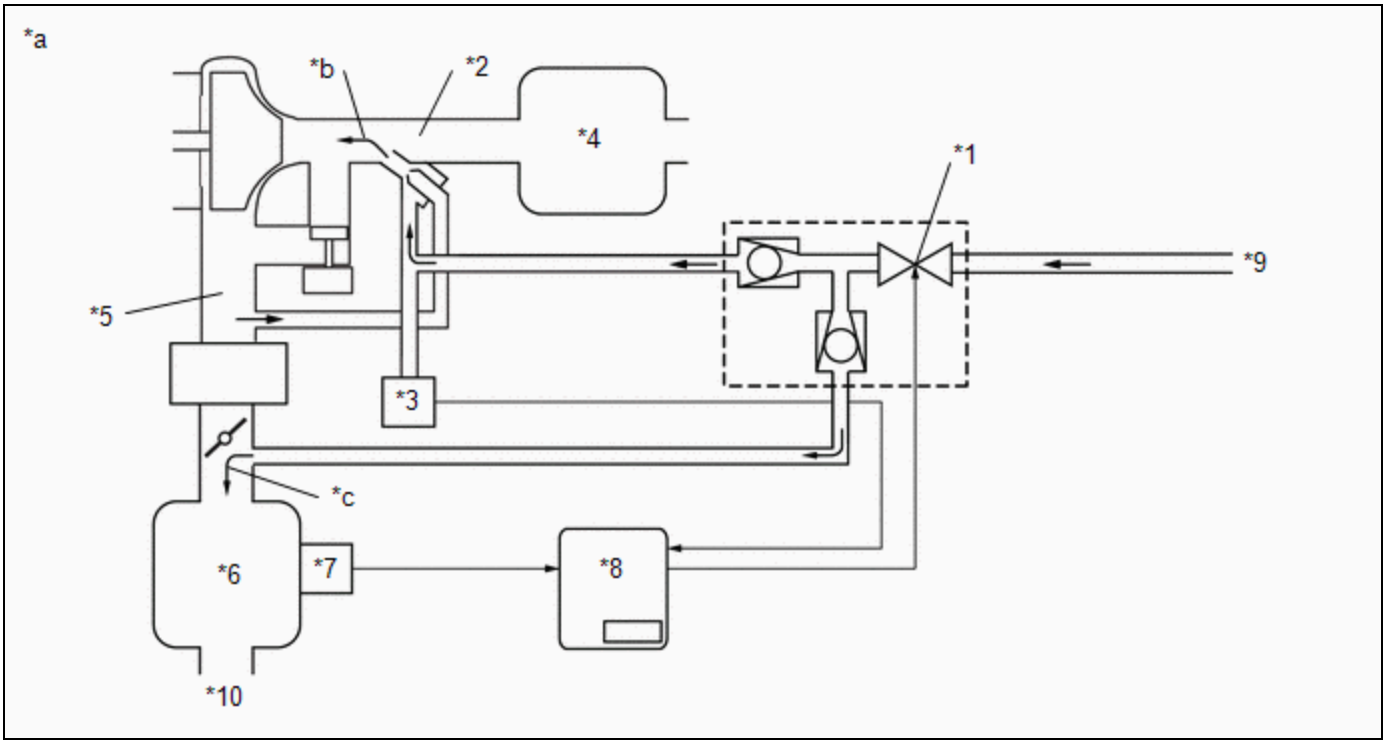
Last Modified: 04-03-2024	6.11:8.1.0	**Doc ID:** RM100000002KD5Q
Model Year Start: 2024	**Model:** Tacoma HV	**Prod Date Range:** [03/2024 -]
Title: T24A-FTS (ENGINE CONTROL): SFI SYSTEM (for 1Motor-HEV Model): P04F09C; Evaporative Emission System High Load Purge Line "A" Performance Low/Insufficient Flow; 2024 MY Tacoma HV [03/2024 -]		

DTC	**P04F09C**	**Evaporative Emission System High Load Purge Line "A" Performance Low/Insufficient Flow**

DESCRIPTION

A high load purge line is installed upstream from the turbo to process evaporated fuel vapor during boost operation.

The pressure on the high load purge line is monitored to detect that a hose is detached or clogged.



*1	Purge VSV (with Check Valve)	*2	Air Cleaner Hose Assembly (Ejector)
*3	Purge Pressure Sensor (Vacuum Sensor Assembly)	*4	Air Cleaner
*5	Air Tube Assembly	*6	Intake Manifold
*7	Manifold Absolute Pressure Sensor (No. 1 Turbo Pressure Sensor)	*8	ECM (Atmospheric Pressure Sensor)
*9	from Canister	*10	to Engine
*a	EVAP Purge Flow	*b	Purge Flow During Boost
*c	Purge Flow When Non Boost	-	-

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P04F09C	Evaporative Emission System High Load Purge Line "A" Performance Low/Insufficient Flow	Pressure pulsation during purge VSV operation in the boost range is less than the	• Air piping for high load purge line (purge VSV - air	Comes on	Engine	B	• SAE: P04F0 • DTC for Mexico Models:

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
		threshold value (2 trip detection logic).	cleaner hose assembly (ejector)) • Purge VSV • Purge pressure sensor (vacuum sensor assembly) • Air piping for ejector drive line (air tube assembly - air cleaner hose assembly (ejector)) • Air cleaner hose assembly (ejector) • Air tube assembly • ECM				Does not apply

MONITOR DESCRIPTION

When pressure pulsation caused by purge VSV operation in the boost range is less than the threshold value, it is determined that a high load purge line malfunction has occurred and a DTC is stored.

MONITOR STRATEGY

Related DTCs	P04F0: High load purge flow monitor
Required Sensors/Components (Main)	Purge pressure sensor (vacuum sensor assembly)
Required Sensors/Components (Related)	Purge VSV Manifold absolute pressure sensor (No. 1 turbo pressure sensor)
Frequency of Operation	Continuous
Duration	Within 12 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Engine	Running
Engine coolant temperature	4.4°C (40°F) or higher

Intake air temperature (mass air flow meter sub-assembly)	4.4°C (40°F) or higher
Purge VSV	Not operated by scan tool
Leak detection pump	Not operated by scan tool
Vent valve	Not operated by scan tool
Engine speed	Less than 3000 rpm
Vent valve	Not operated by purge flow monitor
Atmospheric pressure	76 to 111 kPa(abs) [11.02 to 16.10 psi(abs)]
Auxiliary battery voltage	10 V or higher
Manifold absolute pressure fail (P0107, P0108, P106A)	Not detected
Turbo pressure sensor fail (P0237, P0238, P106D)	Not detected
Atmospheric pressure sensor fail (P106C, P2228, P2229)	Not detected
Purge pressure sensor fail (P14D4, P14D5, P14D6, P14D7)	Not detected

TYPICAL MALFUNCTION THRESHOLDS

Judging counter (*1)	30 times or more
Normal counter (*2) / judging counter	Less than 0.9
*1: Duration that both of following conditions are met	More than 0.524 seconds
Manifold absolute pressure - atmospheric pressure	7 kPa (1.02 psi) or more
Boost pressure - atmospheric pressure	15 kPa (2.18 psi) or more, and less than 55 kPa (7.98 psi) (at atmospheric pressure coefficient 1)
Purge duty cycle	20% or more, and less than 60% (varies with manifold absolute pressure - atmospheric pressure)
*2: Normal counter count up frequency	15 Hz (peak to peak purge line pressure 0.39 kPa or more)

MONITOR RESULT

Refer to detailed information in Checking Monitor Status.

Click here INFO

P04F0: Evaporative System / HIGH LOAD PURGE FLOW

MONITOR ID	TEST ID	SCALING	UNIT	DESCRIPTION
$3D	$E2	Multiply by 0.01	No dimension	High load purge flow

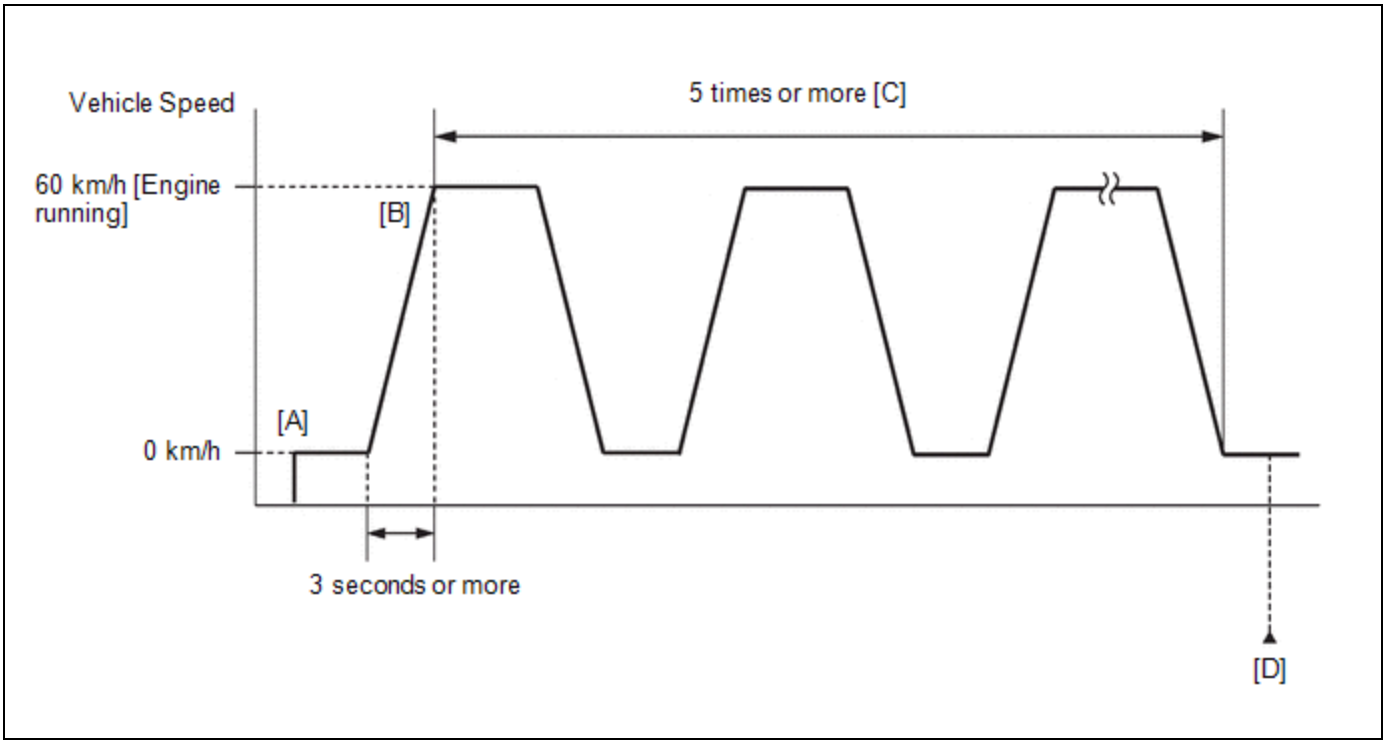
CONFIRMATION DRIVING PATTERN

HINT:

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

  Click here INFO



1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for at least 30 seconds.
3. Put the engine in Inspection Mode (for measuring Exhaust Gas).

   Click here INFO

4. Start the engine and warm it up until the engine coolant temperature is 75°C (167°F) or higher [A].

   HINT:

   The A/C switch and all accessory switches should be off.

5. With the engine running, accelerate the vehicle from 0 km/h (0 mph) to 60 km/h (37 mph) taking 3 seconds or more [B].

   CAUTION:

   When performing the confirmation driving pattern, obey all speed limits and traffic laws.

   HINT:

   If the engine stops, further depress the accelerator pedal to restart the engine.

6. Repeat [B] 5 times or more [C].
7. Enter the following menus: Powertrain / Engine / Trouble Codes [D].
8. Read the pending DTCs.

   HINT:

   - If a pending DTC is output, the system is malfunctioning.
   - If a pending DTC is not output, perform the following procedure.

9. Enter the following menus: Powertrain / Engine / Utility / All Readiness.
10. Input the DTC: P04F09C.
11. Check the DTC judgment result.

    HINT:

    - If the judgment result shows NORMAL, the system is normal.
    - If the judgment result shows ABNORMAL, the system has a malfunction.
    - If the judgment result shows INCOMPLETE, perform steps [B] and [D].
    - [A] to [D]: Normal judgment procedure.

      The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

- When clearing the permanent DTCs, do not disconnect the cable from the auxiliary battery terminal or attempt to clear the DTCs during this procedure, as doing so will clear the universal trip and normal judgment histories.

WIRING DIAGRAM

Refer to DTC P14D211.

Click here INFO

CAUTION / NOTICE / HINT

NOTICE:

- Vehicle Control History may be stored in the hybrid vehicle control ECU assembly if the engine is malfunctioning. Certain vehicle condition information is recorded when Vehicle Control History is stored. Reading the vehicle conditions recorded in both the freeze frame data and Vehicle Control History can be useful for troubleshooting.

  Click here INFO

  (Select Powertrain in Health Check and then check the time stamp data.)
- If any "Engine Malfunction" Vehicle Control History item has been stored in the hybrid vehicle control ECU assembly, make sure to clear it. However, as all Vehicle Control History items are cleared simultaneously, if any Vehicle Control History items other than "Engine Malfunction" are stored, make sure to perform any troubleshooting for them before clearing Vehicle Control History.

  Click here INFO

PROCEDURE

1.	**CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P04F09C)**

(a) Read the DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
P04F09C and other DTCs are output	A
P04F09C and P04419C are output	B
P04F09C is output	C

HINT:

If any DTCs other than P04F09C are output, troubleshoot those DTCs first.

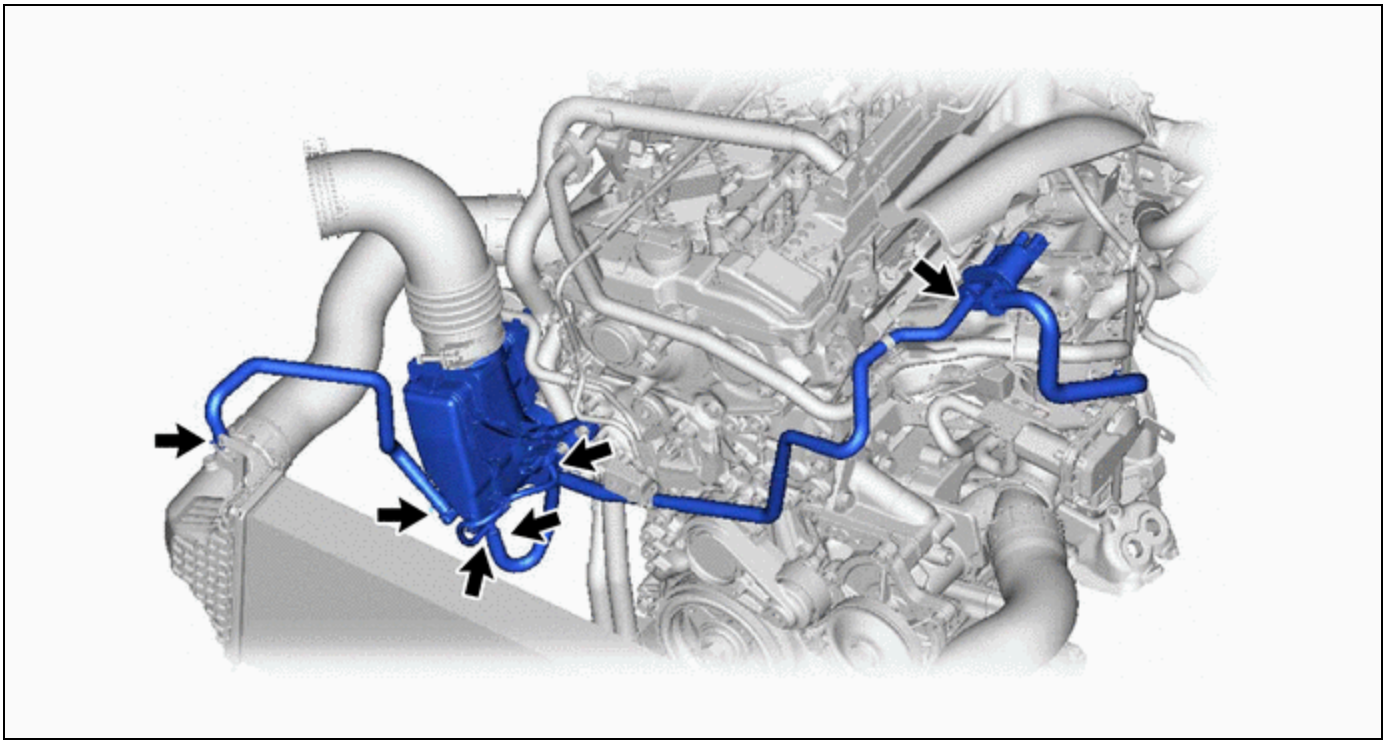
A ▶ **GO TO DTC CHART**

B ▶ **GO TO DTC P04419C**

C ▼

2.	**CHECK HIGH LOAD PURGE LINE (AIR CLEANER HOSE ASSEMBLY - PURGE VSV, PURGE PRESSURE SENSOR, AIR TUBE ASSEMBLY)**

(a) Check the high load purge line connections.



OK:
High load purge line is connected correctly.

NG ▶ **SECURELY RECONNECTION HIGH LOAD PURGE LINE**

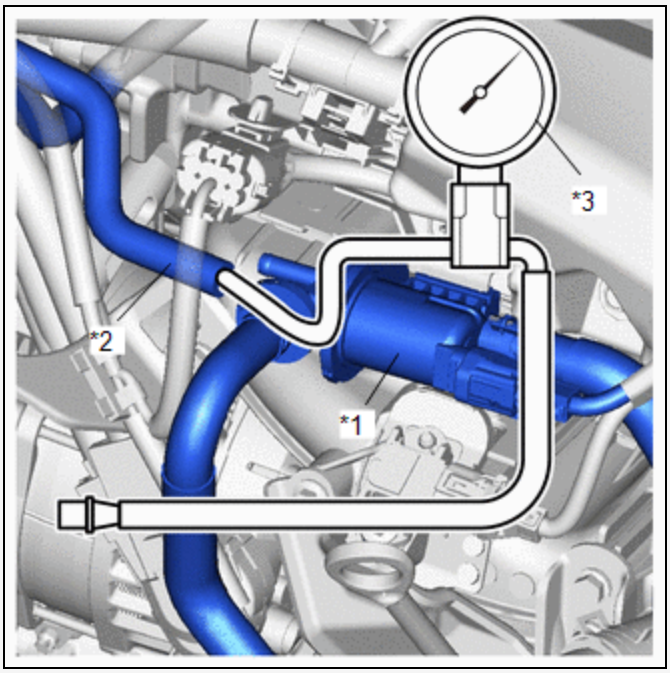
OK ▼

3.	CHECK HIGH LOAD PURGE LINE (PURGE VSV - AIR CLEANER HOSE ASSEMBLY)

Pre-procedure1

(a) Disconnect the vacuum hose from the purge VSV.

(b) Connect the vacuum gauge to the purge line (to air cleaner hose assembly)



*1	Purge VSV
*2	High load purge line (to air cleaner hose assembly)
*3	Vacuum gauge

(c) Put the engine in Inspection Mode (for measuring Exhaust Gas).

Powertrain > Hybrid Control > Utility

TESTER DISPLAY
Inspection Mode

(d) Start the engine.

Procedure1

(e) Perform the "Control the Wastegate Valve Duty Ratio".

Powertrain > Engine > Active Test

TESTER DISPLAY
Control the Wastegate Valve Duty Ratio

(f) Operate the Active Test at 30%.

(g) Check the suction while racing the engine at 2500 rpm.

OK:
Suction applied.

Post-procedure1

(h) None

NG ▶ **GO TO STEP 5**

OK

4.	**INSPECT PURGE VSV**

Click here INFO

OK ▶ **GO TO STEP 9**

NG ▶ **REPLACE PURGE VSV**

5.	**CHECK HIGH LOAD PURGE LINE (PURGE VSV - AIR CLEANER HOSE ASSEMBLY)**

(a) Check the high load purge line.

OK:
High load purge line is not clogged and damaged.

NG ▶ **CLEAN OR REPLACE HIGH LOAD PURGE LINE**

OK

6.	**INSPECT AIR CLEANER HOSE ASSEMBLY (EJECTOR)**

Click here INFO

NG ▶ **CLEAN OR REPLACE AIR CLEANER HOSE ASSEMBLY**

OK

7.	**CHECK EJECTOR DRIVE LINE (AIR CLEANER HOSE ASSEMBLY - AIR TUBE ASSEMBLY)**

(a) Check the ejector drive line.

OK:
Ejector drive line is not clogged and damaged.

NG ▶ **CLEAN OR REPLACE EJECTOR DRIVE LINE**

OK

8.	**INSPECT AIR TUBE ASSEMBLY (EJECTOR DRIVE PORT)**

(a) Inspect the air tube assembly.

OK:
Ejector drive port of the air tube assembly is not clogged and damaged.

NG ▶ **CLEAN OR REPLACE AIR TUBE ASSEMBLY**

OK ▼

9.	**CHECK HIGH LOAD PURGE LINE (PURGE PRESSURE SENSOR - AIR CLEANER HOSE ASSEMBLY)**

(a) Check the purge pressure sensor hose.

OK:
Purge pressure sensor hose is not clogged and damaged.

NG ▶ **CLEAN OR REPLACE PURGE PRESSURE SENSOR HOSE**

OK ▼

10.	**CHECK HARNESS AND CONNECTOR (PURGE PRESSURE SENSOR - ECM)**

Pre-procedure1

(a) Disconnect the purge pressure sensor connector.

(b) Disconnect the ECM connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(D11,D31)
Click Connector(D11)
Click Connector(D31)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
D11-3 (VC) - D31-82 (VCPH)	Always	Below 1 Ω	Ω
D11-2 (PPG) - D31-142 (PHPG)	Always	Below 1 Ω	Ω
D11-1 (GND) - D31-112 (EPHP)	Always	Below 1 Ω	Ω
D11-3 (VC) or D31-82 (VCPH) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
D11-2 (PPG) or D31-142 (PHPG) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
D11-1 (GND) or D31-112 (EPHP) - Body ground and other terminals	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

11.	REPLACE PURGE PRESSURE SENSOR (VACUUM SENSOR ASSEMBLY)

HINT:

Click here INFO

NEXT ▼

12.	CLEAR DTC

Pre-procedure1

(a) None

Procedure1

(b) Clear the DTCs.

Powertrain > Engine > Clear DTCs

Post-procedure1

(c) Turn the ignition switch off and wait for at least 30 seconds.

NEXT ▼

13.	CHECK WHETHER DTC OUTPUT RECURS (DTC P04F09C)

Pre-procedure1

(a) Drive the vehicle in accordance with the driving pattern described in Confirmation Driving Pattern.

Procedure1

(b) Read the DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
DTCs are not output	A
P04F09C is output	B

Post-procedure1

(c) None

A ▶ **END**

B ▶ REPLACE ECM