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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: C142771; ABS Pump Motor Actuator Stuck; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**C142771**	**ABS Pump Motor Actuator Stuck**

DESCRIPTION

When the ignition switch is turned ON (READY), the stop light switch assembly off and the vehicle speed is 20 km/h (12 mph) or more, the No. 2 skid control ECU (brake actuator assembly) performs a self-diagnosis of the ABS motor relay circuit during the initial check of the actuator.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
C142771	ABS Pump Motor Actuator Stuck	When the actuator initial check is being performed, the actuator pump motor does not operate properly.	• Wire harness and connector • Brake actuator assembly (pump motor) • Brake actuator assembly (pump motor circuit)	Comes on	Brake/EPB	A	• SAE Code: C1427 • Output ECU: No. 2 skid control ECU (brake actuator assembly)

MONITOR DESCRIPTION

When the voltage of the ABS pump motor is less than a certain value, the No. 2 skid control ECU (brake actuator assembly) judges that the motor is not rotating, the MIL is illuminated and a DTC is stored.

MONITOR STRATEGY

Related DTCs	C1427: ABS pump motor stuck
Required Sensors/Components(Main)	No. 2 skid control ECU (brake actuator assembly)
Required Sensors/Components(Related)	No. 2 skid control ECU (brake actuator assembly)
Frequency of Operation	Continuous or during initial checking
Duration	3 times
MIL Operation	Immediately
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

C1427

Monitor runs whenever the following DTCs are not stored	C052B (Case 1 to 7): ABS pump motor performance (gate voltage) C052B (Case 8): ABS pump motor performance (motor relay current) C052B (Case 9): ABS pump motor performance (freewheeling MOS current) C052D: ABS pump motor circuit high C052E (Case 1 to 4): ABS pump motor circuit open (motor circuit) C052E (Case 5 and 6): ABS pump motor circuit open (motor relay) C0597: ABS hold solenoid performance C12B2: ABS release solenoid (FL) circuit low C12B3: ABS release solenoid (FL) circuit high C12C8: ABS release solenoid (FR) circuit low C12C9: ABS release solenoid (FR) circuit high C12DE: ABS release solenoid (RL) circuit low C12DF: ABS release solenoid (RL) circuit high C12F4: ABS release solenoid (RR) circuit low C12F5: ABS release solenoid (RR) circuit high C13BF: SM solenoid other functional C13C2 (Case 1 and 2): SM1 solenoid circuit open C13C2 (Case 3): SM1 solenoid circuit low C13C3 (Case 1): SM1 solenoid circuit high (solenoid Off current) C13C3 (Case 2 and 3): SM1 solenoid circuit high (IC data) C13C3 (Case 4): SM1 solenoid circuit high (solenoid On current) C13CB (Case 1 and 2): SM2 solenoid circuit open C13CB (Case 3): SM2 solenoid circuit low C13CC (Case 1): SM2 solenoid circuit high (solenoid Off current) C13CC (Case 2 and 3): SM2 solenoid circuit high (IC data) C13CC (Case 4): SM2 solenoid circuit high (solenoid On current) C137D: Brake system voltage circuit high C143B: Brake system voltage power supply relay circuit high C143C: Brake system voltage power supply relay circuit open
All of the following conditions are met	A, B, C, D, E and F
A. Initial check status	On
B. Following condition is met	0.002 seconds or more
Command to motor relay ON to OFF	-
C. +BS voltage	9.5 V or less
D. IGR voltage	Higher than 10 V
E. IGP voltage	Higher than 10 V
F. BM voltage	6 V or less

TYPICAL MALFUNCTION THRESHOLDS

Following condition is met	0.022 seconds or more
MT voltage	Below 1.3 V

COMPONENT OPERATING RANGE

All of the following conditions are met	A, B and C
A. Initial check status	On
B. Following condition is met	0.002 seconds or more
Command to motor relay ON to OFF	-
C. Following condition is met	Less than 0.022 seconds
MT voltage	Below 1.3 V

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. Wait for 5 seconds or more. [*]

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 DTCs C052C14, C052C16, C052C17, C052C49 and C052F14.

Click here INFO

CAUTION / NOTICE / HINT

NOTICE:

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

PROCEDURE

1.	**PERFORM ACTIVE TEST USING GTS (MOTOR RELAY)**

(a) Check the operating sound of the pump motor when operating it using the GTS.

Chassis > Brake/EPB > Active Test

TESTER DISPLAY	MEASUREMENT ITEM	CONTROL RANGE	RESTRICT CONDITION	DIAGNOSTIC NOTE
Motor Relay	ABS motor relay	OFF / ON	Vehicle condition: Vehicle stopped **HINT:** To protect this Actuator and Solenoid, this test will only last 5 seconds.	Operating sound of motor can be heard

Chassis > Brake/EPB > Active Test

TESTER DISPLAY
Motor Relay

RESULT	PROCEED TO
Operating sound is heard.	A
Operating sound is not heard.	B

B ▶ **GO TO STEP 4**

A ▼

2.	**CLEAR DTC**

Pre-procedure1

(a) None

Procedure1

(b) Clear the DTCs.

Chassis > Brake/EPB > Clear DTCs

Post-procedure1

(c) Turn the ignition switch off.

NEXT

3.	**RECONFIRM DTC**

Pre-procedure1

(a) Based on the Freeze Frame Data and interview with the customer, attempt to reproduce the conditions when the malfunction occurred.

Procedure1

(b) Check if the same DTC is output.

Chassis > Brake/EPB > Trouble Codes

HINT:

- If a speed signal of 20 km/h (12 mph) or more is input to the No. 2 skid control ECU (brake actuator assembly) with the ignition switch turned to ON and the stop light switch assembly off, the ECU performs self-diagnosis of the pump motor circuit.
- If the normal system code is output (no DTCs are output), slightly jiggle the connectors, wire harness, and fuses of the No. 2 skid control ECU (brake actuator assembly).
- If any DTCs are output while jiggling a connector or wire harness of the No. 2 skid control ECU (brake actuator assembly), inspect and repair the connector or wire harness.
- If no DTCs were output when reconfirming DTCs, checking for intermittent problems is necessary because it is suspected that the original DTCs were stored due to the poor connection of a connector terminal.

RESULT	PROCEED TO
C142771 is not output	A
C142771 is output	B

Post-procedure1

(c) None

A **USE SIMULATION METHOD TO CHECK**

B **REPLACE BRAKE ACTUATOR ASSEMBLY** INFO

4.	**CHECK HARNESS AND CONNECTOR (GND2 TERMINAL)**

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.

Procedure2

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

OK:
No deformation or corrosion.

Procedure3

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

Standard Resistance:

EWD INFO

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

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A4-30 (GND2) - Body ground	1 minute or more after disconnecting the cable from the negative (-) auxiliary battery terminal	Below 1 Ω	Ω

Post-procedure1

(f) None

OK ▶ **REPLACE BRAKE ACTUATOR ASSEMBLY** INFO

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