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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: POWER ASSIST SYSTEMS: POWER STEERING SYSTEM: DATA LIST / ACTIVE TEST; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DATA LIST / ACTIVE TEST

DATA LIST

HINT:

Using the GTS to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(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 / EMPS / Data List.

(f) Read the Data List according to the display on the GTS.

Chassis > EMPS > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Total Distance Traveled	Total distance traveled	Min.: 0, Max.: 16777215	-	-
Total Distance Traveled - Unit	Total Distance Traveled unit	km / mile	-	-
Vehicle Speed	Vehicle speed from speedometer	Min.: 0.0 km/h (0.0 MPH) Max.: 300.0 km/h (186.4 MPH)	• 0 km/h (0 MPH): Ignition switch ON (READY) and vehicle stopped • No significant fluctuation: Ignition switch ON (READY) and vehicle driven at a	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
			constant speed	
Engine Revolution	Engine speed	Min.: 0 rpm Max.: 12800 rpm	No significant fluctuation	Engine running at a constant speed
Ready Status	Ready status	OFF or ON	-	-
Battery Voltage	Auxiliary battery voltage	Min.: 0.00 V Max.: 25.00 V	11 to 14 V	-
Steering Wheel Torque	Steering wheel torque	Min.: -25.000 Nm Max.: 25.001 Nm	Value changes in proportion to steering effort - Ignition switch ON (READY) and steering wheel being turned	-
Steering Angle Velocity	Steering angle speed	Min.: -32768 deg/s Max.: 32767 deg/s	Value changes in proportion to steering speed - Ignition switch ON (READY) and steering wheel being turned	-
Steering Angle	Steering angle	Min.: -3072.0 deg Max.: 3070.5 deg	-	-
Status of Vehicle Power (IGP PT2)	State of IGP power source(PT2)	OFF or ON	OFF: Ignition switch off ON: Ignition switch ON	-
Status of Vehicle Power (IGP PT1)	State of IGP power source(PT1)	OFF or ON	OFF: Ignition switch off ON: Ignition switch ON	-
Status of Vehicle Power (IGP PDC)	State of IGP power source(PDC)	OFF or ON	OFF: Ignition switch off ON: Ignition switch ON	-
Status of Vehicle Power (IGR PDC)	State of IGR power source(PDC)	OFF or ON	OFF: Ignition switch off ON: Ignition switch ON	-
IG Power Supply	IG power source voltage	Min.: 0.00 V Max.: 25.00 V	8 to 16 V	Ignition switch ON

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
PIG Power Supply	PIG power source voltage	Min.: 0.00 V Max.: 25.00 V	9 to 16 V	Ignition switch ON (READY) and steering wheel being turned
Thermistor Temperature	ECU substrate temperature	Min.: -50.0 °C (-58.0 °F) Max.: 200.0 °C (392.0 °F)	-50 °C to 200 °C (-58 °F to 392 °F)	-
Power Source	Operating state of hybrid system	Operating State or Stopped State	Operating State: READY ON Stopped State: READY OFF	-
PS Assist Signal	Status of the record of power steering assist signal	Assist Stop or Under an Assist	OFF: Assist stop ON: Under an assist	-
Synchronization Status of PWM	Modulation synchronization state of the motor pulse wave duty ratio	Synchronization State / Non-Synchronization State	Synchronization State: Synchronized Non-Synchronization State: Not synchronized	*1
Cooperation Control State	Power steering operation control state	Cooperation Control / Other than Cooperation Control	Cooperation Control: Cooperation control Other than Cooperation Control: Other than cooperation control	*1
Middle Voltage of Other Systems	Middle Voltage of Other Systems	Min.: 0.00 V Max.: 25.00 V	-	*1
Torque Sensor 1 Output	Torque sensor 1 output value	Min.: -25.000 Nm Max.: 25.000 Nm	-	-
Torque Sensor 2 Output	Torque sensor 2 output value	Min.: -25.000 Nm Max.: 25.000 Nm	-	-
Torque Sensor 3 Output	Torque sensor 3 output value	Min.: -25.000 Nm Max.: 25.000 Nm	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Torque Sensor 4 Output	Torque sensor 4 output value	Min.: -25.000 Nm Max.: 25.000 Nm	-	-
Torque Sensor 1 Zero Point Value	Torque sensor 1A zero point compensation value	-	-	Although the item is displayed on the GTS, it is not applicable to the vehicle.
Torque Sensor 2 Zero Point Value	Torque sensor 1B zero point compensation value	-	-	Although the item is displayed on the GTS, it is not applicable to the vehicle.
Torque Sensor 3 Zero Point Value	Torque sensor 2A zero point compensation value	-	-	Although the item is displayed on the GTS, it is not applicable to the vehicle.
Torque Sensor 4 Zero Point Value	Torque sensor 2B zero point compensation value	-	-	Although the item is displayed on the GTS, it is not applicable to the vehicle.
Motor 1 U Phase Current	Motor 1 terminal current (U phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 1 V Phase Current	Motor 1 terminal current (V phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 1 W Phase Current	Motor 1 terminal voltage (W phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 1 U Phase Duty	Motor 1 U phase duty	Min.: 0.00% Max.: 100.00%	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Motor 1 V Phase Duty	Motor 1 V phase duty	Min.: 0.00% Max.: 100.00%	-	-
Motor 1 W Phase Duty	Motor 1 W phase duty	Min.: 0.00% Max.: 100.00%	-	-
Motor 1 U Phase Terminal Voltage	Motor 1 terminal voltage (U phase)	Min.: 0.00% Max.: 100.00%	-	*1
Motor 1 V Phase Terminal Voltage	Motor 1 terminal voltage (V phase)	Min.: 0.00% Max.: 100.00%	-	*1
Motor 1 W Phase Terminal Voltage	Motor 1 terminal voltage (W phase)	Min.: 0.00% Max.: 100.00%	-	*1
Motor 1 Power Supply	Power supply voltage to active motor 1	Min.: 0.00 V Max.: 25.00 V	9 to 16 V	Ignition switch ON (READY) and steering wheel being turned
Motor 2 U Phase Current	Motor 2 terminal current (U phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 2 V Phase Current	Motor 2 terminal current (V phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 2 W Phase Current	Motor 2 terminal current (W phase)	Min.: -327.68 A Max.: 327.67 A	Value changes in proportion to steering effort	Ignition switch ON (READY) and steering wheel being turned
Motor 2 U Phase Duty	Motor 2 U phase duty	Min.: 0.00% Max.: 100.00%	-	-
Motor 2 V Phase Duty	Motor 2 V phase duty	Min.: 0.00% Max.: 100.00%	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Motor 2 W Phase Duty	Motor 2 W phase duty	Min.: 0.00% Max.: 100.00%	-	-
Motor 2 U Phase Terminal Voltage	Motor 2 terminal voltage (U phase)	Min.: 0.00 V Max.: 100.00 V	-	*1
Motor 2 V Phase Terminal Voltage	Motor 2 terminal voltage (V phase)	Min.: 0.00 V Max.: 100.00 V	-	*1
Motor 2 W Phase Terminal Voltage	Motor 2 terminal voltage (W phase)	Min.: 0.00 V Max.: 100.00 V	-	*1
Motor 2 Power Supply	Power supply voltage to active motor 2	Min.: 0.00 V Max.: 25.00 V	9 to 16 V	Ignition switch ON (READY) and steering wheel being turned
Motor Rotation Angle 1	Motor Rotation Angle 1	Min.: 0.0 deg Max.: 360.1 deg	Value changes from 0 to 360°	• Ignition switch ON (READY) and steering wheel being turned • *1
Motor Rotation Angle 2	Motor Rotation Angle 2	Min.: 0.0 deg Max.: 360.1 deg	Value changes from 0 to 360°	• Ignition switch ON (READY) and steering wheel being turned • *1
Motor Rotation Angle 3	Motor Rotation Angle 3	Min.: 0.0 deg Max.: 360.1 deg	-	*1
Motor Rotation Angle 4	Motor Rotation Angle 4	Min.: 0.0 deg Max.: 360.1 deg	-	*1

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Motor Rotation Angle Sensor 1 Sin Voltage	Rotation angle sensor Sin1 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Motor Rotation Angle Sensor 1 Cos Voltage	Rotation angle sensor Cos1 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Motor Rotation Angle Sensor 2 Sin Voltage	Rotation angle sensor Sin2 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Motor Rotation Angle Sensor 2 Cos Voltage	Rotation angle sensor Cos2 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Motor Rotation Angle Sensor 3 Sin Voltage	Rotation angle sensor Sin3 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Motor Rotation Angle Sensor 3 Cos Voltage	Rotation angle sensor Cos3 output voltage used for rotation angle calculation	Min.: 0.00 V Max.: 5.00 V	-	-
Turn Counter 1	Turn Counter 1	Min.: 0 Max.: 1024	-	*1
Turn Counter 2	Turn Counter 2	Min.: 0 Max.: 1024	-	*1
Absolute Angle (Pinion Angle)	Absolute Angle (Pinion Angle)	Min.: -32.768 rad Max.: 32.768 rad	-	*1

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Steering Angle for the Steering Assembly	Steering angle for the steering assembly	Min.: -1877.5 deg Max.: 1877.6 deg	-	*1
Status of Learned Left/Right End Position for End Torque Limit Control	Status of Learned Left/Right End Position for End Torque Limit Control	Left Direction (Unlearned) & Right Direction (Unlearned) / Left Direction (Unlearned) & Right Direction (Temporary Position) / Left Direction (Unlearned) & Right Direction (Decision Position) / Left Direction (Temporary Position) & Right Direction (Unlearned) / Left Direction (Temporary Position) & Right Direction (Temporary Position) / Left Direction (Temporary Position) & Right Direction (Decision Position) / Left Direction (Decision Position) & Right Direction (Unlearned) / Left Direction (Decision Position) & Right Direction (Temporary Position) / Left Direction (Decision Position) & Right Direction (Decision Position) / Reading Impossibility / 17 to 255	-	-
Learned End Current Position for End Torque Limit Control	Learned End Current Position for End Torque Limit Control	Min.: -3276.8 deg Max.: 3276.6 deg	-	-
Learned Left End Position for End Torque Limit Control	Learned Left End Position for End Torque Limit Control	Min.: -3276.8 deg Max.: 3276.6 deg	-	-
Learned Right End Position for End Torque Limit Control	Learned Right End Position for End Torque Limit Control	Min.: -3276.8 deg Max.: 3276.6 deg	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Super High Speed Steering Angle Speed Abnormality Number of Times	Super High Speed Steering Angle Speed Abnormality Number of Times	Min.: 0 Max.: 255	-	-
Number of Learned End Position Resets	Number of Learned End Position Resets	Min.: 0 Max.: 255	-	-
Rack Stroke	Rack Stroke	Min.: 6553.5 mm Max.: 1024	-	*1
Manual Learning of Gear Middle Point (Right and Left End Hit Against Completed Status)	Manual learning of gear middle point (right and left end hit against completed status)	Right (Non-Completed)/Left (Non-Completed) Right (Completed)/Left (Non-Completed) Right (Completed)/Left (Non-Completed) Right (Completed)/Left (Completed)	-	*1
Motor Actual Current (Q Axis)	Detected current flow to motor (detected current of axis q)	Min.: -327.68 A Max.: 327.67 A	-	-
Command Value Current (Q Axis)	Target current flow to motor (requested current of axis q)	Min.: -327.68 A Max.: 327.67 A	-	-
Motor Actual Current 2 (D Axis)	Detected current flow to motor (detected current of axis d)	Min.: -327.68 A Max.: 327.67 A	-	-
Command Value Current 2 (D Axis)	Target current flow to motor (requested current of axis d)	Min.: -327.68 A Max.: 327.67 A	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Motor Rotation Angle	Motor rotation angle (detected by rotation sensor)	Min.: 0.0 deg Max.: 360.1 deg	-	-
Final Motor Current Limited (Q Axis)	Final motor current set limit (request current of axis q)	Min.: 0.00 A Max.: 327.67 A	-	-
Steering Angle Sensor Signal State	State of steering angle sensor signal	Usable, Unlearned, Sensor Fault or Communication Fault	-	-
CAN Vehicle Speed (Speed Sensor RR)	Speed sensor RR value sent via CAN	Min.: 0 km/h (0 MPH) Max.: 255 km/h (158 MPH)	• 0 km/h (0 MPH): Engine running and vehicle stopped • No significant fluctuation: Ignition switch ON (READY) and vehicle driven at a constant speed	-
CAN Vehicle Speed (Speed Sensor RL)	Speed sensor RL value sent via CAN	Min.: 0 km/h (0 MPH) Max.: 255 km/h (158 MPH)	• 0 km/h (0 MPH): Engine running and vehicle stopped • No significant fluctuation: Ignition switch ON (READY) and vehicle driven at a constant speed	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
CAN Vehicle Speed (SP1)	Vehicle speed input value sent via CAN (equal to value indicated on speedometer)	Min.: 0 km/h (0 MPH) Max.: 300 km/h (186 MPH)	• 0 km/h (0 MPH): Engine running and vehicle stopped • No significant fluctuation: Ignition switch ON (READY) and vehicle driven at a constant speed	-
CAN Steering Angle Speed (SSAV)	Steering wheel turning speed value sent via CAN	Min.: -32768 deg/s Max.: 32767 deg/s	-	-
Battery Voltage Drop History	Number of times vehicle auxiliary battery voltage dropped	Min.: 0 Max.: 255	-	-
Engine Revolution Ready Signal Communication Failure History	Vehicle speed input value sent via CAN (equal to value indicated on speedometer)	Min.: 0 Max.: 255	-	-
Steering Angle Sensor Signal Communication Failure History	Number of times steering angle sensor signal was interrupted	Min.: 0 Max.: 255	-	-
Vehicle Speed Signal Invalid History	Number of times steering angle sensor signal was interrupted	Min.: 0 Max.: 255	-	-
Overheat Prevention Control History	Number of times assist limit performed due to estimated temperature of	Min.: 0 Max.: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
	power steering ECU and motor coil			
Power Supply Voltage Drop Control History	Number of times assist limit performed due to battery voltage having dropped to 9 V or less	Min.: 0 Max.: 255	-	-
Power Supply Voltage Drop Restraint Control History	Number of times assist limit performed due to battery voltage having dropped to 9 V or less	Min.: 0 Max.: 255	-	-
Engine Stall/READY OFF Control History	Number of times assist limit performed due to ignition switch being turn off.	Min.: 0 Max.: 255	-	-
High Load Continuous Control Number of Times	Number of times assist limit performed to prevent motor from overheating when overloaded due to steering wheel being turned to full lock position for an extended period of time, tire pressing against curbstone, etc.	Min.: 0 Max.: 255	-	-
Vehicle Speed Signal Fault Control History	Number of times assist power set to a value suitable for high-speed driving when driving at high speeds due to an abnormal vehicle speed signal	Min.: 0 Max.: 255	-	-
Chassis Power Supply	Chassis powersupply	Min.: 0	-	*1

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Management EPS Control History	managementEPS control history	Max.: 255		
Load Control History	Number of times electric load limited to ensure stable vehicle power when power steering could not function appropriately or battery voltage was too low to ensure stable power steering	Min.: 0 Max.: 255	-	-
Control State Information	Control statusinformation	Min.: 0 Max.: 65535	-	-
ASIC State Information	Integrated circuitstate information	Min.: 0 Max.: 65535	-	-
ECU Overheat Prevention Part	Internal component of ECU for which overheat protection control is performed	No Target Part, Inverter MOS, Power Supply Relay MOS, Custom IC, Choke Coil, H Bridge MOS, Motor Relay MOS, Around Microcomputer or DBC	-	-
ECU Estimate Temperature of Overheat Prevention Part	Estimated temperature of internal component of ECU for which overheat protection control is performed	Min.: -50.0 °C (-58.0 °F) Max.: 200.1 °C (392.2 °F)	-	-
Motor Overheat Prevention Part	Internal component of motor for which overheat protection control is performed	No Target Part or Motor	-	-
Motor Estimate Temperature of Overheat Prevention Part	Estimated temperature of internal component of motor for which	Min.: -50.0 °C (-58.0 °F) Max.: 200.1 °C (392.2 °F)	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
	overheat protection control is performed			
Battery Voltage (System 2)	Battery Voltage (System 2)	Min.: 0.00 V Max.: 25.00 V	-	*1
IG Power Supply (System 2)	IG Power Supply (System 2)	Min.: 0.00 V Max.: 25.00 V	-	*1
PIG Power Supply (System 2)	PIG Power Supply (System 2)	Min.: 0.00 V Max.: 25.00 V	-	*1
Thermistor Temperature (System 2)	Thermistor Temperature (System 2)	Min.: 0.00 V Max.: 25.00 V	-	*1
Middle Voltage of Other Systems (System 2)	Middle Voltage of Other Systems (System 2)	Min.: 0.00 V Max.: 25.00 V	-	*1
Motor Actual Current (Q Axis) (System 2)	Motor Actual Current (Q Axis) (System 2)	Min.: -327.68 A Max.: 327.67 A	-	*1
Command Value Current (Q Axis) (System 2)	Command Value Current (Q Axis) (System 2)	Min.: -327.68 A Max.: 327.67 A	-	*1
Motor Actual Current 2 (D Axis) (System 2)	Motor Actual Current 2 (D Axis) (System 2)	Min.: -327.68 A Max.: 327.67 A	-	*1
Command Value Current 2 (D Axis) (System 2)	Command Value Current 2 (D Axis) (System 2)	Min.: -327.68 A Max.: 327.67 A	-	*1
Motor Rotation Angle (System 2)	Motor Rotation Angle (System 2)	Min.: 0.00 deg Max.: 360.0 deg	-	*1
Final Motor Current Limited	Final Motor Current Limited (Q Axis)	Min.: 0.00 A	-	*1

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
(Q Axis) (System 2)	(System 2)	Max.: 327.67 A		
Battery Voltage Drop History (System 2)	Battery Voltage Drop History (System 2)	Min.: 0 Max.: 255	-	*1
Engine Revolution Ready Signal Communication Failure History (System 2)	Engine Revolution Ready Signal Communication Failure History (System 2)	Min.: 0 Max.: 255	-	*1
Steering Angle Sensor Signal Communication Failure History (System 2)	Steering Angle Sensor Signal Communication Failure History (System 2)	Min.: 0 Max.: 255	-	*1
Vehicle Speed Signal Invalid History (System 2)	Vehicle Speed Signal Invalid History (System 2)	Min.: 0 Max.: 255	-	*1
Overheat Prevention Control History (System 2)	Overheat Prevention Control History (System 2)	Min.: 0 Max.: 255	-	*1
Power Supply Voltage Drop Control History (System 2)	Power Supply Voltage Drop Control History (System 2)	Min.: 0 Max.: 255	-	*1
Power Supply Voltage Drop Restraint Control History (System 2)	Power Supply Voltage Drop Restraint Control History (System 2)	Min.: 0 Max.: 255	-	*1
Engine Stall/READY OFF Control History (System 2)	Engine Stall/READY OFF Control History (System 2)	Min.: 0 Max.: 255	-	*1

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
High Load Continuous Control Number of Times (System 2)	High Load Continuous Control Number of Times (System 2)	Min.: 0 Max.: 255	-	*1
Vehicle Speed Signal Fault Control History (System 2)	Vehicle Speed Signal Fault Control History (System 2)	Min.: 0 Max.: 255	-	*1
Chassis Power Supply Management EPS Control History (System 2)	Chassis Power Supply Management EPS Control History(System 2)	Min.: 0 Max.: 255	-	*1
Load Control History (System 2)	Load Control History (System 2)	Min.: 0 Max.: 255	-	*1
ASIC State Information (System 2)	ASIC State Information (System 2)	Min.: 0 Max.: 65535	-	*1

HINT:

- With the vehicle stopped or driving very slowly, if the steering wheel is turned repeatedly or turned to a lock position and the vehicle is driven for an extended period of time, the amount of power assist is decreased to prevent overheating of the motor and ECU. If this occurs, do not turn the steering wheel for approximately 10 minutes with engine running to improve power assist.
- If the battery is not sufficiently charged or the voltage decreases temporarily, the amount of power assist is reduced and the EPS warning light comes on. In such cases, the amount of power assist returns to normal when the battery voltage recovers.
- *1: Depending on the vehicle, this item may not be displayed.