

Last Modified: 12-04-2024	6.11:8.1.0	Doc ID: RM100000028ZVV
Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [12/2022 -]
Title: HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM (for M20A-FXS): P05042B; Brake Switch "A"/"B" Signal Cross Coupled; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	P05042B	Brake Switch "A"/"B" Signal Cross Coupled
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DESCRIPTION

The stop light switch assembly is a duplex system that transmits two signals: STP and ST1-. These two signals are used by the hybrid vehicle control ECU to monitor whether or not the brake system is working properly. If the signals, which indicate the brake pedal is being depressed and released, are detected simultaneously, the hybrid vehicle control ECU interprets this as a malfunction in the stop light switch assembly and stores this DTC.

HINT:

The normal signal conditions are as shown in the table below.

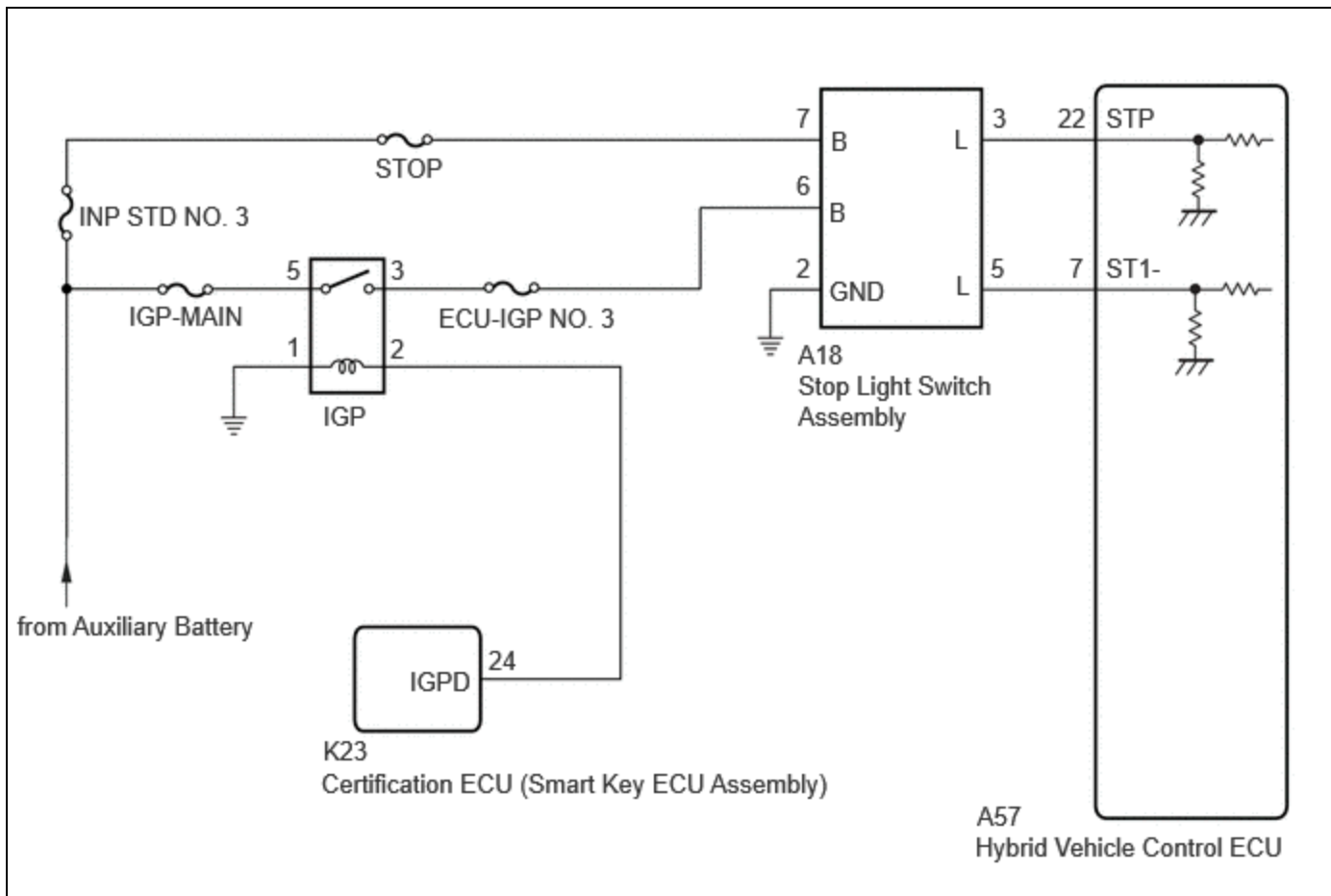
SIGNAL (HYBRID VEHICLE CONTROL ECU TERMINAL)	BRAKE PEDAL RELEASED	IN TRANSITION	BRAKE PEDAL DEPRESSED
STP	OFF	ON	ON
ST1-	ON	ON	OFF

- [OFF] denotes ground potential.
- [ON] denotes auxiliary battery potential (+B).

On the GTS, Data List item Stop Light SW is ON when the brake pedal is depressed.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P05042B	Brake Switch "A"/"B" Signal Cross Coupled	Conditions (a) and (b) are met for 0.5 seconds or more (1 trip detection logic): (a) Ignition switch ON (b) STP signal OFF when ST1-signal OFF	<ul style="list-style-type: none"> • Wire harness or connector • Stop light switch assembly • Hybrid vehicle control ECU 	Does not come on	Master Warning: Does not come on	Hybrid Control	A	SAE Code: P0504

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

Inspect the fuses for circuits related to this system before performing the following procedure.

HINT:

- Stop light switch assembly conditions can be checked using the GTS.
 - a. Enter the following menus: Powertrain / Hybrid Control / Data List / Stop Light SW.
 - b. Check the Data List indication when the brake pedal is depressed and released.

BRAKE PEDAL OPERATION	STOP LIGHT SW
Depressed	ON
Released	OFF

PROCEDURE

1.	CHECK TERMINAL VOLTAGE (POWER SOURCE OF STOP LIGHT SWITCH ASSEMBLY)
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Pre-procedure1

(a) Disconnect the stop light switch assembly connector.

Procedure1

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

Standard Voltage:


[Click Location & Routing\(A18\)](#)
[Click Connector\(A18\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A18-7 (B) - Body ground	Always	11 to 14 V	V

Post-procedure1

(c) Reconnect the stop light switch assembly connector.

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK


2.	CHECK TERMINAL VOLTAGE (POWER SOURCE OF STOP LIGHT SWITCH ASSEMBLY)
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Pre-procedure1

(a) Disconnect the stop light switch 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\(A18\)](#)
[Click Connector\(A18\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A18-6 (B) - Body ground	Ignition switch ON	11 to 14 V	V

Post-procedure1

(d) Turn the ignition switch off.

(e) Reconnect the stop light switch assembly connector.

NG ► GO TO STEP 6

OK

**3. CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH ASSEMBLY - BODY GROUND)**

Pre-procedure1

(a) Disconnect the stop light switch assembly connector.

Procedure1

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

Standard Resistance:

[Click Location & Routing\(A18\)](#)[Click Connector\(A18\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A18-2 (GND) - Body ground	Always	Below 1 Ω	Ω

Post-procedure1

(c) Reconnect the stop light switch assembly connector.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****4. CHECK TERMINAL VOLTAGE (STP AND ST1- VOLTAGE)**

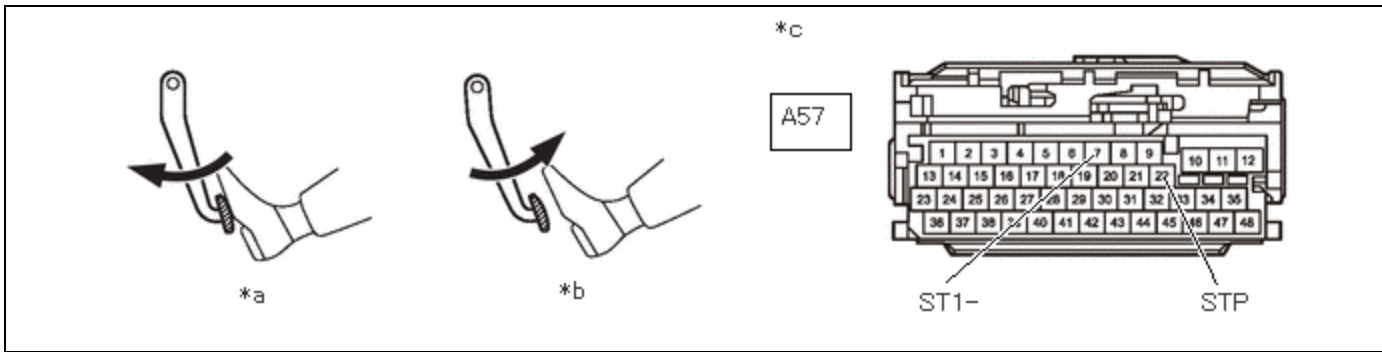
Pre-procedure1

(a) Disconnect the hybrid vehicle control ECU connector.

(b) Turn the ignition switch to ON.

Procedure1

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



*a	Brake Pedal Depressed	*b	Brake Pedal Released
*c	Front view of wire harness connector (to Hybrid Vehicle Control ECU)	-	-

Standard Voltage:



[Click Location & Routing\(A57\)](#)
[Click Connector\(A57\)](#)

TESTER CONNECTION	BRAKE PEDAL OPERATION	SPECIFIED CONDITION	RESULT
A57-7 (ST1-) - Body ground	Released	7.5 to 14 V	V
A57-7 (ST1-) - Body ground	Depressed	Below 1.5 V	V
A57-22 (STP) - Body ground	Released	Below 1.5 V	V
A57-22 (STP) - Body ground	Depressed	7.5 to 14 V	V

Post-procedure1

- (d) Turn the ignition switch off.
- (e) Reconnect the hybrid vehicle control ECU connector.

OK ▶ REPLACE HYBRID VEHICLE CONTROL ECU INFO

NG
▼

5.	CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH ASSEMBLY - HYBRID VEHICLE CONTROL ECU)
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Pre-procedure1

- (a) Disconnect the stop light switch assembly connector.
- (b) Disconnect the hybrid vehicle control ECU connector.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(A57,A18\).](#)

[Click Connector\(A57\).](#)

[Click Connector\(A18\).](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A57-7 (ST1-) - A18-5 (L)	Always	Below 1 Ω	Ω
A57-22 (STP) - A18-3 (L)	Always	Below 1 Ω	Ω
A57-7 (ST1-) or A18-5 (L) - Body ground and other terminals	Always	10 k Ω or higher	k Ω
A57-22 (STP) or A18-3 (L) - Body ground and other terminals	Always	10 k Ω or higher	k Ω

Post-procedure1

(d) Reconnect the hybrid vehicle control ECU connector.

(e) Reconnect the stop light switch assembly connector.

OK ► REPLACE STOP LIGHT SWITCH ASSEMBLY

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

6.	CHECK HARNESS AND CONNECTOR (IGP RELAY - STOP LIGHT SWITCH ASSEMBLY)
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Pre-procedure1

(a) Remove the IGP relay from the No. 1 engine room relay block and No. 1 junction block assembly.

(b) Disconnect the stop light switch assembly connector.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(A18\).](#)

[Click Connector\(A18\).](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
3 (IGP relay holder) - A18-6 (B)	Always	Below 1 Ω	Ω
3 (IGP relay holder) or A18-6 (B) - Body ground and other terminals	Always	10 k Ω or higher	k Ω

Post-procedure1

(d) Reconnect the stop light switch assembly connector.

(e) Install the IGP relay.

OK ► **CHECK ECU POWER SOURCE CIRCUIT**

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

