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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ELECTRONICALLY CONTROLLED BRAKE SYSTEM: P057A00,P05E062; Brake Pedal Position Sensor "A"; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**P057A00**	**Brake Pedal Position Sensor "A"**

DTC	**P05E062**	**Brake Pedal Position Sensor "A"/"B" Signal Compare Failure**

DESCRIPTION

Refer to DTC C110000.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P057A00	Brake Pedal Position Sensor "A"	The difference in the SKS1 and SKS2 brake pedal stroke sensor assembly is invalid for 0.2 seconds or more.	• Wire harness and connector • Brake pedal stroke sensor assembly	Comes on	Brake/EPB	A	• SAE Code: P057A • Output ECU: Both skid control ECUs
P05E062	Brake Pedal Position Sensor "A"/"B" Signal Compare Failure	The difference in change between sensor output voltage 1 (SKS1) and sensor output voltage 2 (SKS2) is excessively large for 0.2 seconds or more.	• Wire harness and connector • Brake pedal stroke sensor assembly	Comes on	Brake/EPB	A	• SAE Code: P05E0 • Output ECU: Both skid control ECUs

MONITOR DESCRIPTION

P057A:

When the No. 2 skid control ECU (brake actuator assembly) detects that the difference between the brake pedal stroke sensor 1 and brake pedal stroke sensor 2 is invalid, the MIL is illuminated and a DTC is stored.

P05E0:

The No. 2 skid control ECU (brake actuator assembly) monitors the output value of the brake pedal stroke sensor assembly.

When the ratio between the output of brake pedal stroke sensor 1 and brake pedal stroke sensor 2 is outside the normal range, the No. 2 skid control ECU (brake actuator assembly) judges that the brake pedal stroke sensor assembly is malfunctioning, the MIL is illuminated and a DTC is stored.

MONITOR STRATEGY

Related DTCs	P057A: Brake pedal position sensor invalid data P05E0: Brake pedal position sensor "A"/"B" correlation
Required Sensors/Components(Main)	Brake pedal stroke sensor assembly
Required Sensors/Components(Related)	No. 2 skid control ECU (brake actuator assembly) Brake pedal stroke sensor assembly
Frequency of Operation	Continuous
Duration	0.198 seconds
MIL Operation	Immediately
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

P057A

Monitor runs whenever the following DTCs are not stored	C1100 (Case 1): Brake pedal position sensor voltage circuit/open C1103 (Case 1): Brake pedal position sensor voltage circuit/open C1103 (Case 2): Brake pedal position sensor invalid data P057C: Brake pedal position sensor open circuit P057D: Brake pedal position sensor circuit high P057E: Brake pedal position sensor intermittent/erratic P05DD: Brake pedal position sensor circuit open P05DE: Brake pedal position sensor circuit high P05DF: Brake pedal position sensor intermittent/erratic P05E0: Brake pedal position sensor "A"/"B" correlation U0129: Lost communication with BSCM (CH1)
All of the following conditions are met	A, B, C, D, E, F and G
A. Both of the following conditions are met	More than 0.198 seconds
+BS cut MOS	Valid
+BS cut MOS voltage	Higher than 7.4 V
B. Up/Downstream communication	Valid
C. Following condition is met	More than 0.22 seconds
BS (linear) voltage	8.5 V or higher
D. +BS cut MOS voltage	Higher than 7.8 V
E. +BS voltage	9.5 V or higher

F. IGR voltage	Higher than 10 V
G. IGP voltage	Higher than 10 V

P05E0

Monitor runs whenever the following DTCs are not stored	C1100 (Case 1): Brake pedal position sensor voltage circuit/open C1100 (Case 2): Brake pedal position sensor invalid data C1103 (Case 1): Brake pedal position sensor voltage circuit/open C1103 (Case 2): Brake pedal position sensor invalid data P057A: Brake pedal position sensor invalid data P057C: Brake pedal position sensor open circuit P057D: Brake pedal position sensor circuit high P057E: Brake pedal position sensor intermittent/erratic P05DD: Brake pedal position sensor circuit open P05DE: Brake pedal position sensor circuit high P05DF: Brake pedal position sensor intermittent/erratic U0129: Lost communication with BSCM (CH1)
All of the following conditions are met	A, B, C, D, E, F and G
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B. Up/Downstream communication	Valid
C. Following condition is met	More than 0.22 seconds
BS (linear) voltage	8.5 V or higher
D. +BS cut MOS voltage	Higher than 7.8 V
E. +BS voltage	9.5 V or higher
F. IGR voltage	Higher than 10 V
G. IGP voltage	Higher than 10 V

TYPICAL MALFUNCTION THRESHOLDS

P057A

Following condition is met	More than 0.018 seconds
Power supply voltage ratio (SKS1/VSK1) and Power supply voltage ratio (SKS2/VSK2) aren't in correlation area	-

P05E0

Power supply voltage ratio (SKS1/VSK1) and Power supply voltage ratio (SKS2/VSK2) aren't in correlation area	-

COMPONENT OPERATING RANGE

P057A

All of the following conditions are met	A, B, C and D
A. Both of the following conditions are met	More than 0.198 seconds
+BS cut MOS	Valid
+BS cut MOS voltage	Higher than 7.4 V
B. Up/Downstream communication	Valid
C. Following condition is met	More than 0.22 seconds
BS (linear) voltage	8.5 V or higher
D. Following condition is met	More than 0.024 seconds
Power supply voltage ratio (SKS1/VSK1) and Power supply voltage ratio (SKS2/VSK2) are in correlation area	-

P05E0

All of the following conditions are met	A, B, C, D, E, F and G
A. Both of the following conditions are met	More than 0.198 seconds
+BS cut MOS	Valid
+BS cut MOS voltage	Higher than 7.4 V
B. Up/Downstream communication	Valid
C. Following condition is met	More than 0.22 seconds
BS (linear) voltage	8.5 V or higher
D. Both of the following conditions are met	-
Power supply voltage ratio (SKS1/VSK1)	More than 0.2
Power supply voltage ratio (SKS2/VSK2)	Less than 0.8
E. Both of the following conditions are met	-
Power supply voltage ratio (SKS1/VSK1)	More than 0.23
Power supply voltage ratio (SKS2/VSK2)	Less than 0.77
F. Both of the following conditions are met	-
Power supply voltage ratio (SKS1/VSK1)	More than 0.26
Power supply voltage ratio (SKS2/VSK2)	Less than 0.74
G. Normal status experience at high voltage	On

CONFIRMATION DRIVING PATTERN

NOTICE:

When performing the normal judgment procedure, make sure that the driver door is closed and is not opened at any time during the procedure.

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.
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

1. Connect the GTS to the DLC3.
2. Turn the ignition switch to ON and turn the GTS on.
3. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
4. Turn the ignition switch off.
5. Turn the ignition switch to ON (READY) and turn the GTS on.
6. Fully depress the brake pedal. [*]

HINT:

[*]: Normal judgment procedure.

The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

7. Enter the following menus: Chassis / Brake/EPB* / Utility / All Readiness.

*: Electric Parking Brake System

8. Check the DTC judgment result.

HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE, perform driving pattern again.

WIRING DIAGRAM

Refer to DTC C110000.

Click here INFO

CAUTION / NOTICE / HINT

NOTICE:

Make sure to wait 5 minutes or more with the ignition switch turned off before removing the integration control supply or disconnecting any supply power circuit from the integration control supply, in order for the voltage to be discharged and self-diagnosis to run.

PROCEDURE

1.	**READ VALUE USING GTS (BRAKE PEDAL STROKE SENSOR ASSEMBLY)**

Pre-procedure1

(a) Mount a pedal effort gauge.

(b) Turn the ignition switch to ON (READY) and depress the brake pedal once.

HINT:

Depress the brake pedal after turning the ignition switch to ON (READY) to set the vehicle to linear mode (switching solenoid (SSA) on).

Procedure1

(c) Depress the brake pedal slowly and check the brake pedal stroke sensor assembly output voltages with respect to brake pedal depression force.

Chassis > Brake Booster > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stroke Sensor	Brake pedal stroke sensor 1	Min.: 0.0 V Max.: 5.0 V	Brake pedal released: 0.6 to 1.4 V	Reading increases when brake pedal is depressed

Chassis > Brake Booster > Data List

TESTER DISPLAY
Stroke Sensor

Chassis > Brake/EPB > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stroke Sensor2	Brake pedal stroke sensor 2	Min.: 0.0 V Max.: 5.0 V	Brake pedal released: 3.6 to 4.4 V	Reading decreases when brake pedal is depressed

Chassis > Brake/EPB > Data List

TESTER DISPLAY
Stroke Sensor2

HINT:

Perform this procedure in linear mode (switching solenoid (SSA) on).

Standard Voltage:

BRAKE EFFORT [N (KGF, LBF)]	STROKE SENSOR [V]	STROKE SENSOR2 [V]
50 (5, 11.2)	0.96 to 1.67	3.33 to 4.04
100 (10, 22.5)	1.14 to 1.86	3.14 to 3.86
150 (15, 33.7)	1.23 to 1.95	3.05 to 3.77

RESULT	PROCEED TO
OK	A
NG (brake pedal stroke sensor 1)	B
NG (brake pedal stroke sensor 2)	C

Post-procedure1

(d) None

A ▶ **USE SIMULATION METHOD TO CHECK**

C ▶ **GO TO STEP 3**

B ▼

2.	**CHECK HARNESS AND CONNECTOR (BRAKE BOOSTER WITH MASTER CYLINDER ASSEMBLY - BRAKE PEDAL STROKE SENSOR ASSEMBLY)**

Pre-procedure1

(a) Turn the ignition switch off.

Procedure1

(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

OK:

The connector is securely connected.

Pre-procedure2

(c) Disconnect the A3 No. 1 skid control ECU (brake booster with master cylinder assembly) connector.

(d) Disconnect the A5 brake pedal stroke sensor assembly connector.

Procedure2

(e) Check both the connector case and the terminals for deformation and corrosion.

OK:

No deformation or corrosion.

Procedure3

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

Standard Resistance:

EWD INFO

Click Location & Routing(A3,A5)
Click Connector(A3)
Click Connector(A5)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A3-29 (SKS1) - A5-6 (SKS1)	Always	Below 1 Ω	Ω
A3-29 (SKS1) or A5-6 (SKS1) - Body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(g) None

OK ▶ **REPLACE BRAKE PEDAL STROKE SENSOR ASSEMBLY**

Click here INFO

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

3.	**CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - BRAKE PEDAL STROKE SENSOR ASSEMBLY)**

Pre-procedure1

(a) Turn the ignition switch off.

Procedure1

(b) Make sure that there is no looseness at the locking part and the connecting part of the connectors.

OK:
The connector is securely connected.

Pre-procedure2

(c) Disconnect the A4 No. 2 skid control ECU (brake actuator assembly) connector.

(d) Disconnect the A5 brake pedal stroke sensor assembly connector.

Procedure2

(e) Check both the connector case and the terminals for deformation and corrosion.

OK:
No deformation or corrosion.

Procedure3

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

Standard Resistance:

EWD INFO

Click Location & Routing(A4,A5)
Click Connector(A4)
Click Connector(A5)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A4-10 (SKS2) - A5-1 (SKS2)	Always	Below 1 Ω	Ω
A4-10 (SKS2) or A5-1 (SKS2) - Body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(g) None

OK ▶ **REPLACE BRAKE PEDAL STROKE SENSOR ASSEMBLY**

Click here INFO

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**