Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002A05W
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: PA10/PB10/PB12 (HYBRID TRANSMISSION / TRANSAXLE): ELECTRONIC SHIFT LEVER SYSTEM: DATA LIST / ACTIVE TEST; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DATA LIST / ACTIVE TEST

DATA LIST

NOTICE:

- Some Data List values may vary significantly if there are slight differences in the environment in which the vehicle is operating when measurement is performed. Variations may also occur due to aging of the vehicle. Due to these considerations, it is not always possible to provide definite values to be used for judgment of malfunctions. It is possible that a malfunction may be present even if measured values are within the "Normal Condition" range.
- In the event of a problem with intricate symptoms, collect sample data from another vehicle of the same model operating under identical conditions in order to reach an overall judgment by comparing all the items in the Data List.
- 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.

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.

(a) According to the display on the GTS, read the Data List.

HINT:

When reading the Data List, first determine which items need to be monitored before proceeding. Attempting to view all of the data may result in a delayed, inaccurate inspection.

Powertrain > Hybrid Control > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Vehicle Speed	Vehicle speed	Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	0 km/h (0 mph): Vehicle stopped No significant fluctuation: While driving at a constant speed	-
Accelerator Position	Accelerator pedal depressed angle	Min.: 0%, Max.: 127.5%	0%: Accelerator pedal released 100%: Accelerator pedal fully depressed	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Master Cylinder Control Torque	Braking torque equivalent to master cylinder brake fluid pressure (Total braking torque)	Min.: -4096.00 Nm, Max.: 4095.87 Nm	Changes with the brake pedal pressure: Brake pedal depressed	-
Shift Position	Current shift state	P / R / N / D / B (S)	The selected shift state is displayed	-
Shift Position (Meter)	Shift position on the meter	Not Displayed / P / R / N / D / B (S)	The selected shift state is displayed	-
Ready Signal	READY state is displayed	ON / OFF	ON: Ignition switch ON (READY)	-
HV/EV Activate Condition	Startup state of the hybrid system	Normal / Remote Air Control System / Remote	Normal: Started by ignition switch Remote Air Control System: Started by remote air conditioning system Remote: Started by remote starter	-
Request Motor Regenerative Brake Torque	Requested motor (MG2) regenerative braking torque	Min.: -4096.00 Nm, Max.: 4095.87 Nm	While braking: Varies depending on vehicle operation conditions	-
Auxiliary Battery Voltage Low Times	Auxiliary battery voltage low times	Min: 0, Max: 255	-	-
P Control Request Status	Shift actuator ECU (shift control actuator assembly) operation request	No Request / Lock(Normal) / Unlock(Normal) / Lock(Abnormal) / Unlock(Abnormal) / Unlock during Running(Normal) / Unlock during Running(Abnormal)	No Request: Ignition switch ON, no shift operation	-
P Control Status	Shift state P status	Control Duty Abnormal / Lock Position(Normal) / Lock	Lock Position(Normal):	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		Position(Abnormal) / Indefinite Position(Normal) / Indefinite Position(Abnormal) / Unlock Position(Normal) / Unlock Position(Abnormal) / Lock Position(Normal) / Lock Position(Abnormal) / Indefinite Position(Normal) / Indefinite Position(Abnormal) / Unlock Position(Normal) / Unlock Position(Abnormal)	Ignition switch ON, no shift operation	
Abnormality Informing Status	Malfunction notifications of other systems	ON / OFF	ON: Malfunction occurring in this system OFF: Malfunction not occurring in this system	-
P Position Automatic Change Request	P position automatic change function request status	ON / OFF	-	-
Limiting Driving Force Request from Transmission Control System	Drive torque limit request status of the HV system sent from the electronic shift lever system	ON / OFF	OFF: Fail-safe control not being performed	-
SP1 Vehicle Speed	Vehicle speed (SP1)	Min.: 0 km/h (0 mph), Max.: 655.35 km/h (407.23 mph)	The same as actual vehicle speed	-
Gear Shift Control Module Power Supply Voltage	Shift control ECU power supply voltage	Min.: -20.00 V, Max.: 19.84 V	8.00 to 15.40 V	Displays terminal BATT voltage of the shift control ECU
Gear Shift Control Module "B" CPU Temperature	Shift actuator ECU internal temperature	Min.: -50°C (-58°F), Max.: 205°C (401°F)	0°C (32°F) to 205°C (401°F)	-
IGCT Signal Status (Gear Shift Control Module)	IGCT signal status of the shift control ECU	ON / OFF	ON: Ignition switch ON	Displays the ON/OFF value of terminal IGCT input signal

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
IGCT Signal Status (Gear Shift Control Module "B")	IGCT signal status of the shift actuator ECU	ON / OFF	ON: Ignition switch ON	Displays the ON/OFF value of terminal IGC1 input signal
IGP Signal Status (Gear Shift Control Module)	IGP signal status of the shift control ECU	ON / OFF	ON: Ignition switch ON	Displays the ON/OFF value of terminal IGP input signal
IG Status (Gear Shift Control Module "B")	IG status of the shift actuator ECU	ON / OFF	ON: Ignition switch ON	-
WAKE Signal Status (Gear Shift Control Module)	WAKE signal status of the shift control ECU	ON / OFF	ON: WAKE signal ON OFF: WAKE signal OFF	Displays the ON/OFF value of terminal WAKE output signal
WAKE Signal Status (Gear Shift Control Module "B")	WAKE signal status of the shift actuator ECU	ON / OFF	ON: WAKE signal ON OFF: WAKE signal OFF	Displays the ON/OFF value of terminal WAKE input signal
Backup Power Supply Type	Backup supply power type	Capacitor Type / Lithium Type / None	-	-
Gear Shift Control Module Backup Signal Status	System backup signal from the backup supply power	Wake Up Request / Capacitor Internal Failure / Backup Mode (Low Capacity) / Backup Possible/Remote Charging Complete / Backup Impossible / Communication Stop / Backup Possible/Remote Charging Incomplete / Capacitor Internal Failure (Backup Possible) / Capacitor External Failure / Capacitor External Failure (Backup Possible) / Capacitor External Failure (Brake Factor)	Normal: Backup Possible/Remote Charging Complete	Displays the integrated capacitor status based on the waveform input to the BUBI terminal of the shift control ECU
Gear Shift Control Module Backup Request	System backup request from the backup supply power	Wake Up/Sleep Permission / Interruption Permission (Not Remote) / ON (Not Remote) / OFF (Not Remote) / ON (Advanced Park) / OFF	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		(Advanced Park) / ON (Stop&Start)		
Fail Safe Status (Gear Shift Control Module)	Fail-safe status of the shift control ECU	Unknown / OFF / ON	-	Hybrid vehicle control ECU SBFS terminal
Fail Safe Status (Gear Shift Control Module "B" to "A")	Shift control ECU fail-safe status from the shift actuator ECU	Normal / Abnormal / Unknown	-	Shift control ECU FS terminal
Fail Safe Power Supply Relay Connect Request	Requested connection status of the shift actuator ECU motor drive relay (fail safe power supply)	ON / OFF	OFF: Connection not requested ON: Connection requested	-
Shift Position (Current Position)	Actual shift lever position (judged value)	Home / R / N / D / B/M/S / Not Available	Home: Shift lever in home position R: Shift lever in R N: Shift lever in N D: Shift lever in D B/M/S: Shift lever in B	-
Shift Sensor Status	Shift sensor malfunction status	Normal / Abnormal / Abnormal (Extreme)	-	-
Shift Sensor 1 Status	Shift lever sensor input signal status	H / R / N / D / B/M/S / O / Abnormal / Unknown	Home: Shift lever in home position R: Shift lever in R N: Shift lever in N D: Shift lever in D B/M/S: Shift lever in B O: Outside of range	Shift sensor (type 1)
Shift Sensor 2 Status	Shift lever sensor input signal status	H / R / N / D / B/M/S / O / Abnormal / Unknown	Home: Shift lever in home position R: Shift lever in R N: Shift lever in N D: Shift lever in D	Shift sensor (type 2)

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
			B/M/S: Shift lever in B O: Outside of range	
Shift Sensor 3 Status	Shift lever sensor input signal status	H / R / N / D / B/M/S / O / Abnormal / Unknown	Home: Shift lever in home position R: Shift lever in R N: Shift lever in N D: Shift lever in D B/M/S: Shift lever in B O: Outside of range	Shift sensor (type 3)
M or S Shift Position Indicator Turn On Request	Shift position indicator (B) illumination status	ON / OFF	ON: Shift state B OFF: Shift state not B	-
D Shift Position Indicator Turn On Request	Shift position indicator (D) illumination status	ON / OFF	ON: Shift state drive (D) OFF: Shift state not drive (D)	-
N Shift Position Indicator Turn On Request	Shift position indicator (N) illumination status	ON / OFF	ON: Shift state neutral (N) OFF: Shift state not neutral (N)	-
R Shift Position Indicator Turn On Request	Shift position indicator (R) illumination status	ON / OFF	ON: Shift state reverse (R) OFF: Shift state not reverse (R)	-
P Shift Position Indicator Turn On Request	P position indicator illumination status	ON / OFF	ON: Shift state park (P) OFF: Shift state not park (P)	-
Back Up Light Turn On Request	Back-up light illumination command	ON / OFF	ON: Back-up light illuminated OFF: Back-up light not illuminated	BL (terminal) output status

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stop Light Switch (Gear Shift Control Module)	Stop light switch status	ON / OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
P Position Switch Signal Status (Gear Shift Control Module)	P position switch status	ON / OFF	ON: P position switch pushed and held OFF: P position switch not pushed	-
Not P Position Learning Value (Output Side)	Learned value (output axis) in accordance with the shift state other than P	Min.: 0.0 deg, Max.: 124.5 deg	21.8 to 35.8 deg	-
Not P Position Learning Value (Motor Side)	Learned value (calculated output axis angle based on the detected motor axis angle) in accordance with the shift state other than P	Min.: 0.00 deg, Max.: 42949672.95 deg	50.20 to 64.60 deg	-
Absolute Angle Sensor Value 1	Value of axis sensor 1 (detected angle)	Min.: 0.0 deg, Max.: 124.5 deg	0.0 to 46.6 deg	-
Absolute Angle Sensor Value 2	Value of axis sensor 2 (detected angle)	Min.: 0.0 deg, Max.: 124.5 deg	0.0 to 46.6 deg	-
Gear Shift Actuator Power Supply Voltage (MA1)	Voltage of gear shift motor supply power terminal (MA1)	Min.: 0 V, Max.: 255 V	8 to 15 V	Displays the voltage input signal of shift control ECU terminal (MA1)
Gear Shift Actuator Power Supply Voltage (MA2)	Voltage of gear shift motor supply power terminal (MA2)	Min.: 0 V, Max.: 255 V	8 to 15 V: Ignition switch ON	Displays the voltage input signal of shift control ECU terminal (MA2)

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Gear Shift Actuator Motor Angle Sensor Value	Value of motor axis sensor (detected angle)	Min.: 0.00 deg, Max.: 358.59 deg	0.00 to 358.59 deg	-
Gear Shift Actuator Motor Speed	Gear shift motor rotation speed	Min.: 0.00 rpm deg, Max.: 10160.15 rpm	0.00 to 10000.00 rpm	-
Gear Shift Actuator Power Supply Relay Downstream Voltage	Internal voltage of the actuator downstream of the motor supply power relay	Min.: 0 V, Max.: 255 V	8 to 15 V: Ignition switch ON	Internal voltage of shift control actuator
U Phase Parking Lock Motor Current-Carrying Status (Gear Shift Control Module "B")	Parking lock motor (U phase) drive signal	ON / OFF	ON: U phase energized OFF: U phase not energized	-
V Phase Parking Lock Motor Current-Carrying Status (Gear Shift Control Module "B")	Parking lock motor (V phase) drive signal	ON / OFF	ON: V phase energized OFF: V phase not energized	-
W Phase Parking Lock Motor Current-Carrying Status (Gear Shift Control Module "B")	Parking lock motor (W phase) drive signal	ON / OFF	ON: W phase energized OFF: W phase not energized	-
U Phase Parking Lock Motor Terminal Current	Current of the parking lock motor terminal (U phase)	Min.: -64.0 A, Max.: 63.5 A	-62.5 to 62.5 A	-
V Phase Parking Lock Motor Terminal Current	Current of the parking lock motor terminal (V phase)	Min.: -64.0 A, Max.: 63.5 A	-62.5 to 62.5 A	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
W Phase Parking Lock Motor Terminal Current	Current of the parking lock motor terminal (W phase)	Min.: -64.0 A, Max.: 63.5 A	-62.5 to 62.5 A	-
ACT Relay Connect Status	Connection status of drive relay of the shift actuator ECU motor	ON / OFF	OFF: Not connected ON: Connected	-
ACT Relay Connect Request	Requested connection status of drive relay of the shift actuator ECU motor	ON / OFF	OFF: Connection not requested ON: Connection requested	-
ACT Position Status	Status of the shift actuator ECU	Other than P / None / Shift in P	Shift in P: Shift state P Other than P: Shift state not P None: Other than above	-
ACT Position Drive Request	Operation request position of the shift actuator ECU	Output NG / Shift in P / Other than P	Shift in P: P position request Other than P: Not P position Output NG: Not requested	-
ACT Operation Status	Operation status of the shift actuator ECU	ON / OFF	OFF: Shift actuator ECU stopped ON: Shift actuator ECU changing	-
ACT Function Informing Status	Function failure status of the shift actuator ECU	Normal / Maintenance / Outside Judgment Guaranteed / Outside Operation Guaranteed / Outside Judgment/Operation Guaranteed / Operation NG / Operation NG/Outside Judgment Guaranteed	Normal: Normal condition Other than above: Malfunctioning	-
ACT Monitoring Information	Monitor status of the shift actuator ECU	Normal / Driver Malfunction 1 / Driver Malfunction 2 / Driver Malfunction 3 / Driver Malfunction 4 / Driver	Normal: Normal condition	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
		Malfunction 5 / Driver Malfunction 6 / Sensor Malfunction 1 / Sensor Malfunction 2 / Sensor Malfunction 3 / Driver Malfunction 7 / Motor Malfunction 1 / Motor Malfunction 2 / Motor Malfunction 3	Other than above: Malfunctioning	
ACT Position Learning Complete Status	Learning complete status of the shift actuator ECU	Incomplete / Running / Abort / Complete	Incomplete: Before learning Running: Learning in progress Abort: Learning failed Complete: Learning complete / normal	When the shift actuator ECU (shift control actuator assembly) has been removed, perform initialization and learning and confirm that they complete successfully.
Shift Request during Advanced Drive/Park	Shift request during advanced park operation	OFF / ON (Gear Shift Control Module) / ON (Clearance Warning Control Module Semi-Auto) / ON (Clearance Warning Control Module Full-Auto) / ON (Advanced Drive Control Module)	OFF: No shift request ON (Gear Shift Control Module): Is shift request	-
IGCT-Scene Signal Status (Gear Shift Control Module)	IGCT-SCENE signal status of the shift control ECU	ON / OFF	ON: Ignition switch ON	Displays the ON/OFF value of terminal IGCT or IGS input signal
IGCT-Scene Signal Status (Gear Shift Control Module "B")	IGCT-SCENE signal status of the shift actuator ECU	ON / OFF	ON: Ignition switch ON	Displays the ON/OFF value of terminal IGC1 or IGS1 input signal
Shift P Operation during Running Trigger Counter	Number of times P switch was pressed while vehicle being driven	Min: 0, Max: 255	-	-
Shift P Operation before Vehicle	Number of times shift state was not	Min: 0, Max: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stop Trigger Counter	changed to P when P position switch was operated before vehicle stopped			
Shift P Operation during Other than Shift P Operation Trigger Counter	Number of times the P position switch was operated when the shift lever was not in the home position	Min: 0, Max: 255	-	-
Auto Change to Shift Position P Cancel Trigger Counter	Number of times P position automatic change function did not operate	Min: 0, Max: 255	-	-
Voltage Low for Shift Control System Trigger Counter	Number of times shift control system did not operate due to low voltage	Min: 0, Max: 255	-	-
Shift Operation when Auxiliary Battery Voltage Low Trigger Counter	Number of times a shift operation was performed while auxiliary battery voltage was low	Min: 0, Max: 255	-	-
Consecutive Shift Change between Shift P and Other than Shift P in Short Times Trigger Counter	Number of times shift state was attempted to be changed between P and other than P within a short period of time	Min: 0, Max: 255	-	-
Shift Operation during Ready Indicator Blinking Trigger Counter	Number of times shift state was attempted to be changed from P with READY indicator light blinking	Min: 0, Max: 255	-	-
Shift R/D/B(S) Operation during	Number of times shift state was attempted to be	Min: 0, Max: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Ready OFF Trigger Counter	changed to R, D or B with READY indicator not illuminated			
Shift Operation without Depressing Brake from Shift Position P Trigger Counter	Number of times shift state was attempted to be changed from P with brake pedal not depressed	Min: 0, Max: 255	-	-
Shift Operation during Accelerator & Brake Depress Trigger Counter	Number of times shift state was attempted to be changed from P with READY indicator light illuminated and accelerator and brake pedals depressed	Min: 0, Max: 255	-	-
Shift B(S) Operation from Shift Position P/N Trigger Counter	Number of times shift state was attempted to be changed from P or N to B	Min: 0, Max: 255	-	-
Shift B(S) Operation from Shift Position R Trigger Counter	Number of times shift state was attempted to be changed from R to B	Min: 0, Max: 255	-	-
Shift D Operation during Backward Movement Trigger Counter	Number of times shift state was attempted to be changed to D while reversing	Min: 0, Max: 255	-	-
Shift R Operation during Forward Movement Trigger Counter	Number of times shift state was attempted to be changed to R while driving forward	Min: 0, Max: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Shift R/D Operation during Ready OFF Trigger Counter	Number of times shift state was attempted to be changed to R, D or B with READY indicator not illuminated and the ignition switch ON	Min: 0, Max: 255	-	-
Shift N Operation during Running Trigger Counter	Number of times shift state was changed to N by holding shift lever in N for a certain amount of time while driving	Min: 0, Max: 255	-	-
Quick Shift Operation to Shift Position N during Running Trigger Counter	Number of times shift state was changed to N when shift lever not held in N while driving	Min: 0, Max: 255	-	-
Shift N Change by Busy Shift Trigger Counter	Number of times shift state was changed to neutral (N) by moving the shift lever to R, D and/or N repeatedly within short period of time	Min: 0, Max: 255	-	-
Shift N Operation on The Way Back to Home Position after Shift D/R Operation Trigger Counter	Number of times shift state was changed to N when shift lever was returning from R or D	Min: 0, Max: 255	-	-
Shift R Operation on The Way Back to Home Position after Shift D Operation Trigger Counter	Number of times shift state was changed to D when shift lever was returning from R	Min: 0, Max: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Shift D Operation on The Way Back to Home Position after Shift R Operation Trigger Counter	Number of times shift state was changed to R when shift lever was returning from D	Min: 0, Max: 255	-	-
Shift N Operation at Short Times during Low Speed/Stopping Trigger Counter	Number of times shift state was attempted to be changed to N without holding shift lever in N for a long enough time when driving at low speed or stopped	Min: 0, Max: 255	-	-
Shift P Repeated Operation Trigger Counter during Running	Number of times shift state changed to N as P position switch was consecutively operated while driving	Min: 0, Max: 255	-	-
Shift P Hold Down Trigger Counter during Running	Number of times shift state changed to N as P position switch was pressed and held while driving	Min: 0, Max: 255	-	-
Shift P Operation when Auxiliary Battery Low Voltage Trigger Counter	Number of times that the P position switch was operated during battery power failure	Min: 0, Max: 255	-	-
Auto Change to Shift Position P when Driver Get Out Trigger Counter	Number of times shift state changed to P automatically due to driver exiting vehicle	Min: 0, Max: 255	-	-
Shift Position N Hold Mode ON during IG	Number of times the ignition switch	Min: 0, Max: 255	-	-

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
OFF/ACC ON Trigger Counter	was turned off with the shift state N			
Shift Operation on Gradient during Ready OFF Trigger Counter	Number of times a shift operation was performed while on an incline with the ignition switch ON, not in READY mode	Min: 0, Max: 255	-	-
Shift Operation during Advanced Drive/Park Trigger Counter	Number of times a shift operation was performed while advanced drive or advanced park was operating	Min: 0, Max: 255	-	-
Shift P Operation during Advanced Drive/Park Trigger Counter	Number of times the P position switch was operated while advanced drive or advanced park was operating	Min: 0, Max: 255	-	-
Shift Operation during Release Shift P Restriction Request Trigger Counter	Number of times shift state was attempted to be changed from P during P release prohibit request	Min: 0, Max: 255	-	-
Shift D/R Operation Rejection from Shift Position N without Depressing Brake Pedal Trigger Counter	Number of times shift state was attempted to be changed from N to drive state with brake pedal not depressed	Min: 0, Max: 255	-	-
Shift D/R Operation Rejection from Shift Position N during Accelerator Pedal Depress Trigger Counter	Number of times shift state was attempted to be changed from N to drive state with accelerator pedal depressed	Min: 0, Max: 255	-	-