Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BM10
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P142000,P142100; Evaporative Emission Canister (Small Leak); 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

DTC	**P142000**	**Evaporative Emission Canister (Small Leak)**

DTC	**P142100**	**Evaporative Emission Canister (Gross Leak)**

DTC SUMMARY

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P142000	Evaporative Emission Canister (Small Leak)	Leak detection pump creates negative pressure (vacuum) in EVAP system and EVAP system pressure is measured. Reference pressure is measured at the start and at the end of leak check. If stabilized pressure is higher than second reference pressure, ECM determines that EVAP system has a small leak.	• EVAP leak (purge VSV - canister - fuel vapor-containment valve) • Purge VSV • Connector/wire harness (purge VSV - ECM) • Canister pump module • ECM	Comes on	Engine	B	SAE Code: P1420
P142100	Evaporative Emission Canister (Gross Leak)	Leak detection pump creates negative pressure (vacuum) in EVAP system and EVAP system pressure is measured. Reference pressure is measured at the start and at the end of leak check. If stabilized pressure is higher than [second reference pressure x 0.2], ECM determines that EVAP system has a large leak.	• EVAP leak (purge VSV - canister - fuel vapor-containment valve) • Purge VSV • Connector/wire harness (purge VSV - ECM) • Canister pump module • ECM	Comes on	Engine	B	SAE Code: P1421

DTC NO.	MONITORING ITEM	DETECTION TIMING	DETECTION LOGIC	SAE CODE
P142000	Canister small leak	EVAP monitoring (Ignition switch off)	2 trip	P1420
P142100	Canister gross leak			P1421

DESCRIPTION

Refer to EVAP (evaporative emission) System.

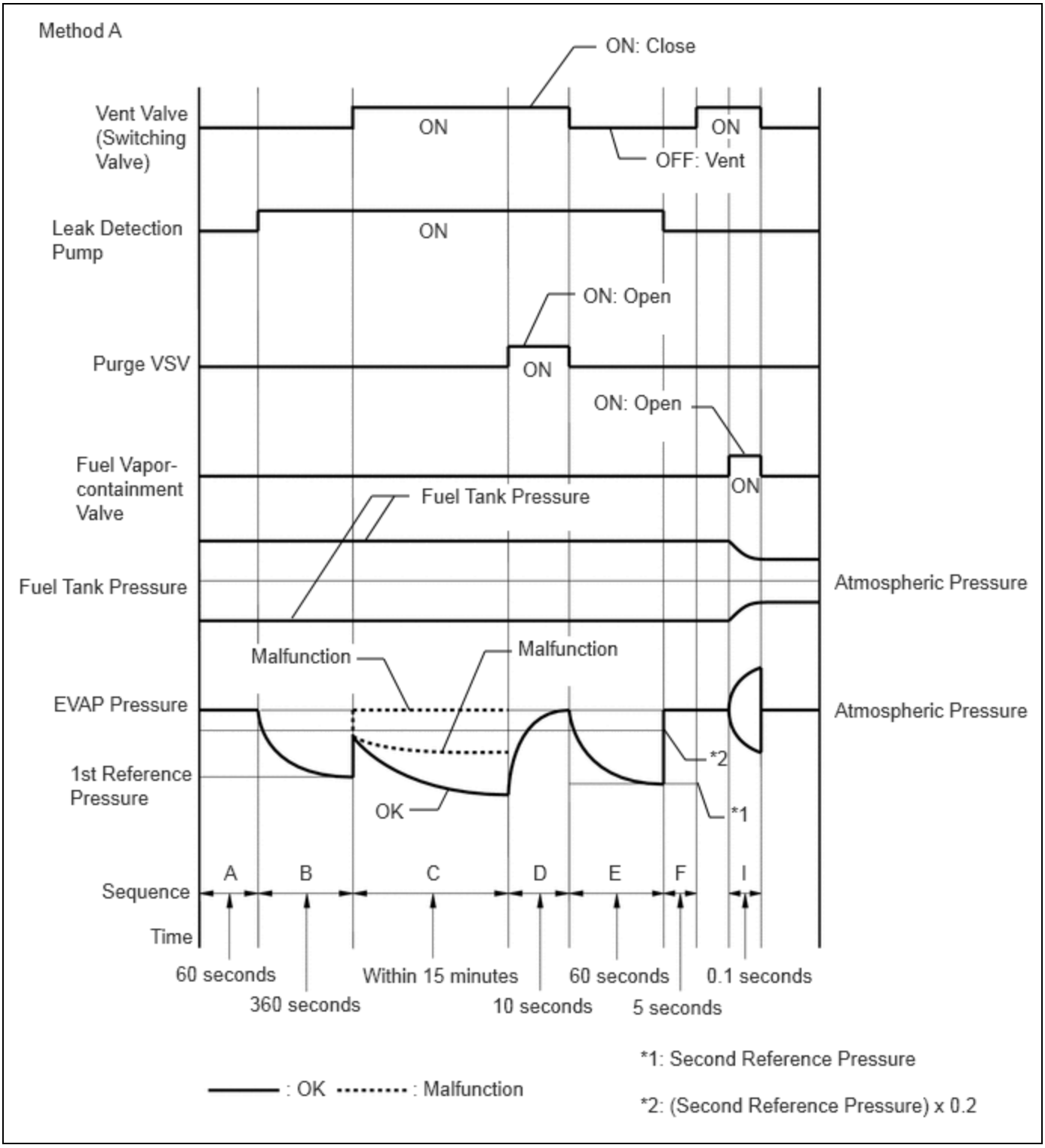
Click here INFO

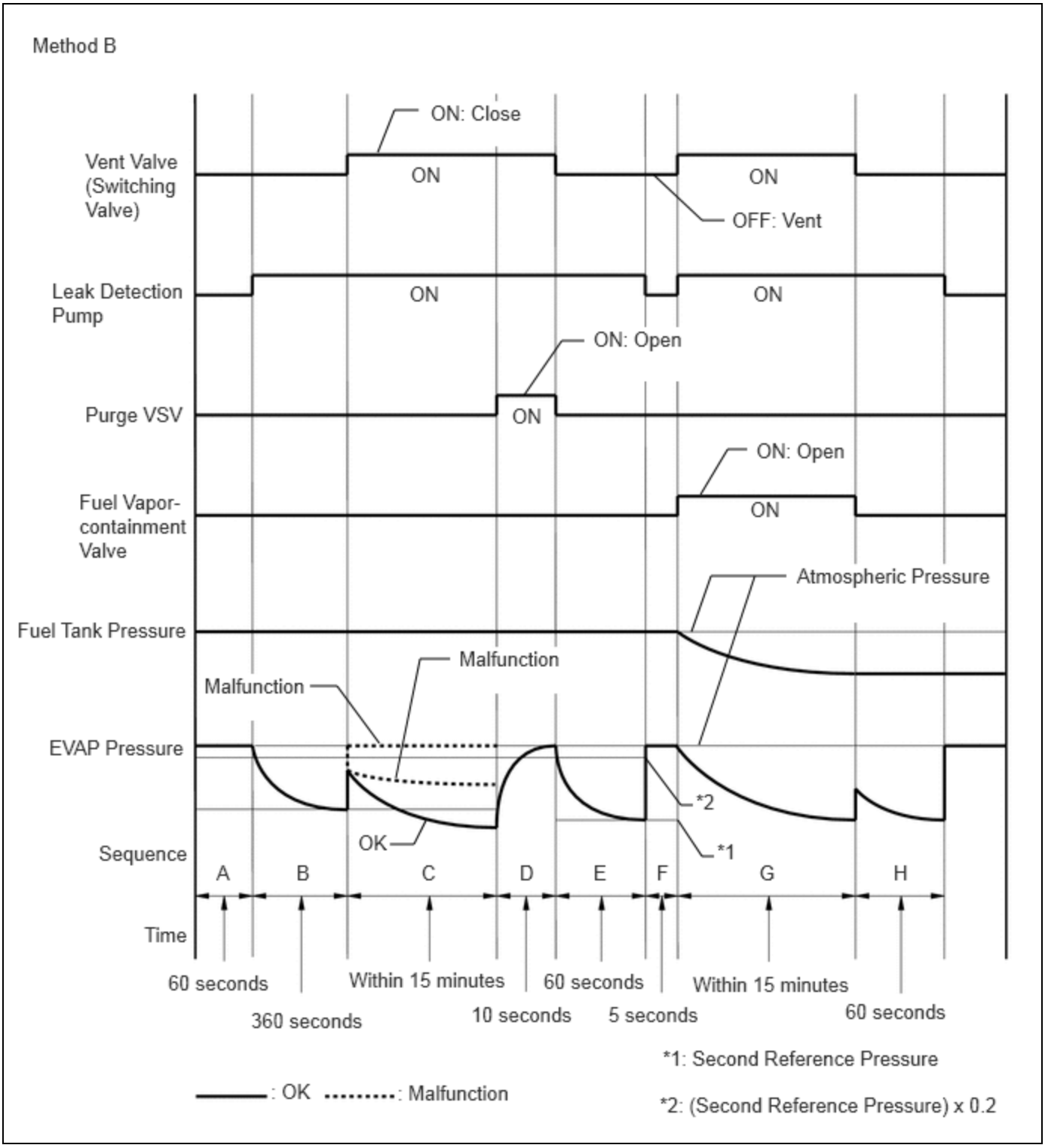
MONITOR DESCRIPTION

1. P142000: EVAP (evaporative emission) small leak

   In operation C, the leak detection pump creates negative pressure (vacuum) in the EVAP system and the EVAP system pressure is measured. If the stabilized system pressure is higher than the second reference pressure, the ECM determines that the EVAP system has a small leak, illuminates the MIL and stores the DTC (2 trip detection logic).
2. P142100: EVAP gross leak

   In operation C, the leak detection pump creates negative pressure (vacuum) in the EVAP system and the EVAP system pressure is measured. If the stabilized system pressure is higher than [second reference pressure x 0.2] (near atmospheric pressure), the ECM determines that the EVAP system has a large leak, illuminates the MIL and stores the DTC (2 trip detection logic).


Method A
ON: Close
Vent Valve (Switching Valve)
ON
ON
OFF: Vent
Leak Detection Pump
ON
ON: Open
Purge VSV
ON
ON: Open
Fuel Vapor-containment Valve
ON
Fuel Tank Pressure
Fuel Tank Pressure
Atmospheric Pressure
Malfunction
Malfunction
EVAP Pressure
Atmospheric Pressure
*2
1st Reference Pressure
OK
*1
A
B
C
D
E
F
I
Sequence
Time
60 seconds
360 seconds
Within 15 minutes
10 seconds
60 seconds
5 seconds
0.1 seconds
*1: Second Reference Pressure
*2: (Second Reference Pressure) x 0.2
: OK
: Malfunction



MONITOR STRATEGY

Required Sensors/Components (Main)	Purge VSV Canister pump module
Required Sensors/Components (Related)	-
Frequency of Operation	Once per driving cycle
Duration	Within 20 minutes
MIL Operation	2 driving cycles

Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Key-off monitor runs when all of the following conditions are met	-
Atmospheric pressure	70 kPa(abs) [10.2 psi(abs)] or higher, and less than 110 kPa(abs) [16 psi(abs)]
Auxiliary battery voltage	10.5 V or higher
Vehicle speed	Less than 4 km/h (2.5 mph)
Ignition switch	Off
Engine condition	Not running
Key-OFF duration	5, 7 or 9.5 hours
Pressure sensor of canister pump module malfunction (P0451, P0452, P0453)	Not detected
Fuel tank pressure sensor malfunction (P1451, P1452, P1453)	Not detected
Purge VSV	Not operated by scan tool
Vent valve	Not operated by scan tool
Fuel vapor-containment valve	Not operated by scan tool
Leak detection pump	Not operated by scan tool
Purge flow before key-OFF	Performed
Engine coolant temperature	4.4°C (39.9°F) or higher, and less than 35°C (95°F)
Intake air temperature	4.4°C (39.9°F) or higher, and less than 35°C (95°F)

TYPICAL MALFUNCTION THRESHOLDS

P1420: EVAP Small Leak

EVAP pressure when vacuum introduction for canister was complete	Between conditions 1 and 2
Condition 1	Higher than second reference pressure
Condition 2	Lower than [second reference pressure x 0.2]

P1421: EVAP Gross Leak

EVAP pressure when vacuum introduction for canister was complete	Higher than [second reference pressure x 0.2]

MONITOR RESULT

Refer to EVAP system.

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CONFIRMATION DRIVING PATTERN

NOTICE:

- The Evaporative System Check (Automatic Mode) consists of 9 steps performed automatically by the GTS. It takes a maximum of approximately 40 minutes.
- Do not perform the Evaporative System Check when the fuel tank is higher than 90% full because the cut-off valve may be closed, making the fuel tank leak check unavailable.
- Do not start the engine during this operation.
- When the temperature of the fuel is 35°C (95°F) or higher, a large amount of vapor will form and any check result will be inaccurate. When performing the Evaporative System Check, keep the fuel temperature less than 35°C (95°F).

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. Turn the ignition switch to ON [A].
4. Enter the following menus: Powertrain / Engine / Utility / Evaporative System Check / Automatic Mode [B].
5. After the "Evaporative System Check" is completed, check for All Readiness by entering the following menus: Powertrain / Engine / Utility / All Readiness.
6. Input the DTC: P142000 or P142100.
7. Check the DTC judgment result.

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system is malfunctioning.
- [A] to [B]: 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.

CAUTION / NOTICE / HINT

NOTICE:

- Vehicle Control History may be stored in the hybrid vehicle control ECU 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.

  for HEV Model: Click here INFO

  for PHEV Model: 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, 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.

  for HEV Model: Click here INFO

  for PHEV Model: Click here INFO

PROCEDURE

1.	**GO TO EVAP SYSTEM**

HINT:

Click here INFO

NEXT END