EMISSION CONTROL SYSTEM

EC00B-05

PURPOSE

The emission control systems are installed to reduce the amount of CO, HC and NOx exhausted from the engine (3) and (4)), 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.

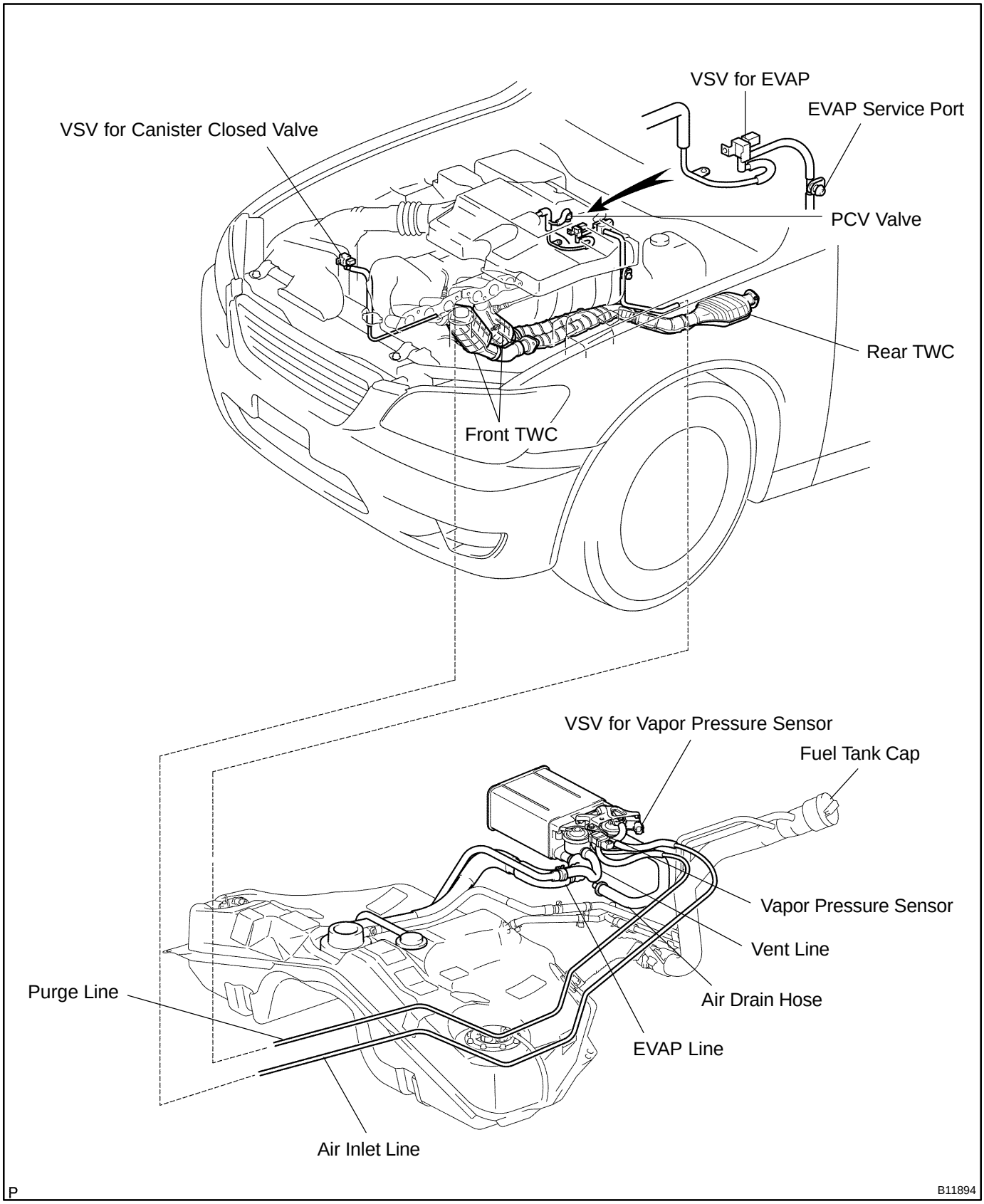
System	Abbreviation	Function
(1) Positive Crankcase Ventilation	PCV	Reduces blow-by gas (HC)
(2) Evaporative Emission Control	EVAP	Reduces evaporated HC
(3) Three-Way Catalytic Converter	TWC	Reduces CO, HC and NOx
(4) Sequential Multiport Fuel Injection *	SFI	Injects a precisely timed, optimum amount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

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

PARTS LAYOUT AND SCHEMATIC DRAWING

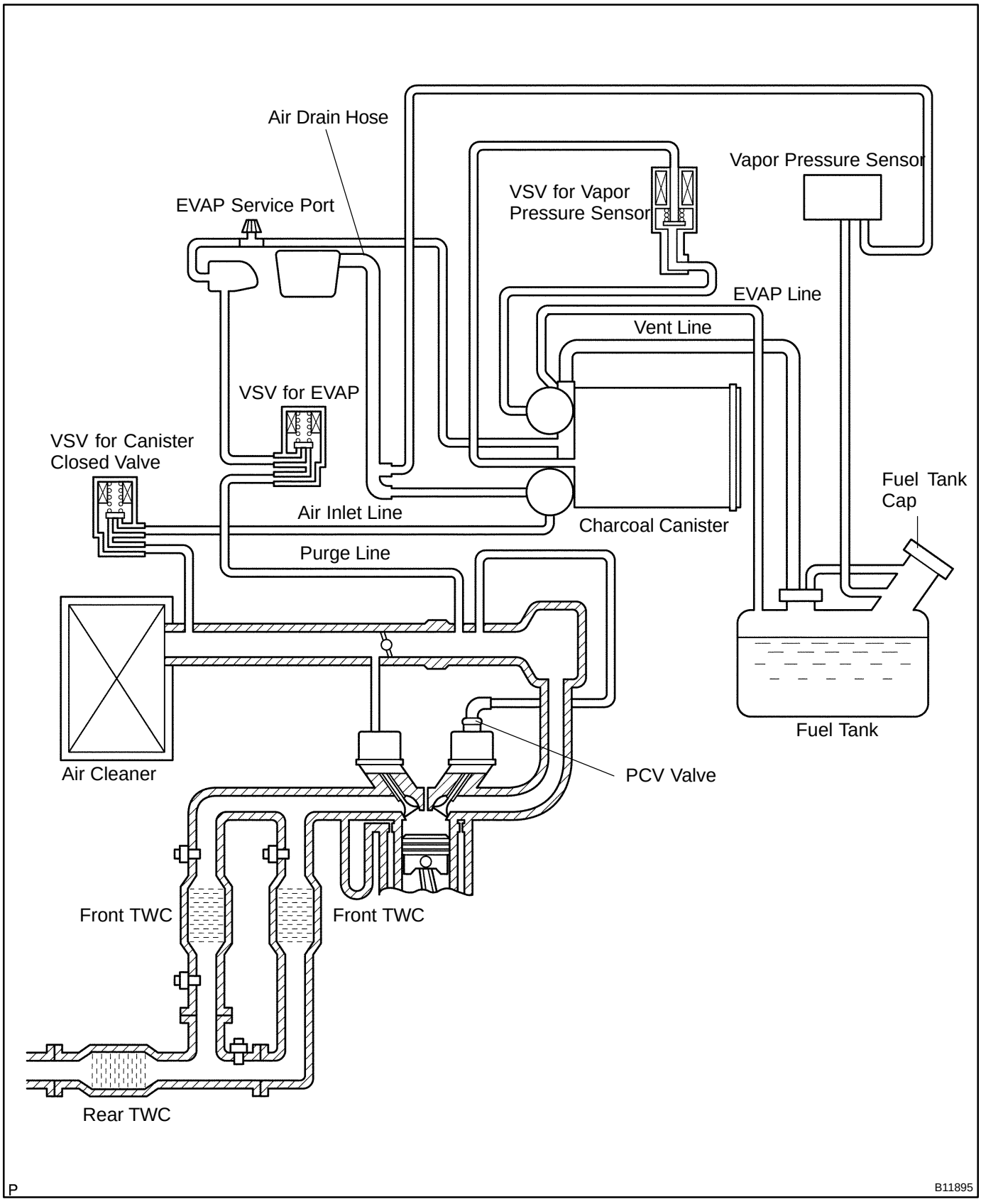
LOCATION

EC04V-10



EC04W-14

DRAWING



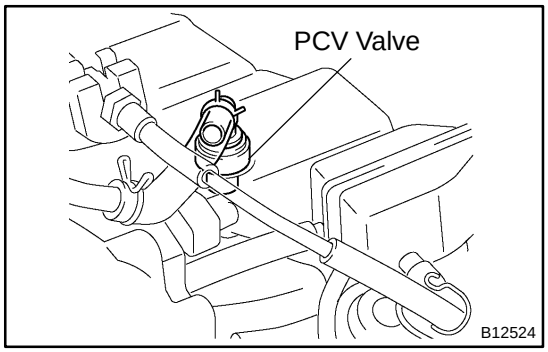
POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

EC04X-09

INSPECTION

1. REMOVE ENGINE COVER

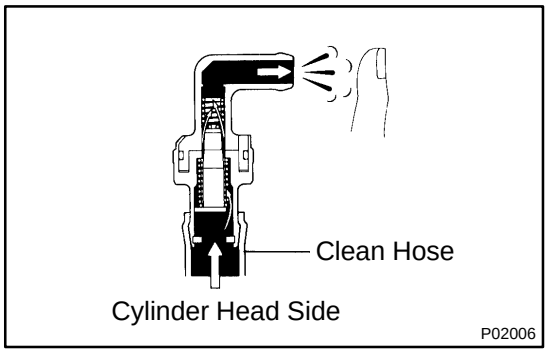
Remove 4 nuts and engine cover.



2. REMOVE PCV VALVE

(a) Disconnect the PCV hose from the PCV valve.

(b) Remove the PCV valve.



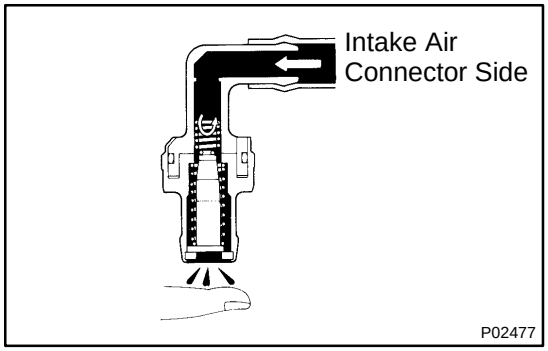
3. INSTALL CLEAN HOSE TO PCV VALVE

4. INSPECT PCV VALVE OPERATION

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

CAUTION:

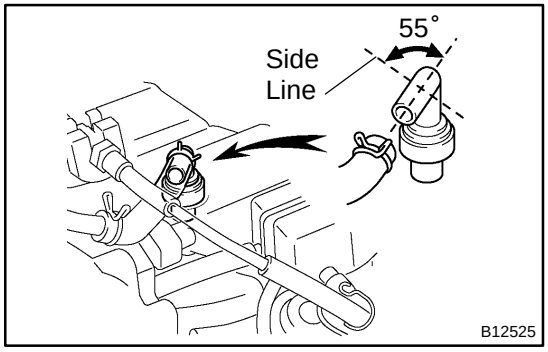
- **Do not suck air through the valve.**
- **Petroleum substances inside the valve are harmful.**



(b) Blow air into the intake air connector side, and check that air passes through with difficulty.

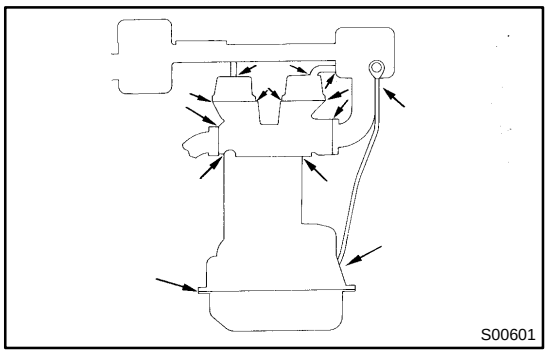
If operation is not as specified, replace the PCV valve.

5. REMOVE CLEAN HOSE FROM PCV VALVE



6. REINSTALL PCV VALVE

The port faces in the direction indicated in the illustration.



7. VISUALLY INSPECT HOSES, CONNECTIONS AND GASKETS

Check for cracks, leaks or damage.

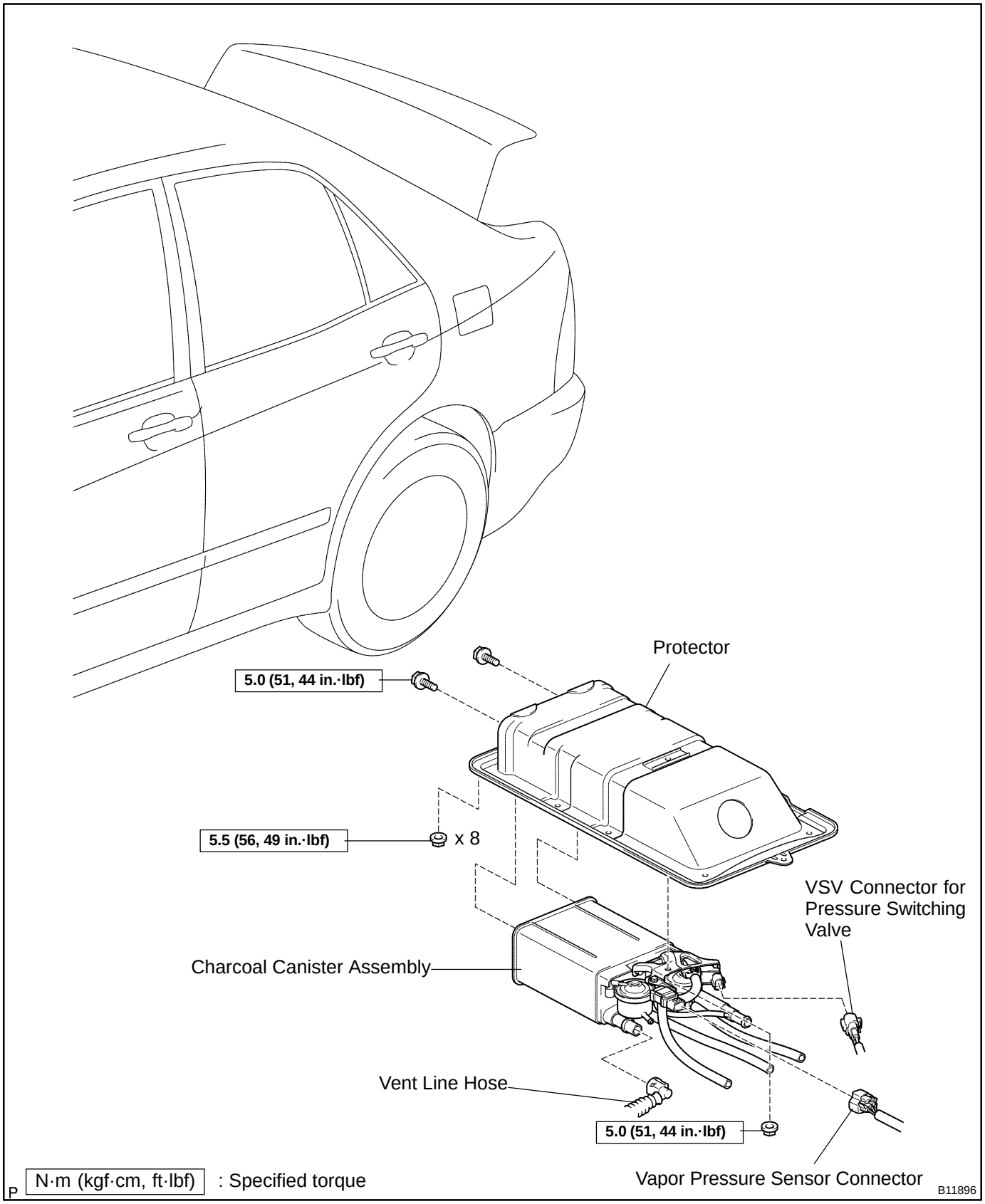
8. REINSTALL ENGINE COVER

Install the engine cover with the 4 nuts.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM

EC053-08

COMPONENTS



EC0BD-05

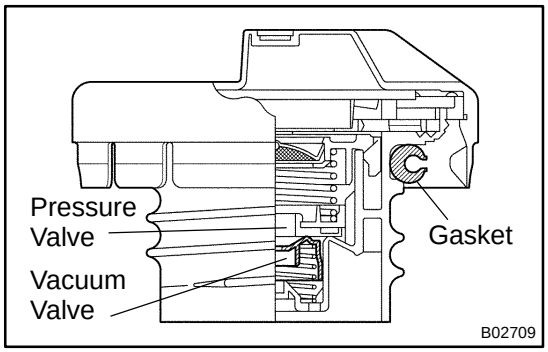
INSPECTION

1. INSPECT LINES AND CONNECTORS

Visually check for loose connections, sharp bends or damage.

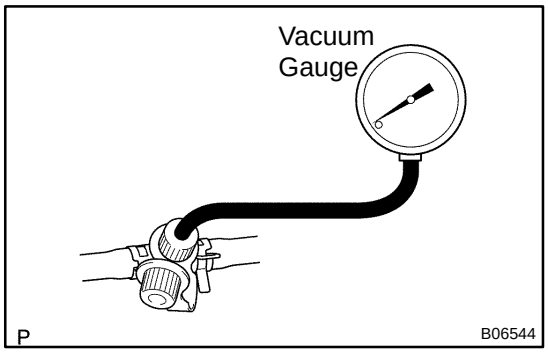
2. INSPECT FUEL TANK FILLER PIPE

Visually check for deformation, cracks or fuel leakage.



3. VISUALLY INSPECT FUEL TANK CAP

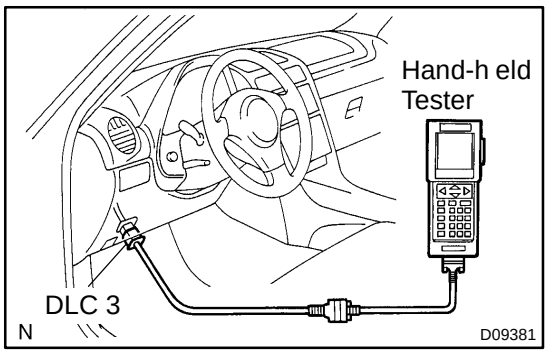
Check if the cap and/or gasket are deformed or damaged.
If necessary, repair or replace the cap.



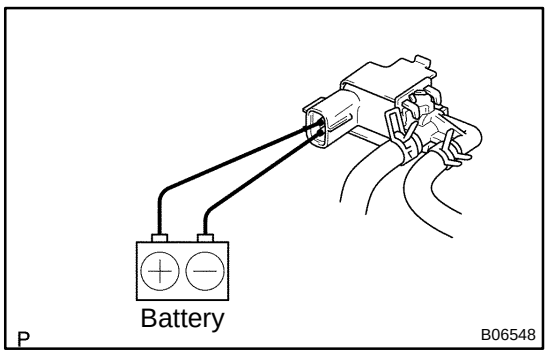
4. INSPECT EVAP SYSTEM LINE

(a) Warm up the engine and stop the engine.
Allow the engine to warm up to normal operating temperature.

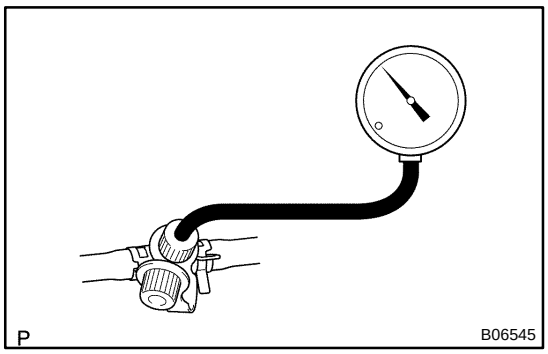
(b) Install a vacuum gauge (EVAP control system test equipment vacuum gauge) to the EVAP service port on the purge line.



(c) Hand-held Tester:
Forced driving of the VSV for the EVAP.
(1) Connect a hand-held tester to the DLC3.
(2) Start the engine.
(3) Push the hand-held tester main switch ON.
(4) Select the following menu items: DIAGNOSIS/ENHANCED OBDII / ACTIVE TEST / EVAP VSV (ALONE).



(d) If you have no 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

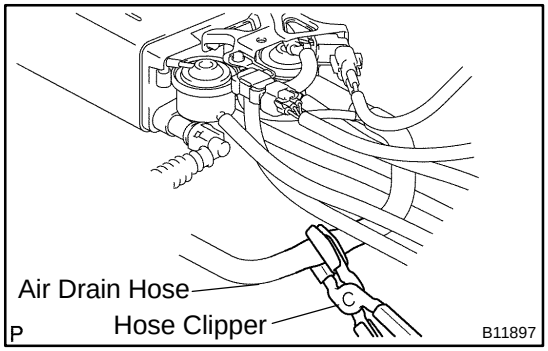
HINT:
If the vacuum does not change, you can conclude that the hose connecting the VSV to the service port has come loose or is blocked, or the VSV is malfunctioning.

(f) Hand-held Tester:
Conclude forced driving of the VSV for the EVAP.
(1) Stop the engine.
(2) Disconnect the hand-held tester from the DLC3.

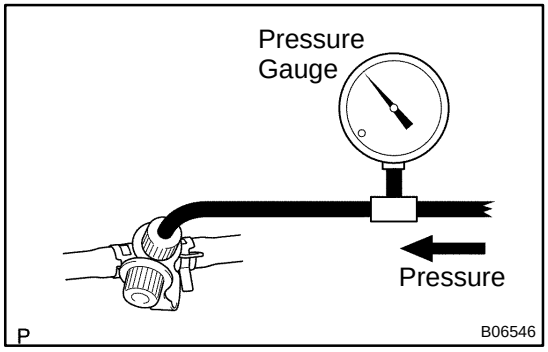
(g) If you have no Hand-held Tester:
Conclude forced driving of the VSV for the EVAP.
(1) Stop the engine.
(2) Disconnect the positive (+) and negative (-) leads from the battery from the VSV terminals for the EVAP.
(3) Connect the VSV connector for the EVAP.

(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.

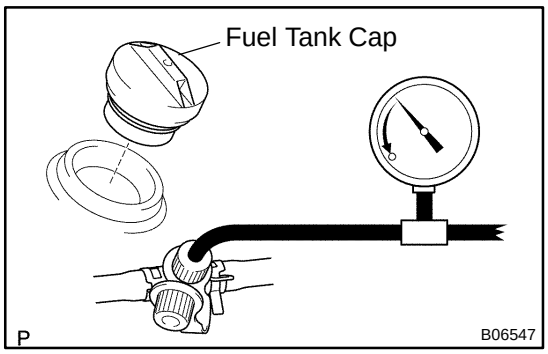


(j) Check the pressure.
(1) Close off the air drain hose at the marked position of the canister with a hose clipper or similar instrument.



(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.

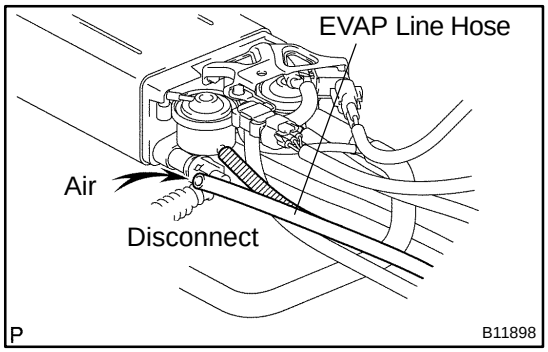


(3) Check if the pressure decreases when the fuel tank cap is removed while adding pressure.

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

(a) 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/cm^2, 0.58 psi).

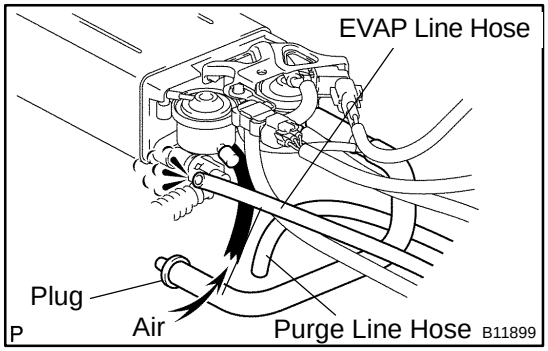
(b) Check that the internal pressure of the fuel tank can be hold for 1 minute.

(c) Check the connected portions of each hose and pipe.

(d) 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

(a) Disconnect the purge line hose and EVAP line hose from the charcoal canister.

(b) Plug the EVAP port with a cap.

(c) Disconnect the air drain hose from the canister tank, and plug its.

(d) Pressurize 4 kPa (41 gf/cm^2, 0.58 psi) to the purge port and check that there is ventilation through the EVAP line hose.

HINT:

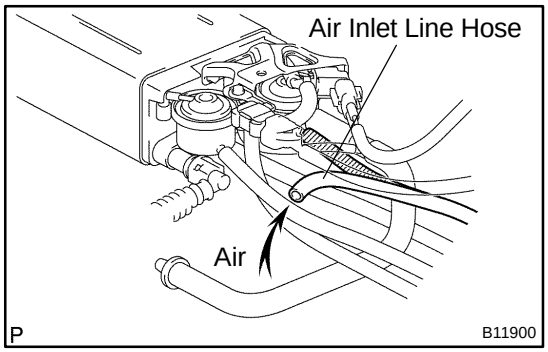
In the condition that the fuel fuel is full, as the float value of the fill check valve is closed and has no ventilation, it is necessary to check the fuel amount (volume).

(e) 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.

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

(g) Reconnect the air drain hose to the canister tank.



7. CHECK AIR INLET LINE

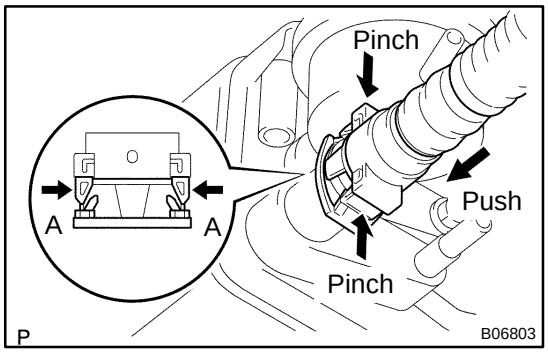
(a) Disconnect the air inlet line hose from the charcoal canister.

(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) Remove the luggage trim from body.



(b) Remove the charcoal canister assembly.

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

(2) Disconnect the vent line hose from the charcoal canister.

Push the connector deep inside, pinch portion A, and pull out the connector.

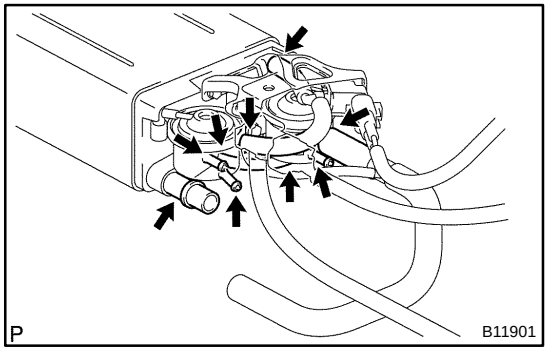
(3) Disconnect the air drain hose from the canister tank.

(4) Remove the 8 nuts and the charcoal canister assembly with protector.

(5) Disconnect the vapor pressure sensor connector.

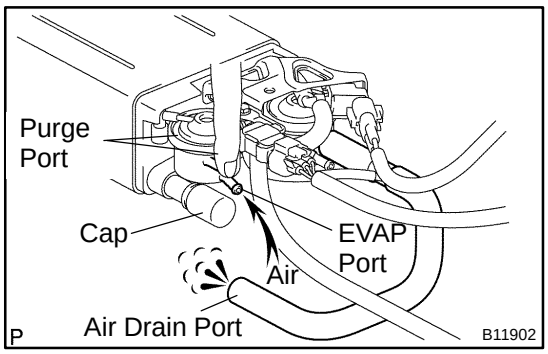
(6) Disconnect the VSV connector for vapor pressure sensor.

(7) Remove the 2 bolts, nut and the charcoal canister assembly from the protector.



9. INSPECT CHARCOAL CANISTER

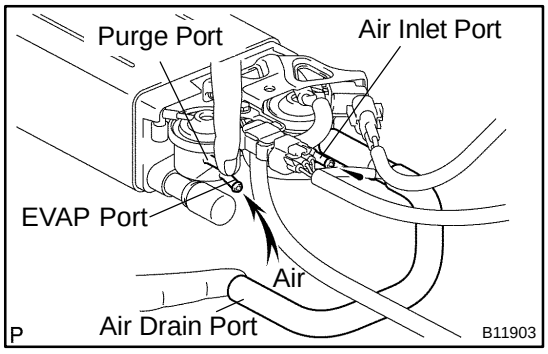
(a) Visually check the charcoal canister for cracks or damage.



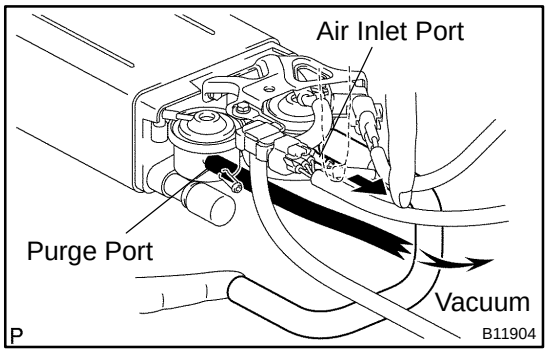
(b) Inspect the charcoal canister operation.

(1) Plug the vent port with a cap.

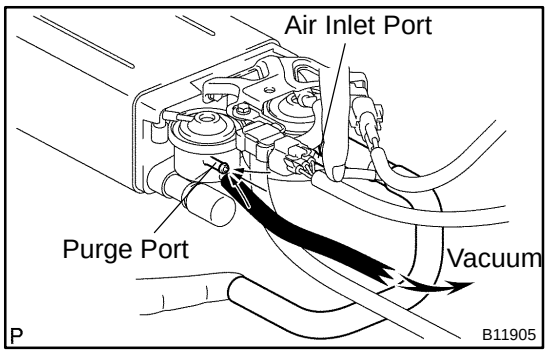
(2) While holding the purge port closed, blow air (1.76 kPa, 18 gf/cm^2, 0.26 psi) into the EVAP port and check that air flows from the air drain port.



(3) While holding the purge port and the air drain port closed, blow air (1.76 kPa, 18 gf/cm^2, 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.

10. INSPECT VSV FOR EVAP (See page SF-56)

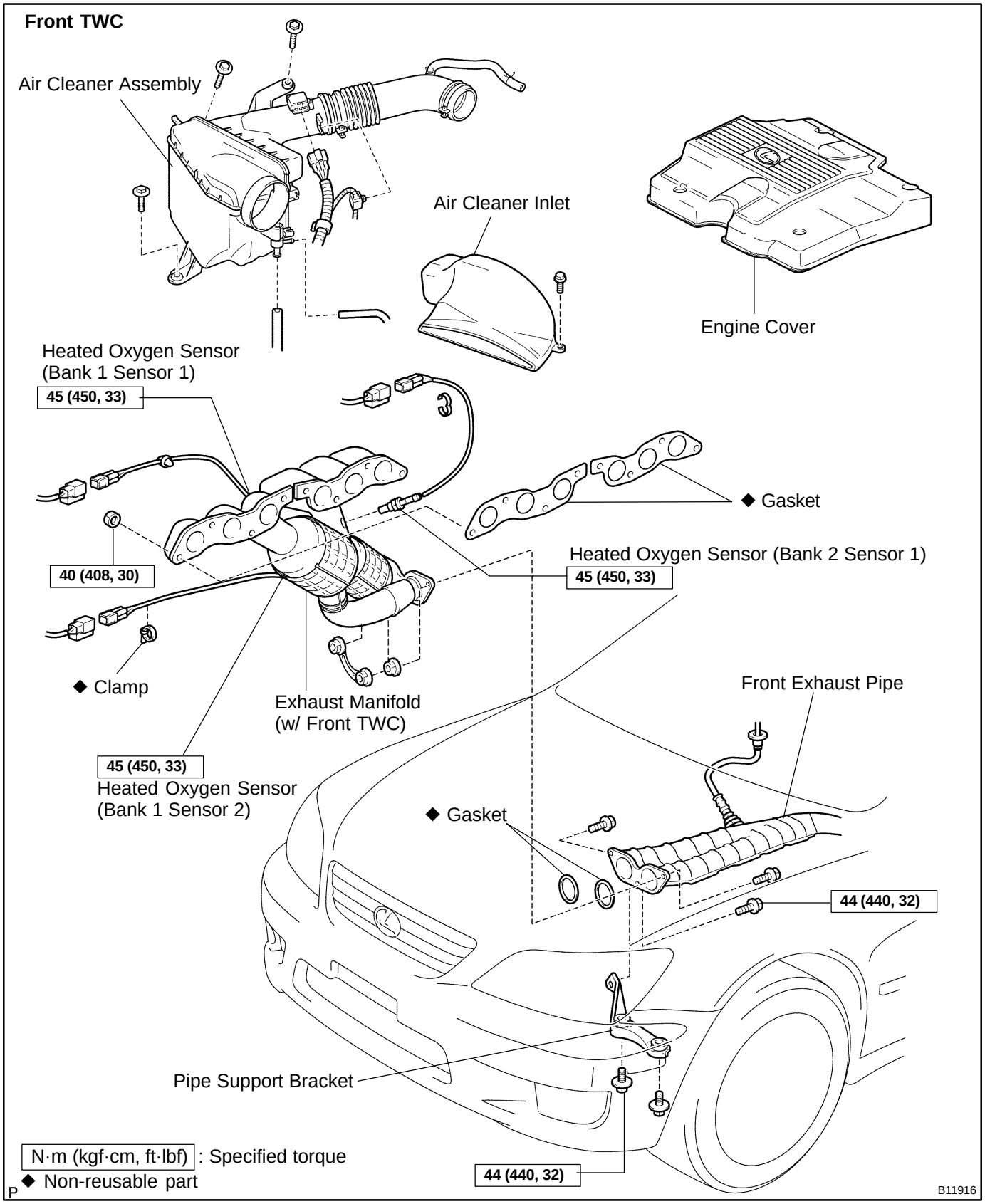
11. INSPECT VAPOR PRESSURE SENSOR (See page SF-67)

12. REINSTALL CHARCOAL CANISTER ASSEMBLY

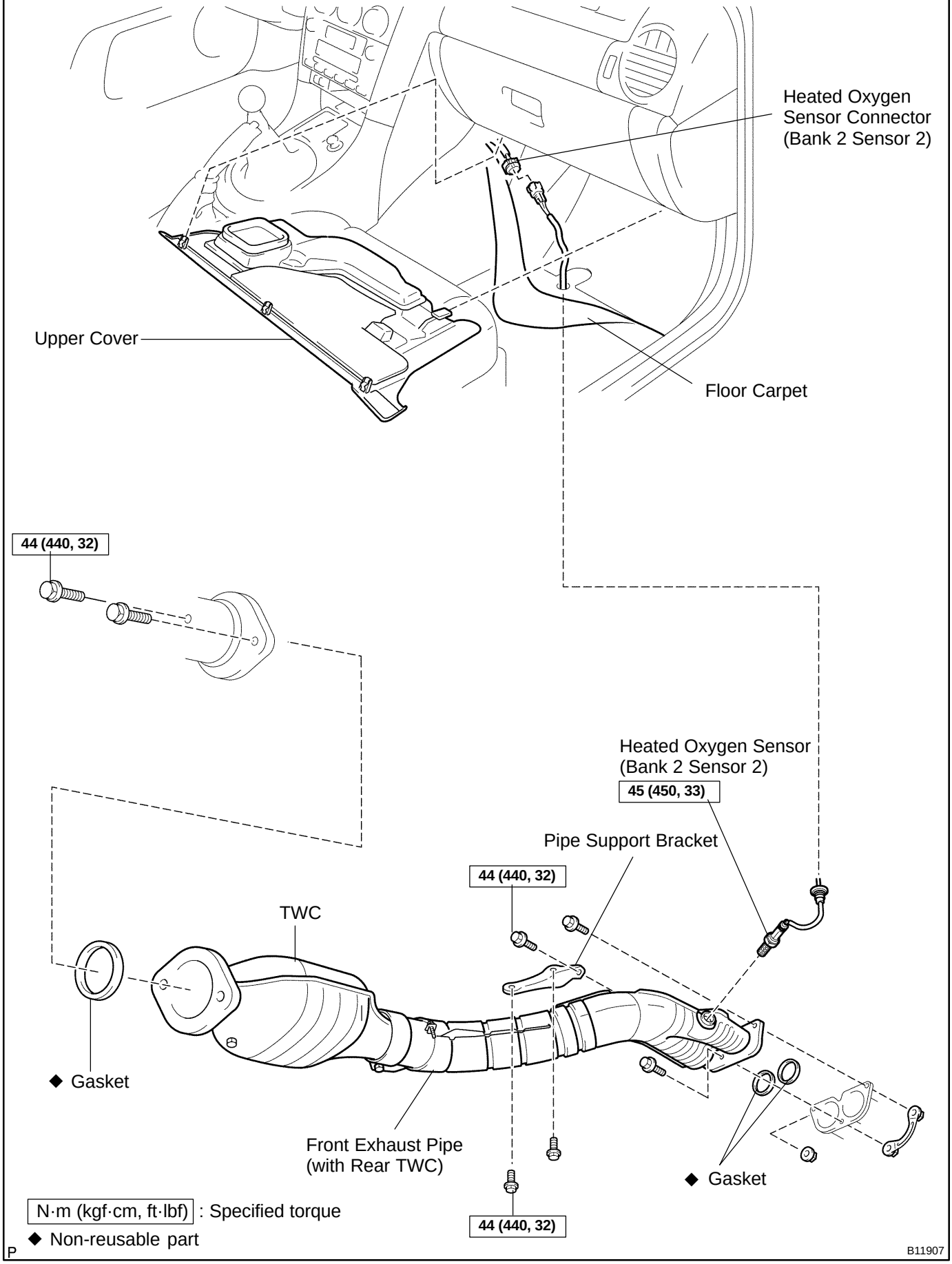
THREE-WAY CATALYTIC CONVERTER (TWC) SYSTEM

COMPONENTS

EC0DF-07



Rear TWC


Heated Oxygen Sensor Connector (Bank 2 Sensor 2)
Upper Cover
Floor Carpet
44 (440, 32)
Heated Oxygen Sensor (Bank 2 Sensor 2)
45 (450, 33)
Pipe Support Bracket
44 (440, 32)
TWC
◆ Gasket
Front Exhaust Pipe (with Rear TWC)
◆ Gasket
44 (440, 32)
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
P
B11907

EC04Z-01

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 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.

EC050-07

REPLACEMENT

1. REMOVE ENGINE COVER

2. REMOVE AIR CLEANER INLET

3. REMOVE AIR CLEANER ASSEMBLY AND MAF METER (See page EM-65)

4. DISCONNECT HEATED OXYGEN SENSORS (BANK 1 SENSOR 1, 2) FROM EXHAUST MANIFOLD

(a) Disconnect the 3 oxygen sensor connectors.

(b) Disconnect the 2 oxygen sensors from the exhaust manifold.

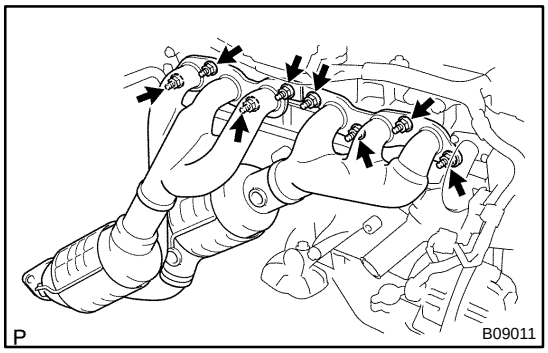
5. REMOVE FRONT EXHAUST PIPE (WITH REAR TWC)

(a) Take out the front side of the floor carpet.

(b) Disconnect the heated oxygen sensor (bank 2 sensor 2) connector.

(c) Remove the 2 bolts and pipe support bracket.

(d) Remove the 5 bolts, front exhaust pipe and 3 gaskets.



6. REMOVE EXHAUST MANIFOLD (WITH FRONT TWC)

(a) Using a 14 mm deep socket wrench, remove the 8 nuts, exhaust manifold and 2 gaskets.

(b) Remove the heated oxygen sensor (bank 2 sensor 1) form the exhaust manifold.

7. REINSTALL EXHAUST MANIFOLD (WITH FRONT TWC)

(a) Install the heated oxygen sensor (bank 2 sensor 1) to the exhaust manifold.

Torque: 45 N·m (450 kgf·cm, 33 ft·lbf)

(b) Install 2 new gaskets to the cylinder head.

(c) Using a 14 mm deep socket wrench, install a new exhaust manifold with 8 new nuts. Uniformly tighten the nuts in several passes.

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

8. REINSTALL FRONT EXHAUST PIPE (WITH REAR TWC)

(a) Reinstall new 3 gaskets and front exhaust pipe with 5 bolts and support bracket.

Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

(b) Reinstall the pipe support bracket with the 2 bolts.

Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)

9. RECONNECT HEATED OXYGEN SENSORS (BANK 1 SENSOR 1, 2) TO EXHAUST MANIFOLD

(a) Install the 2 oxygen sensors to the exhaust manifold.

Torque: 45 N·m (450 kgf·cm, 33 ft·lbf)

(b) Connect the 3 oxygen sensor connectors.

10. REINSTALL AIR CLEANER ASSEMBLY AND MAF MATER (See page EM-71)

11. REINSTALL AIR CLEANER INLET

12. REINSTALL ENGINE COVER