

Last Modified: 12-04-2024	6.11:8.1.0	Doc ID: RM10000002BM13
Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [03/2023 -]
Title: M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P15AD87; Active Grille Air Shutter "A" Missing Message; 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

DTC	P15AD87	Active Grille Air Shutter "A" Missing Message
------------	----------------	--

DESCRIPTION

The ECM and swing grille actuator assembly each detect reception malfunctions. Swing grille actuator assembly reception malfunctions detected by the swing grille actuator assembly are sent to the ECM via LIN communication.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P15AD87	Active Grille Air Shutter "A" Missing Message	ECM or swing grille actuator assembly communication stops for 15.5 seconds or more with the ignition switch ON (2 trip detection logic).	Radiator shutter assembly	Comes on	Engine	A	SAE Code: P15AD

MONITOR DESCRIPTION

When a communication malfunction occurs in either the ECM or swing grille actuator assembly, the ECM stores a DTC.

MONITOR STRATEGY

Related DTCs	P15AD: Active grille air shutter control module verify communication
Required Sensors/Components (Main)	Swing grille actuator assembly ECM
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	15.5 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever the following DTCs are not stored	None
Both 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

TYPICAL MALFUNCTION THRESHOLDS

Either of the following conditions is met	-
Lost communication at LIN driver	Judged
LIN error signal from the actuator	Received

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].
- Wait 30 seconds or more [B].
- Enter the following menus: Powertrain / Engine / Trouble Codes [C].
- 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: P15AD87.
- Check the DTC judgment result.

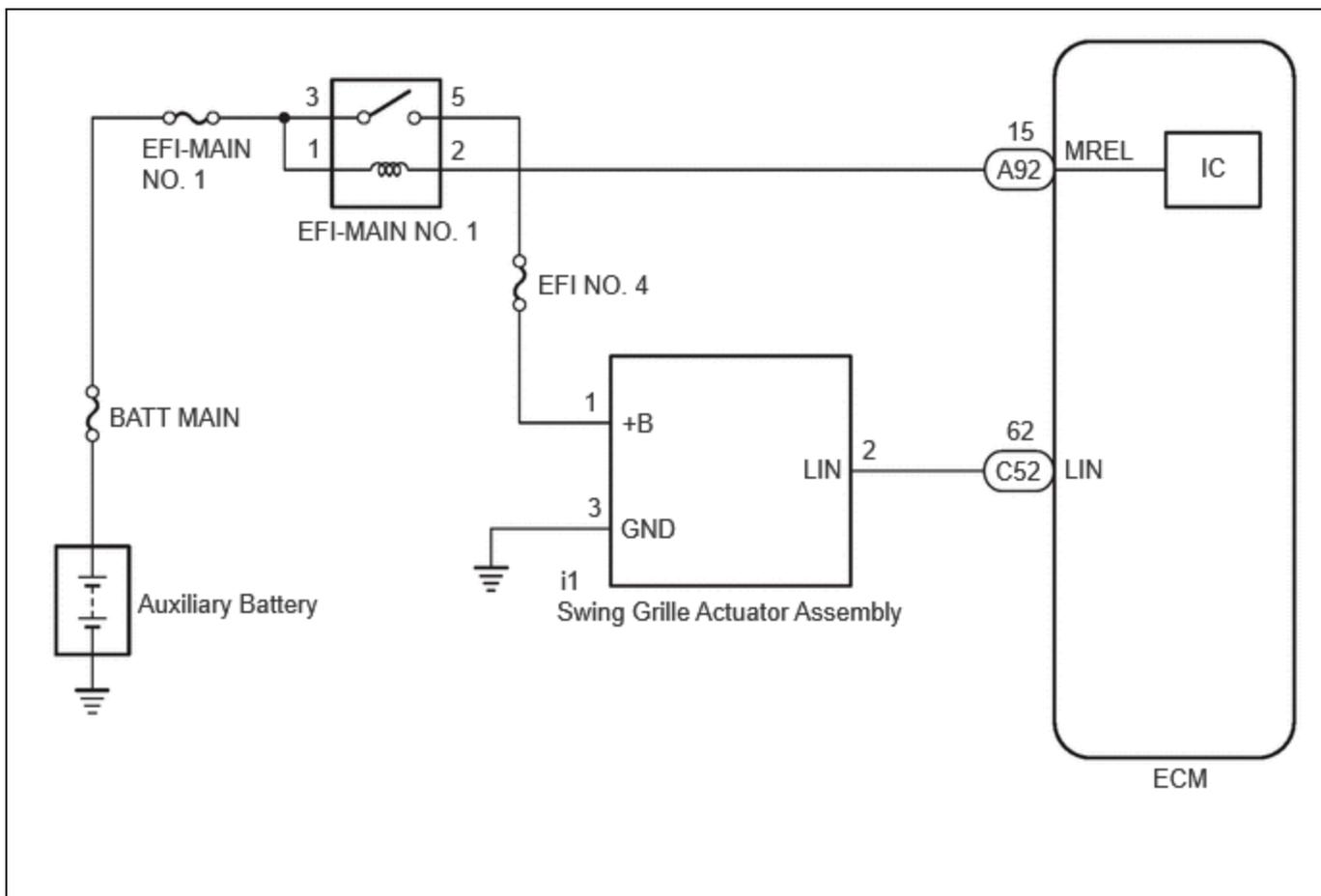
HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system has a malfunction.
- [A] to [C]: 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



CAUTION / NOTICE / HINT

NOTICE:

- Inspect the fuses for circuits related to this system before performing the following procedure.
- 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. CHECK HARNESS AND CONNECTOR (SWING GRILLE ACTUATOR ASSEMBLY - ECM)

Pre-procedure1

- (a) Disconnect the swing grille actuator assembly connector.
 (b) Disconnect the ECM connector.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(i1,C52\)](#)

[Click Connector\(i1\)](#)

[Click Connector\(C52\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
i1-2 (LIN) - C52-62 (LIN)	Always	Below 1 Ω	Ω
i1-2 (LIN) or C52-62 (LIN) - Body ground and other terminals	Always	10 k Ω or higher	k Ω

HINT:

Other parts that are connected between the tester connection terminals may affect the measurement value. Conduct the inspection after disconnecting them if the result is not as specified.

Post-procedure1

- (d) None.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



3. CHECK TERMINAL VOLTAGE (POWER SOURCE OF SWING GRILLE ACTUATOR ASSEMBLY)

Pre-procedure1

- (a) Disconnect the swing grille actuator assembly connector.
- (b) Turn the ignition switch to ON.

Procedure1

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

Standard Voltage:



[Click Location & Routing\(i1\)](#)

[Click Connector\(i1\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
i1-1 (+B) - i1-3 (GND)	Ignition switch ON	11 to 14 V	V

HINT:

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

[Click here](#)

Post-procedure1

- (d) None.

OK **REPLACE RADIATOR SHUTTER ASSEMBLY**

NG



4. CHECK HARNESS AND CONNECTOR (SWING GRILLE ACTUATOR ASSEMBLY - BODY GROUND)

Pre-procedure1

- (a) Disconnect the swing grille actuator assembly connector.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(i1\)](#)

[Click Connector\(i1\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
i1-3 (GND) - Body ground	Always	Below 1 Ω	Ω

Post-procedure1

(c) None.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



5.	CHECK HARNESS AND CONNECTOR (SWING GRILLE ACTUATOR ASSEMBLY - EFI-MAIN NO. 1 RELAY)
-----------	--

Pre-procedure1

- (a) Disconnect the swing grille actuator assembly connector.
- (b) Remove the EFI-MAIN NO. 1, VVT, EFI-MAIN NO. 2 and EFI-MAIN NO. 3 relays from the No. 1 engine room relay block and No. 1 junction block assembly

HINT:

Remove the VVT, EFI-MAIN NO. 2 and EFI-MAIN NO. 3 relays connected between the checked terminals as the coil inside the relay influences the measurement value.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(i1\)](#)

[Click Connector\(i1\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
i1-1 (+B) - 5 (EFI-MAIN NO. 1 Relay)	Always	Below 1 Ω	Ω
i1-1 (+B) or 5 (EFI-MAIN NO. 1 Relay) - Body ground and other terminals	Always	10 k Ω or higher	k Ω

Post-procedure1

(d) None.

NG  **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK



6.	CHECK ECM POWER SOURCE CIRCUIT
-----------	---------------------------------------

HINT:

Click here 

NEXT



7.	READ VALUE USING GTS (GRILLE SHUTTER CONTROL MODE)
-----------	---

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**

