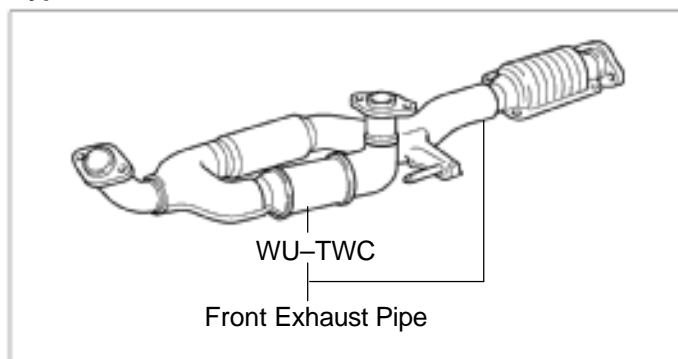
- (a) Check the heat insulator for damage.
- (b) Check for adequate clearance between the catalytic converter and heat insulator.

COMPONENTS

WU-TWC for Bank 1



Type B

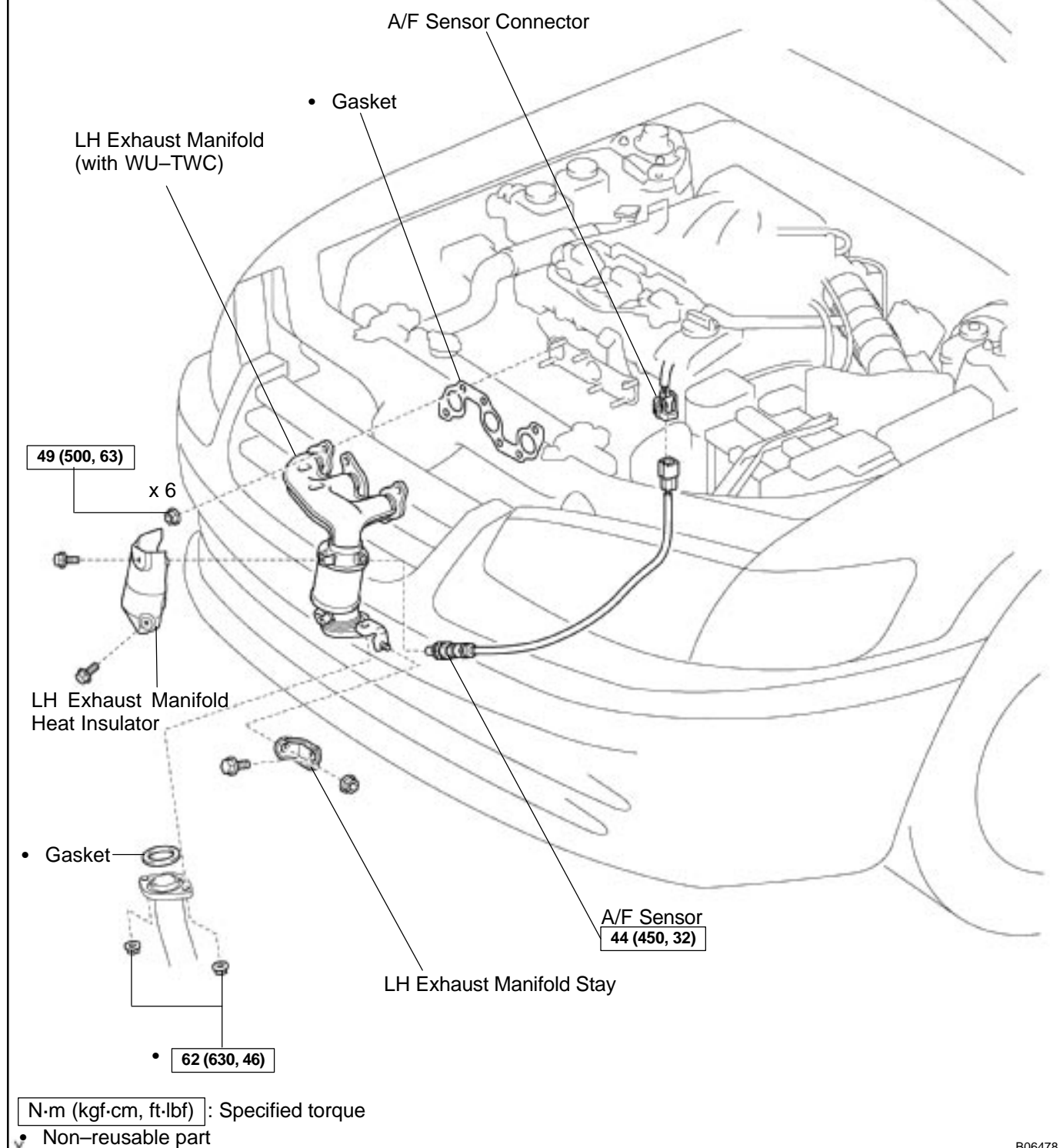


N·m (kgf·cm, ft·lbf) : Specified torque

• Non-reusable part

B06395

WU-TWC for Bank 2



B06478

THREE-WAY CATALYTIC CONVERTER (TWC) SYSTEM ON-VEHICLE INSPECTION

EC022-04

1. INSPECT EXHAUST PIPE ASSEMBLY

- (a) Check the connections for looseness or damage.
- (b) Check the clamps for weakness, cracks or damage.

2. INSPECT TWC

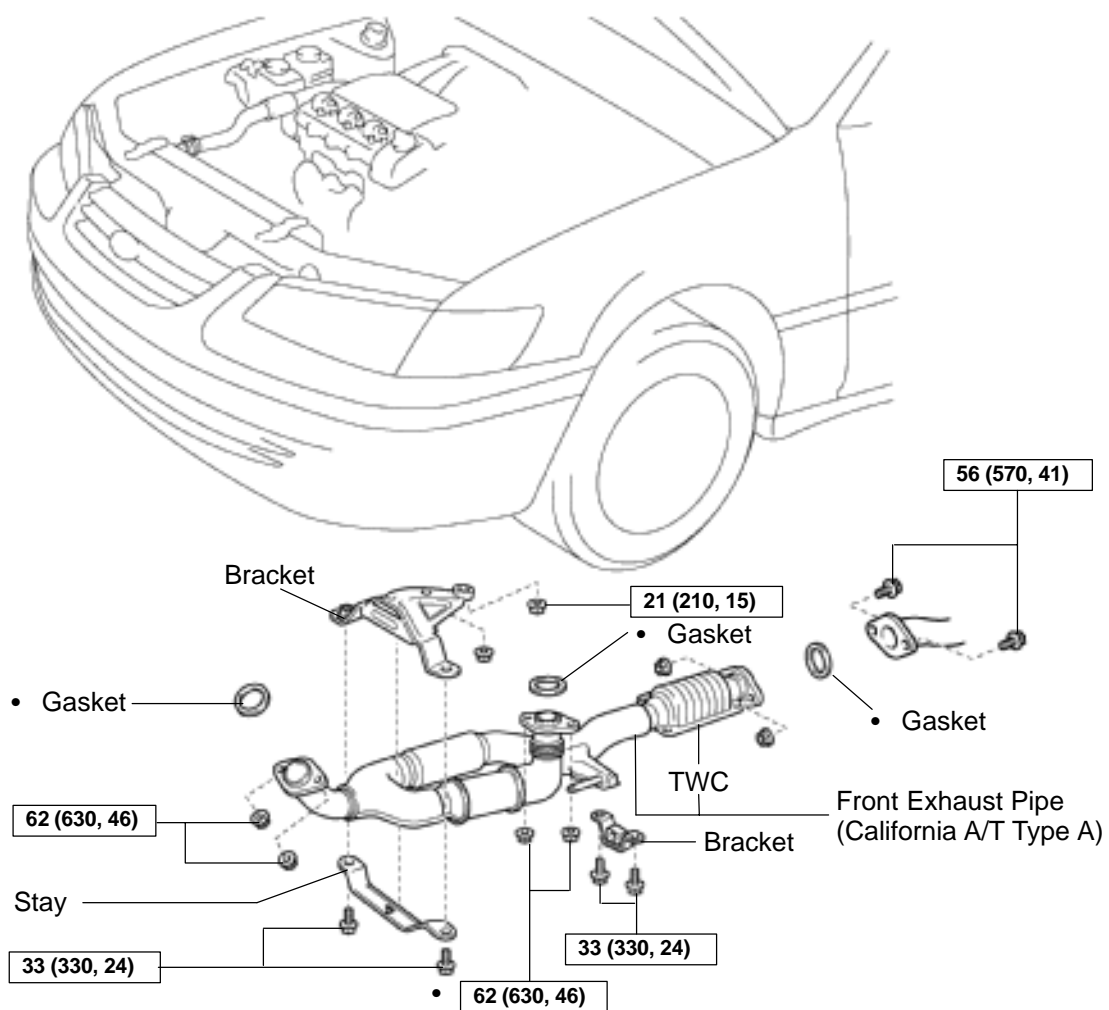
Check for dents or damage.

If any part of the protector is damaged or dented to the extent that it contacts the TWC, repair or replace it.

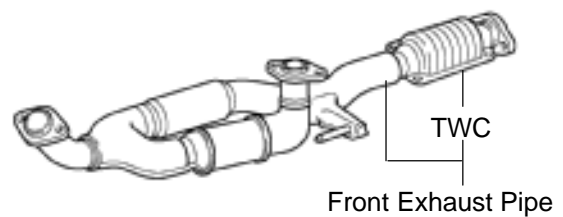
3. INSPECT TWC HEAT INSULATOR

- (a) Check the heat insulator for damage.
- (b) Check for adequate clearance between the catalytic converter and heat insulator.

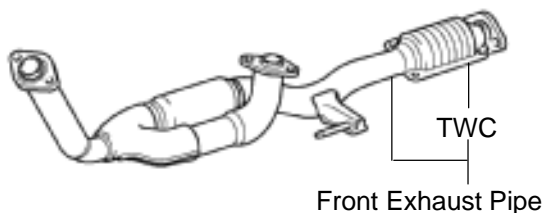
COMPONENTS



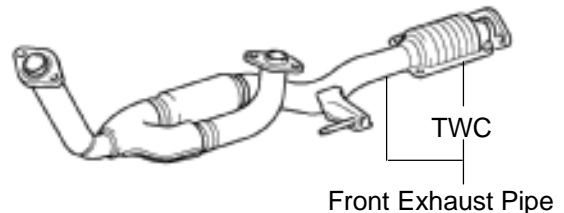
California A/T (Type B)



Except M/T and california A/T



M/T



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

• Non-reusable part

B06396