Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BM17
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P210900; Throttle/Pedal Position Sensor "A" Minimum Stop Performance; 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

DTC	**P210900**	**Throttle/Pedal Position Sensor "A" Minimum Stop Performance**

DESCRIPTION

The idle speed is controlled by the Electronic Throttle Control System (ETCS). The ETCS is comprised of a throttle actuator, which operates the throttle valve, and a throttle position sensor, which detects the opening amount of the throttle valve. The ECM controls the throttle actuator to adjust the throttle valve opening amount so that the idle speed is maintained at the target idle speed.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P210900	Throttle/Pedal Position Sensor "A" Minimum Stop Performance	The Throttle Air Flow F/B Value* approaches its limit even though the actual intake air amount during idling is within the normal range (up to 1.5 times the normal amount) (1 trip detection logic). *: Data List item	Throttle body with motor assembly	Does not come on	Engine	B	SAE Code: P2109

HINT:

- This malfunction is only detected once per trip. After it has been detected once, the system will not monitor for the malfunction for the rest of the trip.
- The system uses the throttle body with motor assembly and mass air flow meter sub-assembly to detect this malfunction.

MONITOR DESCRIPTION

If there are deposits in the throttle valve, a decrease in the ISC flow rate may cause engine stall or unstable idling. Therefore, the necessary ISC flow rate for idling is maintained using the throttle air flow feedback. The ECM stores this DTC if the Throttle Air Flow F/B Value approaches its limit. The ECM begins monitoring for the DTC detection conditions when the following preconditions are met:

1. The mass air flow meter sub-assembly is normal.
2. Atmospheric pressure is 85 kPa(abs) [12.3 psi(abs)] or higher.
3. The vehicle has been driven at a speed of 30 km/h (19 mph) or more at least once.
4. The engine coolant temperature is 45°C (113°F) or less at engine start, the engine is warmed up and conditions for Throttle Air Flow F/B Value are met, or the ignition switch has been turned to ON (include engine running) for 1 hour or more, the engine is warmed up and conditions for Throttle Air Flow F/B Value are met.

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

HINT:

Since a pending DTC is not stored for this DTC, it takes time to confirm whether the malfunction has been successfully repaired by checking for this DTC. When confirming whether the malfunction has been successfully repaired, compare "ISC Learning Value" recorded in the Freeze Frame Data with "ISC Learning Value" in the Data List after repairs have been made to save time.

PROCEDURE

1.	**CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P210900)**

(a) Read the DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
P210900 and other DTCs are output	A
P210900 is output	B

HINT:

If any DTCs other than P210900 are output, troubleshoot those DTCs first.

A ▶ **GO TO DTC CHART**

B ▼

2.	**READ FREEZE FRAME DATA (ISC LEARNING VALUE)**

(a) Using the GTS, check "ISC Learning Value" in the Freeze Frame Data.

Powertrain > Engine > DTC(P210900) > Freeze Frame Data

TESTER DISPLAY
ISC Learning Value

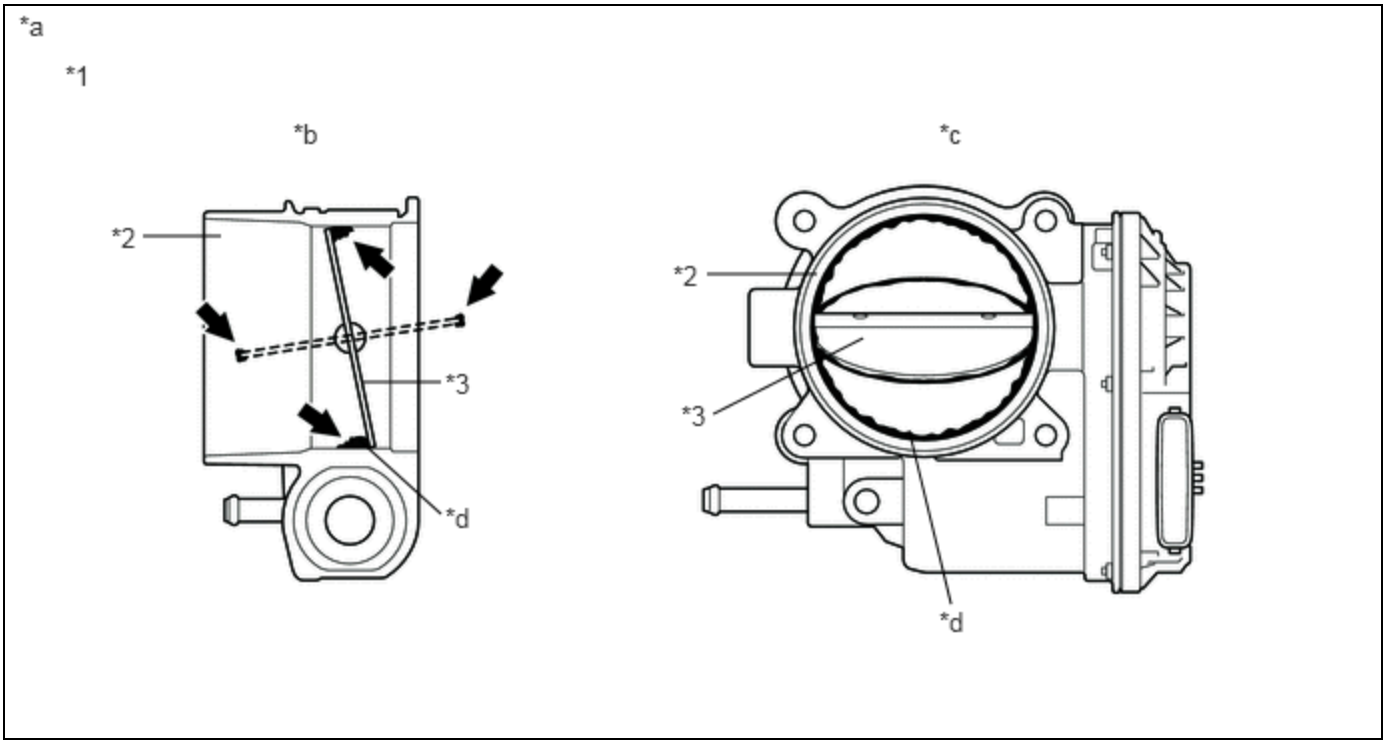
HINT:

Be sure to confirm that the Freeze Frame Data item "ISC Learning Value" is the same as that used when confirming whether the malfunction has been successfully repaired.

NEXT

3.	**INSPECT THROTTLE BODY WITH MOTOR ASSEMBLY**

(a) Check for foreign matter between the throttle valve and the housing.



*1	Throttle Body with Motor Assembly	*2	Bore
*3	Throttle Valve	-	-
*a	Reference	*b	Throttle Body with Motor Assembly Cross-section Diagram
*c	When valve fully opened	*d	Deposits

HINT:

The illustration is for reference only, actual parts may differ.

RESULT	PROCEED TO
Foreign matter between the throttle valve and housing	A

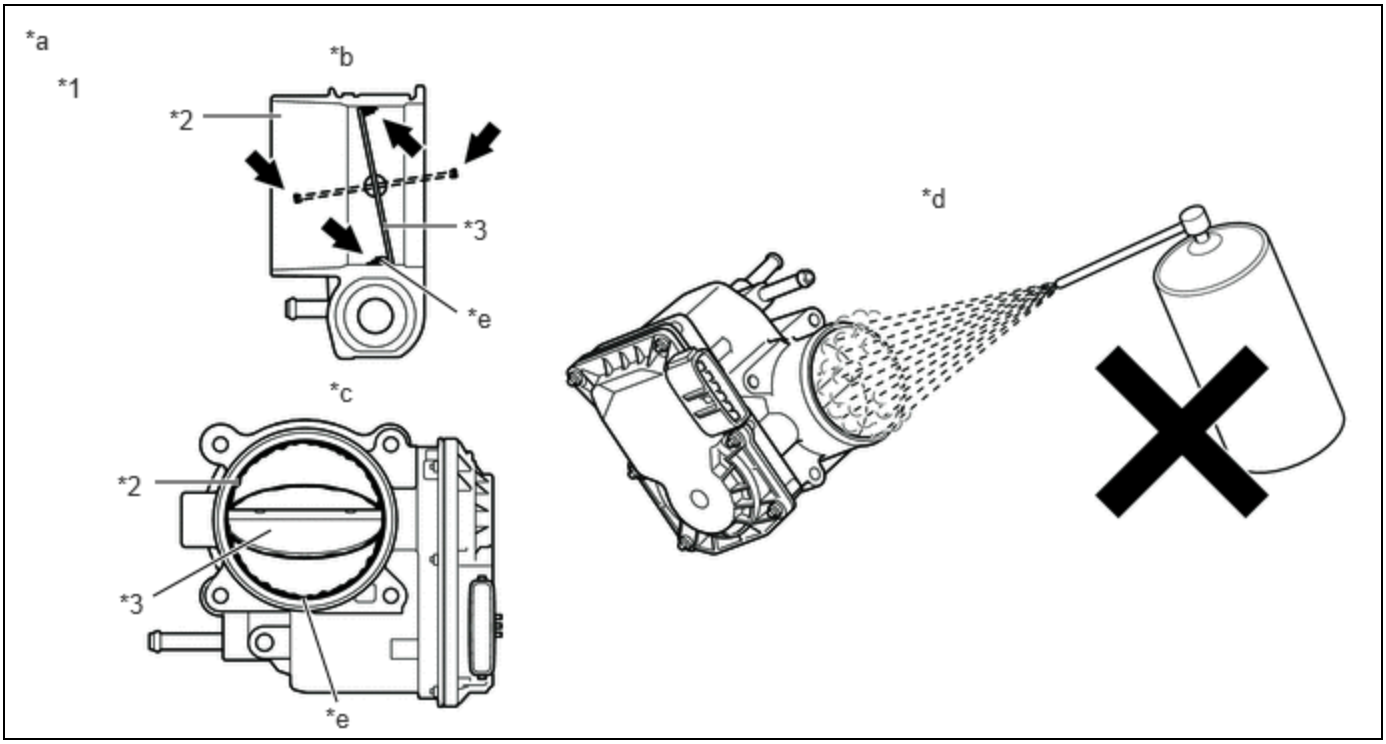
RESULT	PROCEED TO
No foreign matter between the throttle valve and housing	B

B ▶ **REPLACE THROTTLE BODY WITH MOTOR ASSEMBLY**

A ▼

4.	**REMOVE FOREIGN MATTER (CLEAN THROTTLE BODY WITH MOTOR ASSEMBLY)**

(a) Clean off any deposits inside of the throttle body with motor assembly.



*1	Throttle Body with Motor Assembly	*2	Bore
*3	Throttle Valve	-	-
*a	Reference	*b	Throttle Body with Motor Assembly Cross-section Diagram
*c	When valve fully opened	*d	Do not directly apply cleaner
*e	Deposits	-	-

(1) Push open the throttle valve and wipe off any deposits from the valve and bore using a cloth soaked in non-residue solvent.

NOTICE:

- Make sure that the cloth or your fingers do not get caught in the valve.
- Make sure that foreign matter does not enter the throttle valve.

- Do not directly apply non-residue solvent to the throttle body with motor assembly or wash the throttle body with motor assembly. Cleaning solvent may leak into the motor from the shaft and cause problems such as rust or valve movement problems.
- If there is coating material on the edge of the throttle valve, be careful not to remove it.
- Push the throttle valve open gently with your finger and check that the throttle valve moves smoothly.

HINT:

- If the throttle valve does not open smoothly, replace the throttle body with motor assembly.

  Click here INFO
- The illustration is for reference only, actual parts may differ.

NEXT

5.	**READ VALUE USING GTS (ISC LEARNING VALUE)**

Pre-procedure1

(a) Perform "Inspection After Repair" after cleaning the throttle body with motor assembly.

HINT:

Click here INFO

Procedure1

(b) According to the display on the GTS, read the Data List.

Powertrain > Engine > Data List

TESTER DISPLAY
ISC Learning Value

OK:

The value of ISC Learning Value is half or less of ISC Learning Value recorded in the freeze frame data.

Post-procedure1

(c) None.

OK ▶ **END**

NG ▶ **REPLACE THROTTLE BODY WITH MOTOR ASSEMBLY**