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<b>Model Year Start:</b> 2023	<b>Model:</b> Prius Prime	<b>Prod Date Range:</b> [03/2023 - ]
<b>Title:</b> M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P059A71,P059A79; Active Grille Air Shutter "A" Actuator Stuck; 2023 - 2024 MY Prius Prius Prime [03/2023 - ]		

<b>DTC</b>	<b>P059A71</b>	<b>Active Grille Air Shutter "A" Actuator Stuck</b>
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<b>DTC</b>	<b>P059A79</b>	<b>Active Grille Air Shutter "A" Mechanical Linkage Failure</b>
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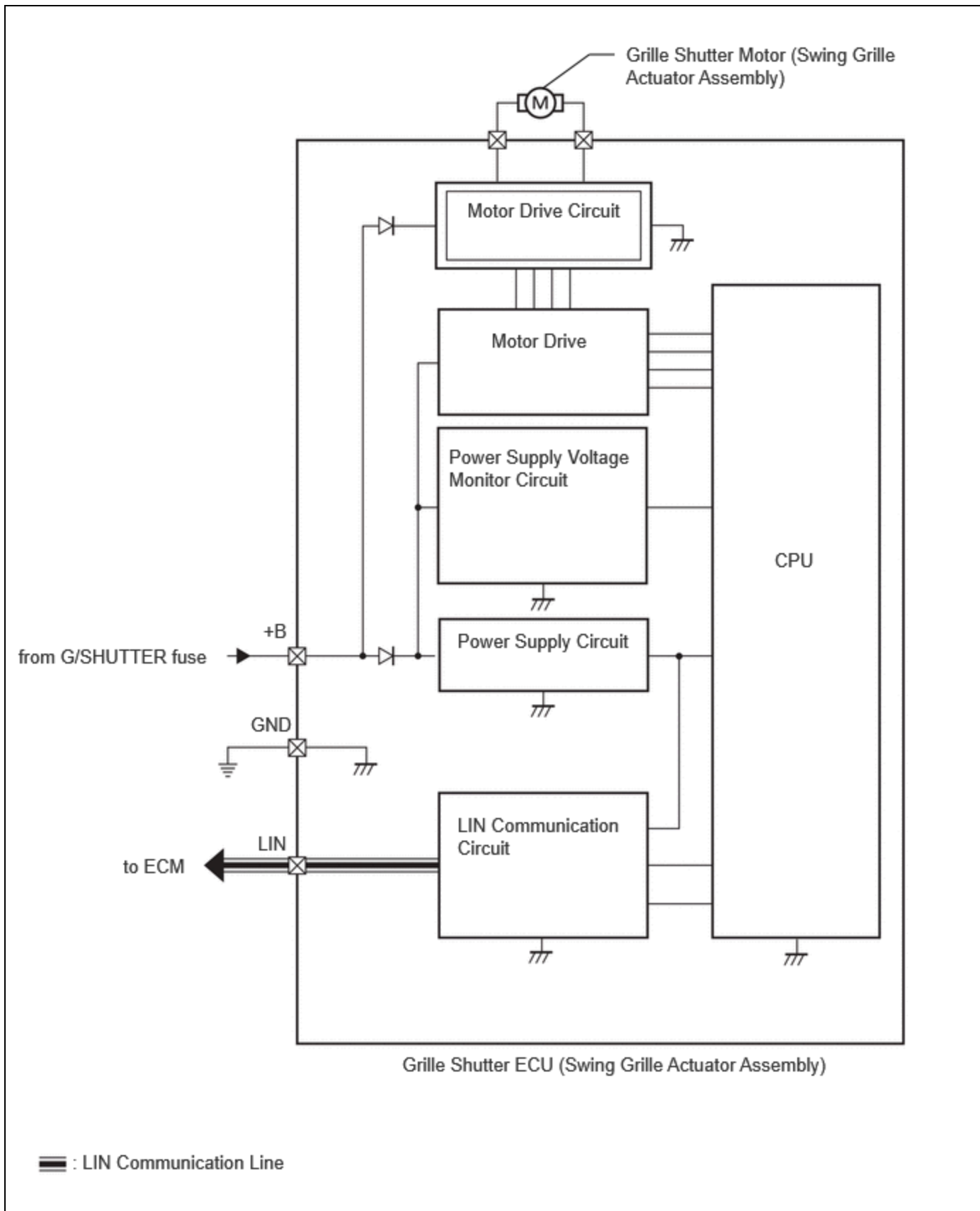
## DESCRIPTION

The grille shutter system is composed of the radiator shutter sub-assembly and swing grille actuator assembly.

When the certain vehicle conditions are met, the grille shutter system operates the swing grille actuator assembly to open and close the radiator shutter sub-assembly and control the volume of air flowing through the radiator assembly into the engine compartment. This results in increased thermal efficiency and increased fuel economy due to reduced aerodynamic drag. This control is performed based on signals received via CAN communication: vehicle speed signal, engine coolant temperature signal, hybrid inverter coolant temperature signal, ambient temperature signal and refrigerant pressure.

### Control List

CONTROL	DESCRIPTION
Closing Operation Control	When the grille shutter is open and the vehicle conditions are met, the grille shutter closes in order to improve fuel economy (reduce air resistance) and reduce engine warm up time.
Opening Operation Control	When the grille shutter is closed and the vehicle conditions are met, the grille shutter opens to ensure radiator and engine cooling air.
Ignition Switch Off-linked Opening Operation Control	When the ignition switch is turned off and the vehicle is stopped with the grille shutter closed, the grille shutter opens.
Winter Control Mode	During operation in low temperatures when there is a possibility of the grille shutter being stuck due to being frozen, a malfunction judgment is not made even though it is detected that the grille shutter is stuck.
Brake (B) Shift State-linked Opening Control	Opens the grille shutter to assist braking when brake (B) is selected. This control is prohibited when the grille shutter is in winter control mode.
Retry Operation	If a mechanical malfunction is detected during a grille shutter operation, the operation will be attempted again.



DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P059A71	Active Grille Air Shutter "A" Actuator Stuck	A signal from the swing grille actuator assembly indicating that the grille shutter is stuck is detected for 7.86 seconds or more (2 trip detection logic).	<ul style="list-style-type: none"> <li>Radiator shutter assembly</li> <li>ECM</li> </ul>	Comes on	Engine	A	SAE Code: P059F
P059A79	Active Grille Air Shutter "A" Mechanical Linkage Failure	A signal from the swing grille actuator assembly indicating a malfunction is detected for 7.86 seconds or more (2 trip detection logic).	<ul style="list-style-type: none"> <li>Radiator shutter assembly</li> <li>ECM</li> </ul>	Comes on	Engine	A	SAE Code: P059F

## MONITOR DESCRIPTION

When the swing grille actuator assembly detects that the grille shutter is stuck or there is a malfunction, a DTC request is sent to the ECM and the ECM stores a DTC.

## MONITOR STRATEGY

Related DTCs	P059F: Active grille air shutter stuck / lose connection
Required Sensors/Components (Main)	Swing grille actuator assembly Radiator shutter sub-assembly
Required Sensors/Components (Related)	-
Frequency of Operation	Once per driving cycle
Duration	7.86 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

## TYPICAL ENABLING CONDITIONS

Monitor runs whenever the following DTCs are not stored	None
All of the following conditions are met	-
Auxiliary battery voltage	8 V or higher
Time after ignition switch off to ON	0.5 seconds or higher
Receive LIN communication signal	4.608 seconds or less

## TYPICAL MALFUNCTION THRESHOLDS

### Stuck

All of the following conditions are met	-
Block error signal from the actuator	Received
Retry number	8
Either of the following condition is met	-
Ambient air temperature	10°C (14°F) or higher
Engine coolant temperature	120°C (248°F) or higher

### Lose Connection

Both of the following conditions are met	-
Over travel error signal from the actuator	Received
Retry number	8

## 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

- Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
- Turn the ignition switch off and wait for at least 30 seconds.
- Turn the ignition switch to ON [A].
- Enter the following menus: Powertrain / Engine / Utility / Switch Grille Shutter Control Mode [B].
- According to the display on the GTS, change the grille shutter control mode from normal mode to maintenance mode.
- Enter the following menus: Powertrain / Engine / Utility / Grille Shutter Initialization / Initialization operation (Nominal Torque) [C].
- According to the display on the GTS, perform initialization.
- Enter the following menus: Powertrain / Engine / Trouble Codes [D].
- 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.

- Enter the following menus: Powertrain / Engine / Utility / All Readiness.
- Input the DTC: P059A71 or P059A79.
- Check the DTC judgment result.

### HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system has a malfunction.
- [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.

## CAUTION / NOTICE / HINT

### NOTICE:

- In order to ensure safety, before performing troubleshooting or removing the radiator shutter assembly, change the grille shutter control mode to maintenance mode.
- 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. PERFORM UTILITY USING GTS (SWITCH GRILLE SHUTTER CONTROL MODE)

- (a) According to the display on the GTS, change the grille shutter control mode from normal mode to maintenance mode.

**Powertrain > Engine > Utility**

TESTER DISPLAY
Switch Grille Shutter Control Mode

### NEXT



### 2. INSPECT GRILLE SHUTTER (FOREIGN MATTER AND ICE)

- (a) Check the area around the shutters and the links of the grille shutter for foreign matter and ice.

OK:

No foreign matter or ice.

**NG** **GO TO STEP 6**

**OK****3. PERFORM UTILITY USING GTS (GRILLE SHUTTER INITIALIZATION)**

(a) According to the display on the GTS, perform initialization (nominal torque).

**Powertrain > Engine > Utility**

TESTER DISPLAY
Grille Shutter Initialization

**NEXT****4. 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****5. CHECK DTC OUTPUT (DTC P059A71 OR P059A79)**

(a) Read the DTCs.

**Powertrain > Engine > Trouble Codes**

RESULT	PROCEED TO
DTCs are not output	A

RESULT	PROCEED TO
P059A71 or P059A79 is output	B

**HINT:**

Perform "Switch Grille Shutter Control Mode and Grille Shutter Initialization" after replacing the radiator shutter assembly.

Click here [INFO](#)

**A** ► **GO TO STEP 8**

**B** ► **REPLACE RADIATOR SHUTTER ASSEMBLY**

<b>6.</b>	<b>REMOVE FOREIGN MATTER OR ICE (CLEAN GRILLE SHUTTER)</b>
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- (a) Remove any foreign matter and/or ice from the area around the shutters and the links of the grille shutter.

**NEXT**

<b>7.</b>	<b>CLEAR DTC</b>
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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**

<b>8.</b>	<b>READ VALUE USING GTS (GRILLE SHUTTER CONTROL MODE)</b>
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Pre-procedure1

(a) According to the display on the GTS, change the grille shutter control mode from maintenance mode to normal mode.

**Powertrain > Engine > Utility**

TESTER DISPLAY
Switch Grille Shutter Control Mode

Procedure1

(b) Read the value displayed on the GTS.

**Powertrain > Engine > Data List**

TESTER DISPLAY
Grille Shutter Control Mode

Standard:

GTS DISPLAY	SPECIFIED CONDITION
Grille Shutter Control Mode	Normal

Post-procedure1

(c) None.

**NEXT**  **END**

