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| <b>Model Year Start:</b> 2023  | <b>Model:</b> Prius Prime | <b>Prod Date Range:</b> [03/2023 - ] |
| <b>Title:</b> POWER ASSIST SYSTEMS: POWER STEERING SYSTEM: Heavy Steering Feel (EPS Warning Light (Yellow)); 2023 - 2024 MY Prius Prius Prime [03/2023 - ] |                           |                                      |

## Heavy Steering Feel (EPS Warning Light (Yellow))

## PROCEDURE

### 1. READ VALUE USING GTS

(a) Enter the following menus: Chassis / EMPS / Data List.

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

#### Chassis > EMPS > Data List

| TESTER DISPLAY   | MEASUREMENT ITEM   | RANGE                | NORMAL CONDITION | DIAGNOSTIC NOTE |
|--|--|----------------------|------------------|-----------------|
| Battery Voltage Drop History                                 | Number of times vehicle auxiliary battery voltage dropped  | Min.: 0<br>Max.: 255 | -                | -               |
| Engine Revolution Ready Signal Communication Failure History | Vehicle speed input value sent via CAN (equal to value indicated on speedometer)                         | Min.: 0<br>Max.: 255 | -                | -               |
| Steering Angle Sensor Signal Communication Failure History   | Number of times steering angle sensor signal was interrupted   | Min.: 0<br>Max.: 255 | -                | -               |
| Vehicle Speed Signal Invalid History                         | Number of times steering angle sensor signal was interrupted   | Min.: 0<br>Max.: 255 | -                | -               |
| Overheat Prevention Control History                          | Number of times assist limit performed due to estimated temperature of power steering ECU and motor coil | Min.: 0<br>Max.: 255 | -                | -               |
| 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<br>Max.: 255 | -                | -               |

| TESTER DISPLAY                                      | MEASUREMENT ITEM  | RANGE                | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|----------------------|------------------|-----------------|
| Power Supply Voltage Drop Restraint Control History | Number of times assist limit performed due to battery voltage having dropped to 9.7 V or less   | Min.: 0<br>Max.: 255 | -                | -               |
| Engine Stall/READY OFF Control History              | Number of times assist limit performed due to engine stall  | Min.: 0<br>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<br>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<br>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<br>Max.: 255 | -                | -               |

### Chassis > EMPS > Data List

|  |
|--|
| TESTER DISPLAY   |
| Battery Voltage Drop History                                 |
| Engine Revolution Ready Signal Communication Failure History |
| Steering Angle Sensor Signal Communication Failure History   |
| Vehicle Speed Signal Invalid History                         |
| Overheat Prevention Control History                          |
| Power Supply Voltage Drop Control History                    |
| Power Supply Voltage Drop Restraint Control History          |

|  |
|--|
| TESTER DISPLAY                               |
| Engine Stall/READY OFF Control History       |
| High Load Continuous Control Number of Times |
| Vehicle Speed Signal Fault Control History   |
| Load Control History                         |

**HINT:**

If the auxiliary battery is not sufficiently charged or the voltage decreases temporarily, the amount of power assist will be reduced and the EPS warning light will come on. In such cases, the amount of power assist returns to normal when the auxiliary battery voltage recovers.

OK:

No control history

**OK** ► **USE SIMULATION METHOD TO CHECK**

**NG**



|           |  |
|-----------|--|
| <b>2.</b> | <b>CHECK FOR VEHICLE CONTROL HISTORY (POWER STEERING SYSTEM)</b> |
|-----------|--|

(a) Check for vehicle control history and note any codes that are output.

**Chassis > EMPS > Utility**

|                               |
|-------------------------------|
| TESTER DISPLAY                |
| Vehicle Control History (RoB) |

(1) Record the vehicle control history.

| RESULT  | PROCEED TO |
|---|------------|
| Vehicle control history is not output                 | A          |
| Vehicle control history other than [X206D] are output | B          |
| Vehicle control history [X206D] is output             | C          |

**A** ► **USE SIMULATION METHOD TO CHECK**

**B ▶ GO TO VEHICLE CONTROL HISTORY**

**C**



|           |  |
|-----------|--|
| <b>3.</b> | <b>CHECK FOR VEHICLE CONTROL HISTORY FREEZE FRAME DATA (POWER STEERING SYSTEM)</b> |
|-----------|--|

(a) Check for vehicle control history freeze frame data and note any codes that are output.

**Chassis > EMPS > Utility**



(1) Record the vehicle control history.

| RESULT   | PROCEED TO |
|--|------------|
| Vehicle control history is not output  | A          |
| Vehicle control history freeze frame data [Status of Vehicle Power (IGP PDC) is OFF] and [Status of Vehicle Power (IGR PDC) is OFF] are output | B          |
| Vehicle control history freeze frame data [Status of Vehicle Power (IGP PDC) is OFF] and [Status of Vehicle Power (IGR PDC) is ON] are output  | C          |

**A ▶ GO TO CAN COMMUNICATION SYSTEM**

for HEV Model: Click here [INFO](#)

for PHEV Model: Click here [INFO](#)

**B ▶ GO TO PROBLEM SYMPTOMS TABLE (ENGINE STALLS)**

for M20A-FXS: Click here [INFO](#)

for 2ZR-FXE: Click here [INFO](#)

**C**



|           |  |
|-----------|--|
| <b>4.</b> | <b>CHECK VEHICLE CONTROL HISTORY (AIRBAG SYSTEM)</b> |
|-----------|--|

(a) Check for vehicle control history freeze frame data and note any codes that are output.

**Body Electrical > SRS Airbag > Utility**

|                               |
|-------------------------------|
| TESTER DISPLAY                |
| Vehicle Control History (RoB) |

**Record Data Item Chart**

| TESTER DISPLAY        | MEASUREMENT ITEM                             | RANGE   | DIAGNOSTIC NOTE  |
|-----------------------|--|---|--|
| Vehicle Speed         | Vehicle speed at main driven wheels          | 0 to 200 km/h   | If the vehicle speed is 200 km/h or more, "200 km/h" is displayed. |
| Engine RPM Data       | Number of crankshaft revolutions in 1 minute | 0 to 12800 rpm  | -  |
| Shift Position Signal | Shift lever position                         | N / D / R / P / 5 / 4 / 3 / 2 / LO / B / SD / S-Mode / Undetermined | -  |

(1) Record the vehicle control history.

**HINT:**

If the engine is stopped while the vehicle is stationary and the shift position is not P, the EPS warning light (yellow) illuminates and the message "Engine Stopped Steering Power Low" will be displayed on the multi-information display in the combination meter assembly, but this is caused by incorrect operation and is not a malfunction.

| RESULT   | PROCEED TO |
|--|------------|
| Vehicle control history (vehicle speed 0 km/h or more, engine speed 0 rpm and shift position not in P) is output     | A          |
| Vehicle control history (vehicle speed 0 km/h or more, engine speed 0 rpm and shift position not in P) is not output | B          |

**A**  **INCORRECT OPERATION**

If incorrect operation of the engine switch causes unintended IG OFF operation while the shift position is not P, the engine will stop thus causing EPS shutdown and illumination of the EPS warning light (yellow), but this is not a malfunction. (EPS control during engine stall)

**B**  **USE SIMULATION METHOD TO CHECK**

