INSPECTION PROCEDURE

HINT:

- If DTC P0441 (purge flow), P0446, P2418 (CCV or by–pass VSV), P0451, P0452 or P0453 (evaporative pressure sensor) is output with DTC P0442, P0455 or P0456, first troubleshoot DTC P0441, P0446, P2418, P0451, P0452 or P0453. If no malfunction is detected, troubleshoot DTC P0442 or P0456 next.
- Ask the customer if, after the MIL illuminated, the customer found the fuel tank cap was loose and tightened it. Also ask the customer if the fuel tank cap was loose when refuelling. If the fuel tank cap was loose, it was the cause of the DTC. If the fuel tank cap was not loose or if the customer was not sure if that was loose, troubleshoot according to the following procedure.
- Read freeze frame data using the hand–held tester. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air–fuel ratio was LEAN or RICH, and other data from the time the malfunction occurred.
- When the ENGINE RUN TIME in the freeze frame data is less than 200 seconds, carefully check the FTP sensor.

1	CHECK FUEL TANK CAP ASSY

OK: The fuel cap meets OEM specifications.

NG → REPLACE WITH A CAP THAT MEETS OEM SPECIFICATIONS

OK

2	CHECK THAT FUEL TANK CAP IS CORRECTLY INSTALLED

OK: The fuel cap is tightened securely.

NG → CORRECTLY INSTALL FUEL TANK CAP

OK

3	INSPECT FUEL TANK CAP ASSY (See page 12–4)

NG → REPLACE FUEL TANK CAP ASSY

OK

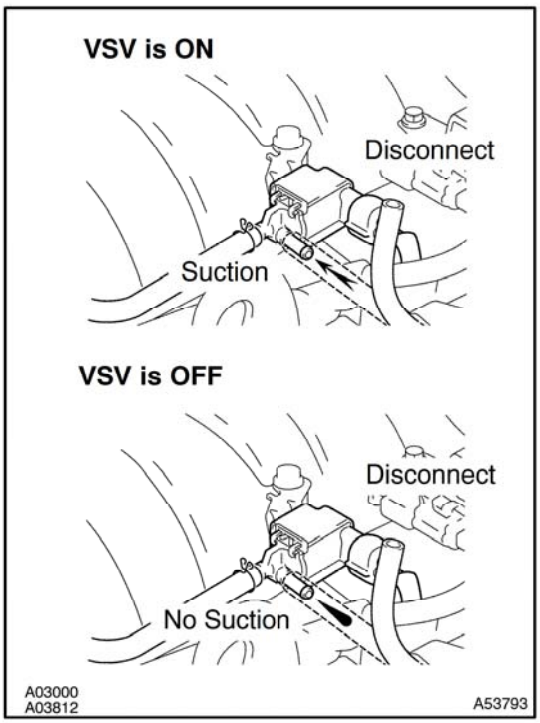
4	CHECK FILLER NECK FOR DAMAGE

(a) Remove the fuel tank cap.
(b) Visually inspect the filler neck for damage.

NG → REPLACE FUEL TANK INLET PIPE SUB–ASSY

OK

5	PERFORM ACTIVE TEST (EVAP VSV)



(a) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST.
(b) Disconnect the vacuum hose of the EVAP VSV from the EVAP canister.
(c) Start the engine.
(d) Select the item EVAP VSV (ALON) / ALL in the ACTIVE TEST and operate the EVAP VSV (press the right or left button).
(e) When the EVAP VSV is operated by the hand–held tester, check whether the disconnected hose applies suction to your finger.

OK:

Tester Condition	Specified Condition
VSV is ON	Disconnected hose applies suction to your finger
VSV is OFF	Disconnected hose applies no suction to your finger

OK → **Go to step 9**

NG

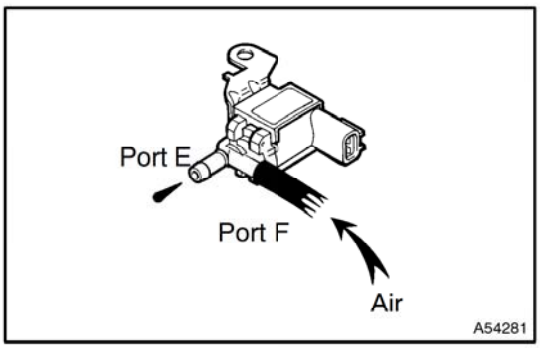
6	CHECK VACUUM HOSES (INTAKE MANIFOLD – EVAP VSV – CANISTER)

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, holes, damage and blockage.

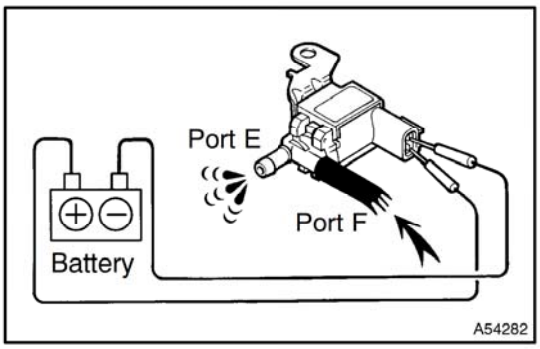
NG → **REPAIR OR REPLACE VACUUM HOSES**

OK

7	INSPECT EVAP VSV (OPERATION)



(a) Check that air flows with difficulty from ports F to E.
OK: Air flows with difficulty from ports F to E.

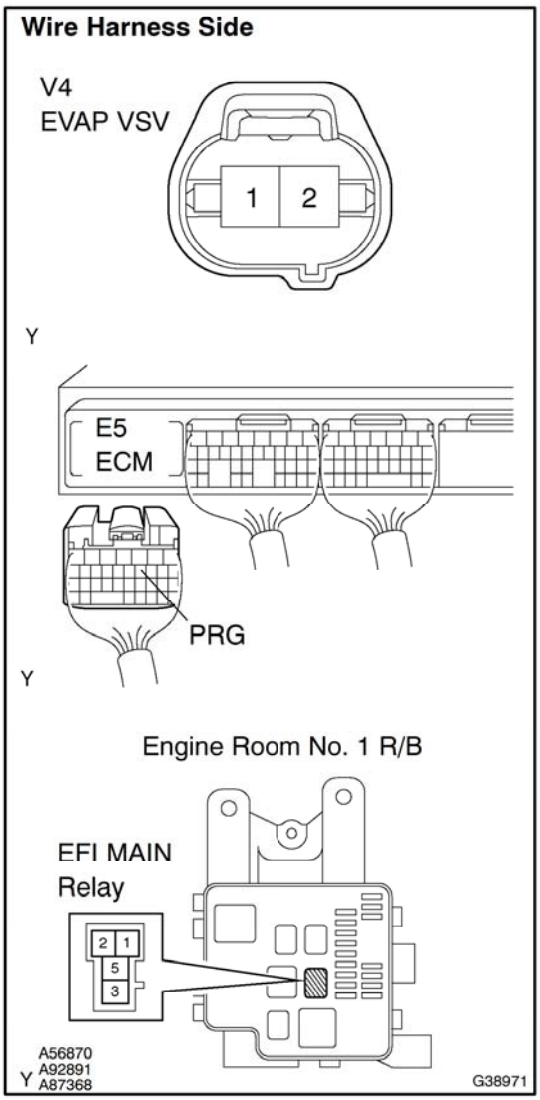


(b) Apply battery voltage across the terminals.
(c) Check that air flows without resistance from ports F to E.
OK: Air flows without resistance from ports F to E

NG → **REPLACE EVAP VSV**

OK

8	CHECK WIRE HARNESS (EVAP VSV – ECM – EFI MAIN RELAY)



(a) Disconnect the V4 EVAP VSV connector.
(b) Disconnect the E5 ECM connector.
(c) Remove the EFI MAIN relay from the engine room No. 1 R/B.
(d) Measure the resistance of the wire harness side connectors.

Standard:

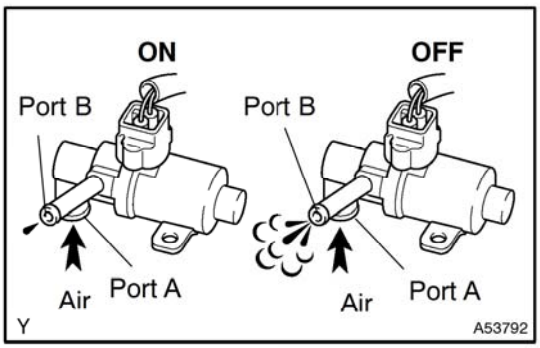
Tester Connection	Specified Condition
V4–1 – E5–11 (PRG)	Below 1 Ω
V4–1 or E5–11 (PRG) – Body ground	10 kΩ or higher
V4–2 – R/B EFI MAIN relay terminal 3	Below 1 Ω
V4–2 or R/B EFI MAIN relay terminal 3 – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM (See page 10–20)

9	PERFORM ACTIVE TEST (CCV)



(a) Disconnect the vacuum hose of the CCV from the charcoal canister.
(b) Start the engine.
(c) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / CAN CTRL VSV.
(d) Operate the CCV with the hand–held tester and check air flow of the CCV .
OK:

Tester Condition	Specified Condition
CCV is ON	Air does not flow from ports A to B
CCV is OFF	Air from port E flows out through port B

OK → **Go to step 13**

NG

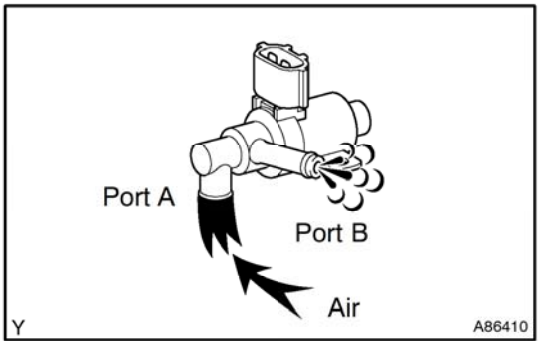
10	CHECK VACUUM HOSES (CCV – CANISTER)

(a) Check that the vacuum hose is connected correctly.
(b) Check the vacuum hose for looseness and disconnection.
(c) Check the vacuum hose for cracks, hole damage and blockage.

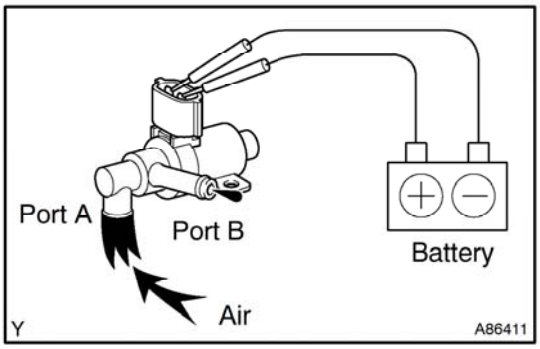
NG → **REPAIR OR REPLACE VACUUM HOSES**

OK

11	INSPECT CCV (OPERATION)



(a) Check that the air flows from ports A to B.
OK: Air flows from ports A to B

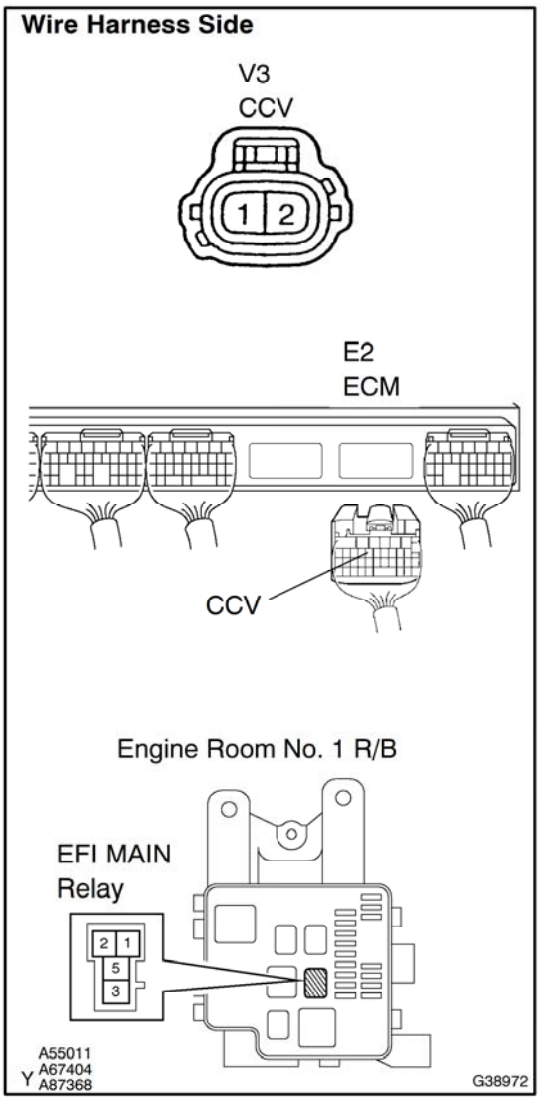


(b) Apply battery voltage across the terminals.
(c) Check that the air does not flow from ports A to B.
OK: Air does not flow from ports A to B

NG → **REPLACE CCV**

OK

12	CHECK WIRE HARNESS (ECM – CCV – EFI MAIN RELAY)



(a) Disconnect the V3 CCV connector.
(b) Disconnect the E2 ECM connector.
(c) Remove the EFI MAIN relay from the engine room No. 1 R/B.
(d) Measure the resistance of the wire harness side connectors.

Standard:

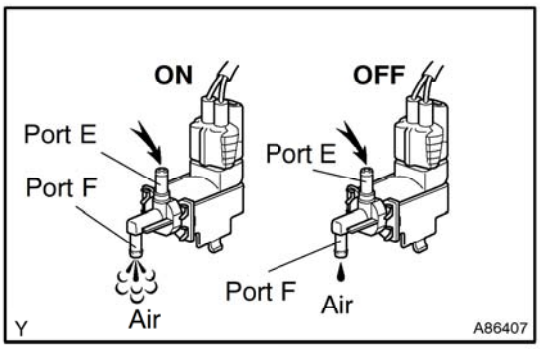
Tester Connection	Specified Condition
V3–1 – E2–12 CCV	Below 1 Ω
V3–1 or E2–12 (CCV) – Body ground	10 kΩ or higher
V3–2 – R/B EFI MAIN relay terminal 3	Below 1 Ω
V3–2 or R/B EFI MAIN relay terminal 3 – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM (See page 10–20)

13 PERFORM ACTIVE TEST (BY–PASS VSV)



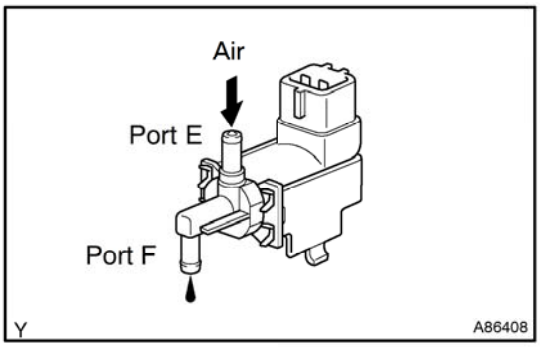
(a) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / TANK BYPASS VSV.
(b) Press the right or left button, operate the by–pass VSV.
(c) Check air flow when operating the by–pass VSV.
Standard:

Tester Condition	Specified Condition
VSV is ON	Air from port E flows out through port F
VSV is OFF	Air does not flow from ports E to F

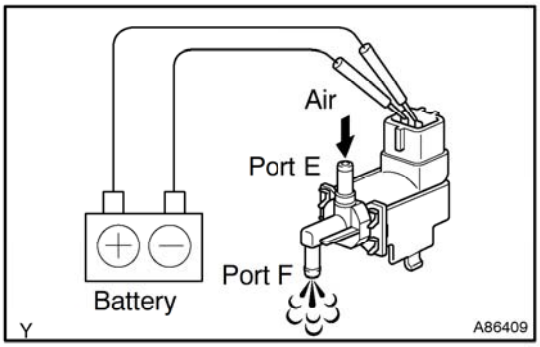
OK → **Go to step 16**

NG

14 INSPECT BY–PASS VSV (OPERATION)



(a) Check that the air flows with difficulty from ports E to F.
OK: Air flows with difficulty from ports E to F

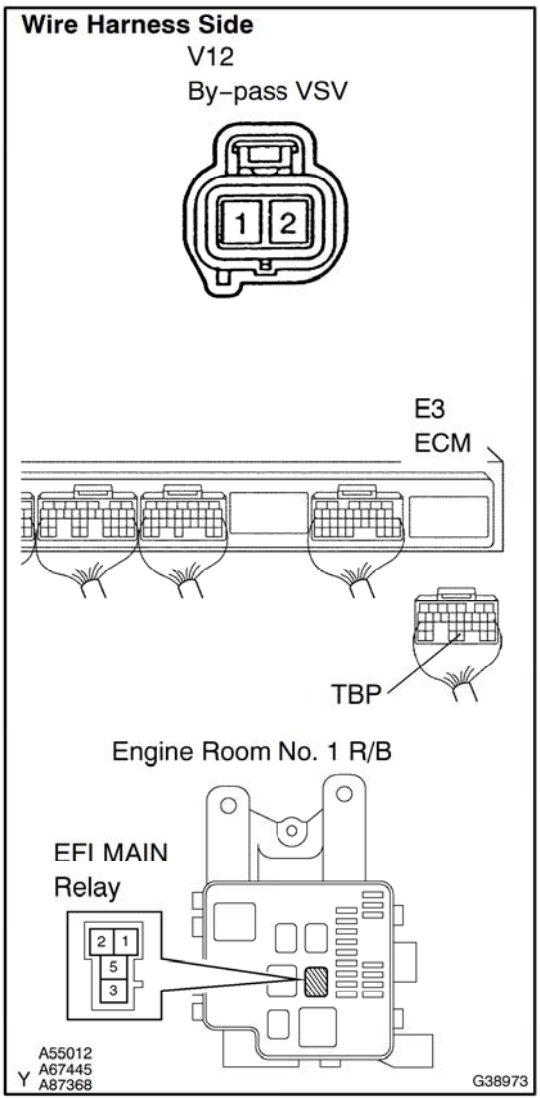


(b) Apply battery voltage across the terminals.
(c) Check that the air flows from ports E to F.
OK: Air flows from ports E to F

NG → **REPLACE BY–PASS VSV**

OK

15	CHECK WIRE HARNESS (EFI MAIN RELAY – BY–PASS VSV – ECM)



(a) Disconnect the V11 by–pass VSV connector.
(b) Disconnect the E3 ECM connector.
(c) Remove the EFI MAIN relay from the engine room No. 1 R/B.
(d) Measure the resistance of the wire harness side connectors.

Standard:

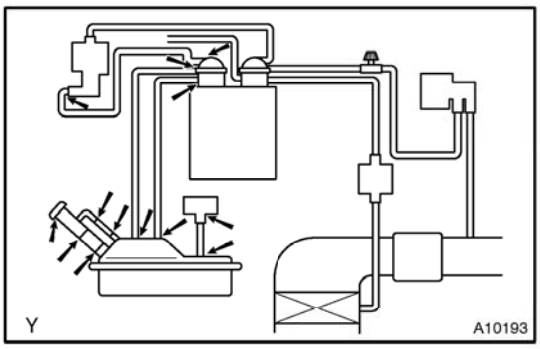
Tester Connection	Specified Condition
V11–1 – E3–28 (TBP)	Below 1 Ω
V11–1 or E3–28 (TBP) – Body ground	10 kΩ or higher
V11–2 – R/B EFI relay terminal 3	Below 1 Ω
V11–2 or R/B EFI relay terminal 3 – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM (See page 10–20)

16	CHECK FOR EVAP LEAK (NEAR FUEL TANK)



(a) Check whether hoses close to the fuel tank have been modified, and check whether there are signs of any damage near the fuel tank or the charcoal canister.
  (1) Check for cracks, deformation or loose connection of the following parts:
    - Fuel tank
    - EVAP canister
    - Fuel tank filler pipe
    - Hoses and tubes around fuel tank and charcoal canister

NG → REPAIR OR REPLACE EVAP LEAK PART

OK

17	CHECK HOSE AND TUBE

(a) Check the connection between the fuel tank and fuel EVAP pipe, the fuel EVAP pipe and under–floor fuel tube, and the under–floor fuel tube and EVAP canister.
(b) Check the hose and the tube for cracks, holes and damage.

NG → REPLACE HOSE AND TUBE

OK

18	CHECK EVAP CANISTER) (FOR CRACKS, HOLE AND DAMAGE)

NG → REPLACE EVAP CANISTER

OK

19	INSPECT FUEL TANK

NG → REPLACE ECM (See page 10–20)

OK

REPLACE FUEL TANK ASSY (See page 11–25)