

<b>Last Modified:</b> 12-04-2024	6.11:8.1.0	<b>Doc ID:</b> RM100000028X1E
<b>Model Year Start:</b> 2023	<b>Model:</b> Prius Prime	<b>Prod Date Range:</b> [12/2022 - ]
<b>Title:</b> BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ELECTRONICALLY CONTROLLED BRAKE SYSTEM: VEHICLE CONTROL HISTORY (RoB); 2023 - 2024 MY Prius Prius Prime [12/2022 - ]		

## VEHICLE CONTROL HISTORY (RoB)

### DESCRIPTION

- Vehicle Control History (RoB) is a function that captures and stores ECU data when triggered by specific vehicle behavior.
- It may be possible to determine the cause of the malfunction by checking the vehicle history information and Freeze Frame Data.
- The number of possible stored Freeze Frame Data sets, whether multi Freeze Frame Data is available, the number of freeze frame points, Freeze Frame Data items, the ECU internal range, etc., is different depending on the stored group.
- The stored data items for Vehicle Control History (RoB) Freeze Frame Data are different depending on the stored group. When the value of a data item does not change across all points, only the value of the detection point will be displayed. The contents of the Freeze Frame Data are almost the same as those of the Data List.

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### PRECAUTIONS

- As Vehicle Control History (RoB) may be overwritten whenever the trigger conditions are met, make sure to save Vehicle Control History (RoB) before performing any inspections.
- As Vehicle Control History (RoB) may be stored when performing an Active Test, learning, etc., make sure to clear the Vehicle Control History (RoB) before returning the vehicle to the customer.

### CHECK VEHICLE CONTROL HISTORY (RoB) (ELECTRONICALLY CONTROLLED BRAKE SYSTEM AND ELECTRIC PARKING BRAKE SYSTEM)

- Turn the ignition switch off.
- Connect the GTS to the DLC3.
- Turn the ignition switch to ON.
- Turn the GTS on.
- Enter the following menus: Chassis / Brake Booster / Utility / Vehicle Control History (RoB).

#### Chassis > Brake Booster > Utility

TESTER DISPLAY
Vehicle Control History (RoB)

- Enter the following menus: Chassis / Brake/EPB\* / Utility / Vehicle Control History (RoB).




\*: Electric Parking Brake System

#### Chassis > Brake/EPB > Utility

TESTER DISPLAY



Vehicle Control History (RoB)

**Vehicle Control History (RoB) Item**

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
X0455	Steering Angle Sensor Wrong Installation	History of steering angle sensor being installed incorrectly	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) Refer to Steering Angle Sensor Wrong Installation (X0455). 
X2005	Hybrid/EV Powertrain Control System Malfunction	History of a malfunction in the HEV system	<ul style="list-style-type: none"> <li>Brake system warning light (yellow indicator) illuminates</li> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X204C	Zero Point Calibration of Yaw Rate Sensor Undone	History of incomplete yaw rate sensor zero point calibration	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) Refer to Zero Point Calibration of Yaw Rate Sensor Undone (X204C). 
X2086	SRS Airbag Malfunction	History of receiving a malfunction signal output for a secondary collision brake control request from the airbag ECU assembly 2 consecutive times	-	Output ECU: No. 2 skid control ECU (brake actuator assembly) Refer to How to Proceed with Troubleshooting in Airbag System. 

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
X2088	Bank Angle Detected	History of VSC operation being temporarily prohibited when driving at a steep bank angle, etc.	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly)  <b>HINT:</b> Explain that VSC operation was temporarily prohibited when driving on a road with a steep bank angle, etc.
X208A	Zero Point Calibration of Steering Angle Sensor Initialization Malfunction	History of being unable to obtain the steering angle zero point after driving at a vehicle speed exceeding 15 km/h (9 mph) for 0.05 seconds or more	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly)  <b>Refer to the following diagnosis procedure:</b>  1. Perform steering angle sensor zero point calibration.
X208B	EPB Motor Continuous Operation Request	History of system suspended to prevent overheat of parking brake actuator assembly when electric parking brake was used repeatedly	<ul style="list-style-type: none"> <li>Parking brake indicator light (red) blinks</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly)  <b>HINT:</b> <ul style="list-style-type: none"> <li>EPB: Electric Parking Brake System</li> <li>Explain that system was suspended to prevent overheating of parking brake actuator assembly when electric parking brake was used repeatedly.</li> </ul>
X208E	Power Steering Control Module Malfunction	History of power steering system malfunction	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly)  <b>Refer to the following diagnosis procedure:</b>  1. Using the GTS, perform a Health Check. 2. Proceed to related output DTC or vehicle control history (RoB).
X2096	Pre-Collision Brake	History of pre-collision brake operation	In accordance with advanced driver assistance system behavior	Output ECU: No. 1 skid control ECU (brake booster assembly) and No. 2 skid

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
				control ECU (brake actuator assembly)
X2098	Pre-Collision Brake Assist	History of pre-collision brake assist operation	In accordance with advanced driver assistance system behavior	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A0	ABS	History of ABS operation	Slip indicator light blinks	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A1	VSC	History of VSC operation	Slip indicator light blinks	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A2	TRC(TRAC)	History of TRAC operation	Slip indicator light blinks	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A5	Hill Start Assist	History of hill start assist operation	-	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A7	Brake Assist	History of brake assist operation	-	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)
X20A8	Secondary Collision Brake	History of secondary collision brake operation	-	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)



CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
X20D7	Zero Point Calibration of Steering Angle Sensor Malfunction	History of the steering angle sensor zero point calibration position differing from the stored value	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) Refer to Zero Point Calibration of Steering Angle Sensor Malfunction (X20D7). 
X20D8	Zero Point Calibration of Steering Angle Sensor Not Acquired	History of being unable to obtain the steering angle zero point	<ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> <li>Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) Refer to Zero Point Calibration of Steering Angle Sensor Not Acquired (X20D8). 
X219A	Gear Shift Control Module Malfunction	History of electronic shift lever system malfunction	-	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X219C	EPB Lock Control Run	History of abnormal EPB operation	Brake system warning light (yellow indicator) illuminates	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>HINT:</b> EPB: Electric Parking Brake System
X21A1	Electronic Brake Booster Motor "A" High Temperature (Level1)	History of system being stopped to protect the brake booster with master cylinder assembly from overheating when brake control was operated repeatedly or operated for an extended period of time.	<ul style="list-style-type: none"> <li>Brake system warning light (yellow indicator) illuminates</li> <li>Brake system warning light (red)</li> </ul>	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> </ol>

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
			<ul style="list-style-type: none"> <li>indicator) illuminates</li> <li>• Slip indicator light illuminates</li> </ul>	2. Proceed to related output DTC or vehicle control history (RoB).
X21AD	ABS Pump Motor Temperature High	History of extremely high ABS motor temperature due to automatic brake control (brake hold, dynamic radar cruise, advanced park, etc.) or long or frequent brake operation	-	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X21D0	Brake Pedal Position Sensor "A" Performance Malfunction	History of malfunction of brake pedal stroke sensor 1	<ul style="list-style-type: none"> <li>• Brake system warning light (yellow indicator) illuminates</li> <li>• Brake system warning light (red indicator) illuminates</li> <li>• ABS warning light illuminates</li> <li>• Slip indicator light illuminates</li> <li>• Brake hold operated indicator light blinks*1</li> </ul>	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X21D1	Brake Pedal Position Sensor "B" Performance Malfunction	History of malfunction of brake pedal stroke sensor 2	<ul style="list-style-type: none"> <li>• Brake system warning light (yellow indicator) illuminates</li> </ul>	Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) <b>Refer to the following diagnosis procedure:</b>

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
			<ul style="list-style-type: none"> <li>Brake system warning light (red indicator) illuminates</li> </ul>	<ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X21DC	Main Battery Failure Power Supply Voltage Low	History of decrease in main power supply voltage of No. 1 skid control ECU (brake booster with master cylinder assembly) due to decreased auxiliary battery voltage, etc.	<ul style="list-style-type: none"> <li>Brake system warning light (yellow indicator) illuminates</li> <li>Brake system warning light (red indicator) illuminates</li> </ul>	<p>Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X21DF	Brake System Control Module "A" Supply Voltage Low	History of decrease in main power supply voltage of No. 2 skid control ECU (brake actuator assembly) due to decreased auxiliary battery voltage, etc.	<ul style="list-style-type: none"> <li>Brake system warning light (yellow indicator) illuminates</li> <li>Brake system warning light (red indicator) illuminates</li> <li>ABS warning light illuminates</li> <li>Slip indicator light illuminates</li> </ul>	<p>Output ECU: No. 2 skid control ECU (brake actuator assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X2442	Stroke Sensor / Brake Pressure Sensor "H" Failure	History of abnormality in correlation between output values of stroke sensor and gap pressure sensor.	<ul style="list-style-type: none"> <li>Brake system warning light (yellow indicator) illuminates</li> <li>Brake system warning light (red indicator) illuminates</li> </ul>	<p>Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> </ol>

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
			<p>indicator) illuminates</p> <ul style="list-style-type: none"> <li>Slip indicator light illuminates</li> </ul>	<p>2. Proceed to related output DTC or vehicle control history (RoB).</p> <p><b>NOTICE:</b> If the detection conditions for X2442 are met 3 times in a row in the same trip, DTC C116C62 is stored.</p> <p><b>INFO</b></p>
X250B	Sub Battery System Malfunction	History of sub battery system malfunction	Brake system warning light (yellow indicator) illuminates	<p>Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X261B	Software Inconsistency with PCS Module	History of mismatch between the specification information sent by the forward recognition camera and the specification information stored in the No. 2 skid control ECU (brake actuator assembly)	-	<p>Output ECU: No. 2 skid control ECU (brake actuator assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Using the GTS, perform a Health Check.</li> <li>Proceed to related output DTC or vehicle control history (RoB).</li> </ol>
X2629	Software Inconsistency with Gear Shift Control Module	<ul style="list-style-type: none"> <li>Whether or not the vehicle is equipped with an electronic shift lever system could not be stored in the No. 2 skid control ECU (brake actuator assembly)</li> <li>Mismatch between the memorized value of the No. 2 skid control ECU</li> </ul>	-	<p>Output ECU: No. 2 skid control ECU (brake actuator assembly)</p> <p><b>Refer to the following diagnosis procedure:</b></p> <ol style="list-style-type: none"> <li>Check whether a specified shift control ECU (transmission floor shift assembly) is installed.</li> </ol>



CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
		(brake actuator assembly) and current vehicle specifications		2. Transition to Dealer Mode (Calibration) and perform system information memorization. 
X2655	Software Inconsistency with Clearance Sonar Control Module	History of a change in CAN signal sent from the clearance warning ECU assembly	-	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"><li>1. Using the GTS, perform a Health Check.</li><li>2. Proceed to related output DTC or vehicle control history (RoB).</li></ol>
X2669	ECM Communication System Programming Failure	History of mismatch between specification information and the information stored in No. 2 skid control ECU (brake actuator assembly).	Brake system warning light (yellow indicator) illuminates	Output ECU: No. 2 skid control ECU (brake actuator assembly) <b>Refer to the following diagnosis procedure:</b> <ol style="list-style-type: none"><li>1. Using the GTS, perform a Health Check.</li><li>2. Proceed to related output DTC or vehicle control history (RoB).</li></ol>
XF01B	ECU Security Key Not Registered	ECU security key has not been registered	*2	<ul style="list-style-type: none"> <li>• Output ECU: No. 1 skid control ECU (brake booster with master cylinder assembly) and No. 2 skid control ECU (brake actuator assembly)</li> </ul> 

\*1: When the vehicle is put into the following vehicle conditions and the brake hold switch (electric parking brake switch assembly) is turned on, the brake hold operated indicator light blinks.

Conditions required for operation standby:

- a. The driver door is closed.
- b. The driver seat belt is fastened.

\*2: Receive side ECU detects communication malfunction and may operate warning in multi-information display or indicator light.

**CHECK VEHICLE CONTROL HISTORY (RoB) (STEERING ANGLE SENSOR)**

- (a) Turn the ignition switch off.
- (b) Connect the GTS to the DLC3.
- (c) Turn the ignition switch to ON.
- (d) Turn the GTS on.
- (e) Enter the following menus: Chassis / Steering Angle Sensor / Utility / Vehicle Control History (RoB).

**Chassis > Steering Angle Sensor > Utility**

TESTER DISPLAY
Vehicle Control History (RoB)

**Vehicle Control History (RoB) Item**

CODE	TESTER DISPLAY	MEASUREMENT ITEM	USER NOTIFICATION	DIAGNOSTIC NOTE
XF01B	ECU Security Key Not Registered	ECU security key has not been registered	*	<ul style="list-style-type: none"> <li>• Output ECU: Steering angle sensor</li> <li>• <span style="background-color: #0070C0; color: white; padding: 2px;">INFO</span></li> </ul>
*: Receive side ECU detects communication malfunction and may operate warning in multi-information display or indicator light.				

**CLEAR VEHICLE CONTROL HISTORY (RoB) (ELECTRONICALLY CONTROLLED BRAKE SYSTEM, ELECTRIC PARKING BRAKE SYSTEM AND STEERING ANGLE SENSOR)**

- (a) Turn the ignition switch off.
- (b) Connect the GTS to the DLC3.
- (c) Turn the ignition switch to ON.
- (d) Turn the GTS on.
- (e) Enter the following menus: Chassis / Brake Booster / Utility / Vehicle Control History (RoB).

**Chassis > Brake Booster > Utility**

TESTER DISPLAY
Vehicle Control History (RoB)

- (f) Enter the following menus: Chassis / Brake/EPB\* / Utility / Vehicle Control History (RoB).

\*: Electric Parking Brake System

**Chassis > Brake/EPB > Utility**

TESTER DISPLAY
Vehicle Control History (RoB)

- (g) Enter the following menus: Chassis / Steering Angle Sensor / Utility / Vehicle Control History (RoB).

**Chassis > Steering Angle Sensor > Utility**

TESTER DISPLAY
Vehicle Control History (RoB)

(h) Press the clear button.

**NOTICE:**

By performing this procedure, all stored Vehicle Control History (RoB) items will be cleared.

**VEHICLE CONTROL HISTORY (AIRBAG SYSTEM)****HINT:**

A part of the control history can be confirmed using the vehicle control history.

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