| | | |
|---|---|---|
| **Last Modified:** 12-04-2024 | 6.11:8.1.0 | **Doc ID:** RM1000000028X1A |
| **Model Year Start:** 2023 | **Model:** Prius Prime | **Prod Date Range:** [12/2022 - ] |
| **Title:** BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: ELECTRONICALLY CONTROLLED BRAKE SYSTEM: DATA LIST / ACTIVE TEST; 2023 - 2024 MY Prius Prius Prime [12/2022 - ] | | |

# DATA LIST / ACTIVE TEST

## DATA LIST

**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.

**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) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the GTS to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the GTS on.

(f) Enter the following menus: Chassis / Brake Booster / Data List.

(g) Enter the following menus: Chassis / Brake/EPB* / Data List.

*: Electric Parking Brake System

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

**Chassis > Brake Booster > Data List**

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Total Distance Traveled - Unit | Total distance traveled unit | km / mile | - | - |
| Total Distance Traveled | Total distance traveled | Min.: 0<br>Max.: 16777215 | - | - |
| Solenoid Power Supply Voltage | Solenoid power supply voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| Stop Light SW | Stop light switch assembly (STP terminal input) | OFF / ON | OFF: Brake pedal released<br>ON: Brake pedal depressed | **HINT:**<br>The brake pedal state is determined using the voltage at terminal STP |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Parking Brake SW | Parking brake status | OFF / ON | OFF: Parking brake released<br>ON: Parking brake applied | - |
| Buzzer | Meter buzzer | OFF / ON | OFF: Buzzer off<br>ON: Buzzer on | - |
| Dealer Mode | Dealer Mode (Signal Check mode or Calibration mode) status | OFF / ON | OFF: Normal mode<br>ON: Dealer Mode (Signal Check mode or Calibration mode) | **HINT:**<br>• For details on Dealer Mode (Signal Check), refer to Signal Check*1<br>• For details on Dealer Mode (Calibration), refer to Reset Memory / Calibration*2 |
| Reservoir Warning SW | Brake fluid level warning switch | OFF / ON | OFF: Reservoir level normal<br>ON: Reservoir level low | - |
| ECB Solenoid (SGH) | Switching solenoid valve (SGH) | OFF / ON | OFF: Solenoid off<br>ON: Solenoid on | ECB: Electronically Controlled Brake System |
| ECB Solenoid (SSA) | Switching solenoid valve (SSA) | OFF / ON | OFF: Solenoid off<br>ON: Solenoid on | ECB: Electronically Controlled Brake System |
| IGP_PT2 | IGP_PT2 status | OFF / ON | OFF: IGP_PT2 OFF<br>ON: IGP_PT2 ON | - |
| Stroke Sensor | Brake pedal stroke sensor 1 | Min.: 0.0 V<br>Max.: 5.0 V | Brake pedal released: 0.6 to 1.4 V | Reading increases when brake pedal is depressed |
| Quantity of Brake Pedal Stroke | Brake pedal stroke amount | Min.: 0 mm<br>Max.: 255 mm | Brake pedal released: 0 mm | Reading increases when brake pedal is depressed |
| Servo Pressure | Pressure value of servo | Min.: 0.00 MPa<br>Max.: 24.48 MPa | Brake pedal released: 0.00 to 1.53 MPa | Brake pedal is being depressed: Changes in proportion to the depression force of the brake pedal |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Voltage of Stroke Sensor | Voltage of brake pedal stroke sensor 1 | Min.: 0.0 V<br>Max.: 5.0 V | - | - |
| Brake Pedal Stroke Change Speed | Brake pedal stroke rate of change | Min.: -2560 mm/s<br>Max.: 2540 mm/s | Brake pedal released or depressed and held: 0 mm/s | Brake pedal is being moved: Changes in proportion to the operation speed of the brake pedal |
| Target Oil Pressure | Wheel target hydraulic pressure | Min.: 0.00 MPa<br>Max.: 20.00 MPa | - | Changes according to the target wheel cylinder hydraulic pressure |
| VCSK Voltage Value | VCSK voltage value | Min.: 0.000 V<br>Max.: 5.500 V | 4.800 to 5.200 V | - |
| SGH Solenoid Current | Switching solenoid valve (SGH) current | Min.: 0.000 A<br>Max.: 3.000 A | 0.000 to 1.500 A | - |
| SSA Solenoid Current | Switching solenoid valve (SSA) current | Min.: 0.000 A<br>Max.: 3.000 A | 0.000 to 1.500 A | - |
| ECB Main Relay | Main relay operation request | OFF / ON | OFF: Relay off<br>ON: Relay on | ECB: Electronically Controlled Brake System |
| Brake Booster Motor | Brake booster motor status | OFF / ON | OFF: Motor off<br>ON: Motor on | - |
| Linear Solenoid (SLM1) | Linear solenoid valve (SLM1) current | Min.: 0.000 A<br>Max.: 0.504 A | - | - |
| Linear Solenoid (SLM2) | Linear solenoid valve (SLM2) current | Min.: 0.000 A<br>Max.: 0.504 A | - | - |
| The Number of Capacitor Operation | Displays the number of integration control supply operations | Min.: 0<br>Max.: 255 | - | - |
| Gap Hold Chamber Oil Pressure | Pressure value of stroke simulator | Min.: 0.00 MPa<br>Max.: 24.48 MPa | Brake pedal released: 0.00 to 1.53 MPa | Brake pedal is being depressed: Changes in proportion to the depression force of the brake pedal |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Gap Hold Chamber Oil Pressure Grade | Amount of change in stroke simulator oil pressure | Min.: -30 MPa/s<br>Max.: 225 MPa/s | - | - |
| Linear Solenoid Current (SLM1) | Linear solenoid valve (SLM1) current | Min.: 0.000 A<br>Max.: 1.500 A | Brake pedal released: 0 A | - |
| Linear Solenoid Current (SLM2) | Linear solenoid valve (SLM2) current | Min.: 0.000 A<br>Max.: 1.500 A | Brake pedal released: 0 A | - |
| IGR Voltage | IGR voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| BS Voltage | BS voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| BM Voltage | BM voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| Zero point Calibrated Value of Phase U Current Monitor | Displays zero point calibrated value of phase U current monitor for brushless motor | Min.: -32.768 A<br>Max.: 32.767 A | - | - |
| Zero point Calibrated Value of Phase V Current Monitor | Displays zero point calibrated value of phase V current monitor for brushless motor | Min.: -32.768 A<br>Max.: 32.767 A | - | - |
| Zero point Calibrated Value of Phase W Current Monitor | Displays zero point calibrated value of phase W current monitor for brushless motor | Min.: -32.768 A<br>Max.: 32.767 A | - | - |
| Thermistor1 Temperature for Inverter Circuit | Temperature of thermistor1 in inverter circuit | Min.: -327.68°C (-558°F)<br>Max.: 327.67°C (622°F) | - | - |
| Thermistor2 Temperature for | Temperature of thermistor2 in inverter | Min.: -327.68°C (-558°F) | - | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Inverter Circuit | circuit | Max.: 327.67°C (-622°F) | | |
| Brushless Motor Inverter end Voltage | Inverter end voltage for brushless motor | Min.: 0.00 V<br>Max.: 655.35 V | - | Changes in proportion to auxiliary battery voltage |
| Brushless Motor Required Rotation Speed (with Rotation Angle Sensor) | Requested brushless motor rotation speed | Min.: -32768 rpm<br>Max.: 32767 rpm | Brake pedal released: 0 rpm | - |
| Brushless Motor Actual Rotation Speed (with Rotation Angle Sensor) | Actual brushless motor rotation speed | Min.: -32768 rpm<br>Max.: 32767 rpm | Brake pedal released: 0 rpm | - |
| Brushless Motor Operation Status (with Rotation Angle Sensor) | Operation status of brushless motor | Abnormal / Stop / Synchronization drive / Extended Induced voltage | - | - |
| Gap Hold Chamber Pressure Sensor Open History | History of momentary open in gap pressure sensor | None / Exist | - | - |
| Down Stream Voltage Solenoid Relay | Solenoid relay downstream voltage | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| CBKP Voltage | CBKP voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |

*1: for performing Dealer Mode (Signal Check): Click here INFO
*2: for entering Dealer Mode (Calibration): Click here INFO

**Chassis > Brake/EPB > Data List**

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Total Distance Traveled - Unit | Total distance traveled unit | km / mile | - | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Total Distance Traveled | Total distance traveled | Min.: 0<br>Max.: 16777215 | - | - |
| FR Wheel Speed | Front wheel speed sensor RH reading | Min.: 0.0 km/h (0 mph)<br>Max.: 6553.5 km/h (4072 mph) | Vehicle stopped: 0.0 km/h (0 mph) | When driving at constant speed: No large fluctuations |
| FL Wheel Speed | Front wheel speed sensor LH reading | Min.: 0.0 km/h (0 mph)<br>Max.: 6553.5 km/h (4072 mph) | Vehicle stopped: 0.0 km/h (0 mph) | When driving at constant speed: No large fluctuations |
| RR Wheel Speed | Rear wheel speed sensor RH reading | Min.: 0.0 km/h (0 mph)<br>Max.: 6553.5 km/h (4072 mph) | Vehicle stopped: 0.0 km/h (0 mph) | When driving at constant speed: No large fluctuations |
| RL Wheel Speed | Rear wheel speed sensor LH reading | Min.: 0.0 km/h (0 mph)<br>Max.: 6553.5 km/h (4072 mph) | Vehicle stopped: 0.0 km/h (0 mph) | When driving at constant speed: No large fluctuations |
| FR Wheel Acceleration | Front wheel RH acceleration | Min.: -200.840 $m/s^2$<br>Max.: 199.271 $m/s^2$ | Vehicle stopped: 0.000 $m/s^2$<br>During deceleration: -200.840 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 199.271 $m/s^2$ | During deceleration/acceleration: Changes continuously |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| FL Wheel Acceleration | Front wheel LH acceleration | Min.: -200.840 $m/s^2$<br>Max.: 199.271 $m/s^2$ | Vehicle stopped: 0.000 $m/s^2$<br>During deceleration: -200.840 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 199.271 $m/s^2$ | During deceleration/acceleration: Changes continuously |
| RR Wheel Acceleration | Rear wheel RH acceleration | Min.: -200.840 $m/s^2$<br>Max.: 199.271 $m/s^2$ | Vehicle stopped: 0.000 $m/s^2$<br>During deceleration: -200.840 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 199.271 $m/s^2$ | During deceleration/acceleration: Changes continuously |
| RL Wheel Acceleration | Rear wheel LH acceleration | Min.: -200.840 $m/s^2$<br>Max.: 199.271 $m/s^2$ | Vehicle stopped: 0.000 $m/s^2$<br>During deceleration: -200.840 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 199.271 $m/s^2$ | During deceleration/acceleration: Changes continuously |
| Master Cylinder Sensor 1 | Master cylinder pressure sensor pressure (value detected by ECU) | Min.: -1.00 MPa<br>Max.: 23.99 MPa | Brake pedal released: -1.00 to 0.00 MPa | Reading increases when brake pedal is depressed |
| Zero Point of M/C | Memorized zero point value of master cylinder pressure sensor | Min.: -12.5 MPa<br>Max.: 12.4 MPa | - | - |
| Master Cylinder Sensor Temperature | Master cylinder pressure sensor temperature | Min.: -80°C (-112°F)<br>Max.: 175°C (347°F) | Current master cylinder pressure sensor temperature | - |
| M/C Sensor Grade | Master cylinder pressure sensor change (value detected by ECU) | Min.: -30 MPa/s<br>Max.: 225 MPa/s | Brake pedal released or pedal held at constant position: 0 MPa/s | When brake pedal is being operated: Changes in proportion with the pedal movement speed |
| Lateral G | Lateral G | Min.: -25.105 $m/s^2$ | Turning right: -25.105 to 0.000 $m/s^2$ | During turning: Changes in proportion with lateral acceleration |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | Max.: 24.908 $m/s^2$ | Turning left: 0.000 to 24.908 $m/s^2$ | |
| Forward and Rearward G | Forward and rearward G | Min.: -25.105 $m/s^2$<br>Max.: 24.908 $m/s^2$ | During deceleration: -25.105 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 24.908 $m/s^2$ | During acceleration/deceleration: Changes in proportion with acceleration |
| Zero Point of Decele2 | Memorized zero point value of lateral G | Min.: -25.105 $m/s^2$<br>Max.: 24.908 $m/s^2$ | - | - |
| Zero Point of Decele | Memorized zero point value of forward and rearward G | Min.: -25.105 $m/s^2$<br>Max.: 24.908 $m/s^2$ | - | - |
| Yaw Rate Sensor Value | Yaw rate sensor value | Min.: -128°/s<br>Max.: 127°/s | Vehicle stopped: 0°/s<br>Turning right: -128 to 0°/s<br>Turning left: 0 to 127°/s | - |
| Zero Point of Yaw Rate Sensor | Memorized zero point value of yaw rate sensor | Min.: -128°/s<br>Max.: 127°/s | After completing zero point calibration: °/s | - |
| Steering Angle Value | Steering angle sensor value | Min.: -3276.8°<br>Max.: 3276.7° | Turning left: 0.0 to 3276.7°<br>Turning right: -3276.8 to 0.0° | - |
| Zero Point of Steering Angle | Memorized zero point value of steering angle sensor | Min.: -3276.8°<br>Max.: 3276.7° | - | - |
| MT Voltage Value | ABS motor drive voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage<br>**HINT:** |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | | | This is the voltage downstream of the ABS motor as monitored by the No. 2 skid control ECU (brake actuator assembly) |
| Solenoid Power Supply Voltage | Solenoid power supply voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage<br>**HINT:**<br>This is the voltage output (which supplies power to each solenoid) from the No. 2 skid control ECU (brake actuator assembly) to the ABS solenoid relay |
| Vehicle Speed | Vehicle speed<br>(Vehicle speed signal output to combination meter assembly) | Min.: 0.0 km/h (0 mph)<br>Max.: 6553.5 km/h (4072 mph) | Vehicle stopped: 0.0 km/h (0 mph) | When driving at constant speed: No large fluctuations |
| Accelerator Opening Angle % | Percentage of accelerator pedal opening angle | Min.: 0.0%<br>Max.: 127.5% | Accelerator pedal released: 0.0% | During accelerator pedal operation: Changes in proportion with the pedal movement |
| Shift Lever Position | Shift position information | fail / 1st / 2nd / 3rd / 4th / 5th / 6th / B / D/M / N / P / R / No input | Actual shift position | - |
| TRC(TRAC)/VSC OFF Mode | TRAC/VSC off mode | Normal mode (TRC(TRAC) ON/VSC ON) / TRC(TRAC) OFF mode (TRC(TRAC) OFF/VSC ON) / VSC | Normal mode (TRC(TRAC) ON/VSC ON): Normal mode<br>TRC(TRAC) OFF mode (TRC(TRAC) OFF/VSC ON): TRAC off mode<br>VSC expert mode (VSC expert mode MID ON): VSC expert mode | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | expert mode (VSC expert mode MID ON) / VSC OFF mode (TRC(TRAC) OFF/VSC OFF) | VSC OFF mode (TRC(TRAC) OFF/VSC OFF): VSC off mode | |
| Brake Hold Control Mode | Brake hold control mode | Out of control mode / Pressure hold mode / Pressure release mode / EPB lock mode | Out of control mode: Brake hold control system is off or brake hold control system is stand-by mode (brake hold standby indicator light is illuminated)<br>Pressure hold mode: Brake hold control is operating (brake hold operated indicator light is illuminated)<br>Pressure release mode: Brake hold control is released (brake hold operated indicator light not illuminated)<br>EPB lock mode: Parking brake is engaged during brake hold control | **HINT:**<br>• EPB: Electric Parking Brake System<br>• If the brake pedal is not depressed for 3 minutes or more after entering pressure hold mode, the system automatically changes to EPB lock mode |
| FR Target Oil Pressure | Front wheel RH target oil pressure | Min.: 0.0 MPa<br>Max.: 20.0 MPa | - | Different according to target oil pressure of each wheel |
| FL Target Oil Pressure | Front wheel LH target oil pressure | Min.: 0.0 MPa<br>Max.: 20.0 MPa | - | Different according to target oil pressure of each wheel |
| RR Target Oil Pressure | Rear wheel RH target oil pressure | Min.: 0.0 MPa<br>Max.: 20.0 MPa | - | Different according to target oil pressure of each wheel |
| RL Target Oil Pressure | Rear wheel LH target oil pressure | Min.: 0.0 MPa<br>Max.: 20.0 MPa | - | Different according to target oil pressure of each wheel |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Vehicle Speed Grade | Vehicle acceleration/deceleration | Min.: -25.105 $m/s^2$<br>Max.: 24.908 $m/s^2$ | Vehicle stopped: 0.000 $m/s^2$<br>During deceleration: -25.105 to 0.000 $m/s^2$<br>During acceleration: 0.000 to 24.908 $m/s^2$ | During driving: Changes in proportion with vehicle acceleration/deceleration |
| Vehicle Stop Time from IG ON | Time vehicle stopped after ignition switch turned to ON | Min.: 0 s<br>Max.: 1275 s | - | - |
| Travel Distance from IG ON | Driving time after ignition switch turned to ON | Min.: 0 s<br>Max.: 1275 s | - | - |
| Stop Light SW | Stop light switch assembly status<br>(STP or STP2 terminal input) | OFF / ON | OFF: Brake pedal released<br>ON: Brake pedal depressed | **HINT:**<br>• Stop light control relay (stop light switch assembly) off: STP terminal status displayed.<br>• Stop light control relay (stop light switch assembly) on: STP2 terminal status displayed. |
| Parking Brake SW | Parking brake status | OFF / ON | OFF: Parking brake released<br>ON: Parking brake applied | - |
| Brake Hold Switch | Brake hold switch (electric parking brake switch assembly) (BH terminal input) | OFF / ON | OFF: Brake hold switch (electric parking brake switch assembly) OFF<br>ON: Brake hold switch (electric parking brake switch assembly) ON | **HINT:**<br>The brake hold switch (electric parking brake switch assembly) state is determined using the voltage at terminal BH |
| Stop Light Relay | Stop light control relay (stop light switch assembly) status<br>(STP terminal input) | OFF / ON | OFF: Stop light control relay (stop light switch assembly) off and brake pedal released<br>ON: Stop light control relay (stop light switch assembly) on or brake pedal depressed | **HINT:**<br>The voltage of power supplied to the stop lights is measured at the STP terminal. |
| Inspection Mode | Inspection mode | OFF / ON | OFF: Normal mode<br>ON: Inspection mode | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| TRC(TRAC) Control | TRAC control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| TRC(TRAC) Engine Control | TRAC throttle control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| TRC(TRAC) Brake Control | TRAC brake control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| FR Wheel VSC Ctrl Status | Front wheel RH VSC control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| FL Wheel VSC Ctrl Status | Front wheel LH VSC control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| RR Wheel VSC Ctrl Status | Rear wheel RH VSC control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| RL Wheel VSC Ctrl Status | Rear wheel LH VSC control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| FR Wheel ABS Ctrl Status | Front wheel RH ABS control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| FL Wheel ABS Ctrl Status | Front wheel LH ABS control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| RR Wheel ABS Ctrl Status | Rear wheel RH ABS control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| RL Wheel ABS Ctrl Status | Rear wheel LH ABS control status | Out of controlling / Under Controlling | Out of controlling: Not during control<br>Under Controlling: During control | - |
| BA Ctrl Status | BA control status | OFF / ON | OFF: Not during control<br>ON: During control | - |
| PBA Ctrl Status | PBA control status | OFF / ON | OFF: Not during control<br>ON: During control | - |
| Stop Light Relay State for ECU Control | Stop light control relay (stop light switch assembly) status (STPO terminal output) (for ECU control) | OFF / ON | OFF: Stop light control relay (stop light switch assembly) off (Stop light off)<br>ON: Stop light control relay (stop light switch assembly) on (Stop light on) | - |
| Solenoid State for ECU Control | ABS solenoid relay status (for ECU control) | OFF / ON | OFF: ABS solenoid relay not operating<br>ON: ABS solenoid relay operating | - |
| Motor State for ECU Control | ABS motor relay status (for ECU control) | OFF / ON | OFF: ABS motor relay not operating<br>ON: ABS motor relay operating | - |
| Buzzer | Meter buzzer | OFF / ON | OFF: Buzzer off<br>ON: Buzzer on | - |
| Dealer Mode | Dealer Mode (Signal Check mode or Calibration mode) status | OFF / ON | OFF: Normal mode<br>ON: Dealer Mode (Signal Check mode or Calibration mode) | **HINT:**<br>• For details on Dealer Mode (Signal Check), refer to Signal Check*1<br>• For details on Dealer Mode (Calibration), refer to Reset Memory / Calibration*2 |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Zero Point Memory State of Steering Angle Sensor | Steering angle sensor zero point memorization status | Zero point is not memorized / Zero point is memorized | - | **HINT:** The steering angle sensor zero point is acquired when the vehicle is being driven in a straight line at a speed of 35 km/h (22 mph) or more for approximately 5 seconds |
| Regenerative Cooperation | Regenerative cooperation | OFF / ON | OFF: Not operating<br>ON: Operating | - |
| TRC(TRAC)/VSC OFF SW | VSC OFF switch (electric parking brake switch assembly) (CSW terminal input) | OFF / ON | OFF: VSC OFF switch (electric parking brake switch assembly) OFF<br>ON: VSC OFF switch (electric parking brake switch assembly) ON | **HINT:** The VSC OFF switch (electric parking brake switch assembly) state is determined using the voltage at terminal CSW |
| IGP_PT2 | IGP_PT2 status | OFF / ON | OFF: IGP_PT2 OFF<br>ON: IGP_PT2 ON | - |
| FR Wheel | Front right wheel rotation direction | Forward / Back | When driving forward: forward<br>When reversing: Back | - |
| FL Wheel | Front left wheel rotation direction | Forward / Back | When driving forward: forward<br>When reversing: Back | - |
| RR Wheel | Rear right wheel rotation direction | Forward / Back | When driving forward: forward<br>When reversing: Back | - |
| RL Wheel | Rear left wheel rotation direction | Forward / Back | When driving forward: forward<br>When reversing: Back | - |
| Brake Hold Ready | Brake hold control permission status | Not in stand-by mode / Stand-by mode | Not in stand-by mode: Brake hold function not operating (brake hold standby indicator light not illuminated)<br>Stand-by mode: Brake hold function stand-by state (brake hold standby indicator light illuminated) | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Stroke Sensor2 | Brake pedal stroke sensor 2 | Min.: 0.0 V<br>Max.: 5.0 V | Brake pedal released: 3.6 to 4.4 V | Reading decreases when brake pedal is depressed |
| Quantity of Brake Pedal Stroke | Brake pedal stroke amount | Min.: 0 mm<br>Max.: 255 mm | Brake pedal released: 0 mm | Reading increases when brake pedal is depressed |
| Voltage of Stroke Sensor2 | Voltage of brake pedal stroke sensor 2 | Min.: 0.0 V<br>Max.: 5.0 V | - | - |
| FR Regenerative Request | FR regenerative request torque | Min.: 0 Nm<br>Max.: 1048560 Nm | - | Changes according to brake pedal force (When depressing the brake pedal lightly after reaching 30 km/h (19 mph) or more, avoiding sudden braking.) |
| FR Regenerative Operation | FR regenerative operation torque | Min.: 0 Nm<br>Max.: 1048560 Nm | - | Changes according to brake pedal force (When depressing the brake pedal lightly after reaching 30 km/h (19 mph) or more, avoiding sudden braking.) |
| Brake Pedal Stroke Change Speed | Brake pedal stroke rate of change | Min.: -2560 mm/s<br>Max.: 2540 mm/s | Brake pedal released or depressed and held: 0 mm/s | Brake pedal is being moved: Changes in proportion to the operation speed of the brake pedal |
| VCSK Voltage Value | VSK2 voltage value | Min.: 0.000 V<br>Max.: 5.500 V | 4.800 to 5.200 V | - |
| ABS Solenoid (SRLR) | Rear pressure reduction solenoid LH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure reduction) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| ABS Solenoid (SRLH) | Rear pressure holding solenoid LH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure holding) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SRRR) | Rear pressure reduction solenoid RH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure reduction) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SRRH) | Rear pressure holding solenoid RH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure holding) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SFLR) | Front pressure reduction solenoid LH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure reduction) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SFLH) | Front pressure holding solenoid LH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure holding) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SFRR) | Front pressure reduction solenoid RH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure reduction) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |
| ABS Solenoid (SFRH) | Front pressure holding solenoid RH status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure holding) | **HINT:**<br>The solenoid valve controls the brake fluid pressure of the wheel cylinder of the vehicle |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| TRC(TRAC)/VSC Solenoid (SM2) | Master cylinder cut solenoid (Brake Pressure Control Solenoid "B") status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure regulation) | **HINT:**<br>Depending on the operating conditions, the master cylinder cut solenoid valves regulate the brake fluid pressure generated by the pump motor |
| TRC(TRAC)/VSC Solenoid (SM1) | Master cylinder cut solenoid (Brake Pressure Control Solenoid "A") status | OFF / ON | OFF: Not operating<br>ON: Operating (pressure regulation) | **HINT:**<br>Depending on the operating conditions, the master cylinder cut solenoid valves regulate the brake fluid pressure generated by the pump motor |
| ABS Motor Relay | Motor relay | OFF / ON | OFF: Motor relay off<br>ON: Motor relay on | - |
| Solenoid Relay | Solenoid relay | OFF / ON | OFF: Solenoid relay off<br>ON: Solenoid relay on | - |
| STPO | Stop light control relay (stop light switch assembly) status<br>(STPO terminal output) | OFF / ON | OFF: Stop light control relay (stop light switch assembly) off (Stop light off)<br>ON: Stop light control relay (stop light switch assembly) on (Stop light on) | **HINT:**<br>When STPO is ON, the stop light control relay (stop light switch assembly) turns ON and the stop lights illuminate |
| IGR Voltage | IG1 voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| +BS Voltage | +BS voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |
| +BM Voltage | BM voltage value | Min.: 0.0 V<br>Max.: 25.5 V | - | Changes in proportion to auxiliary battery voltage |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Voltage Difference between Motor Input-Output Terminal | Voltage difference between motor input-output terminal | Min.: -640.00 V<br>Max.: 639.98 V | - | - |
| Yaw Rate Sensor 1 Higher Resolution Signal | Yaw rate sensor 1 higher resolution signal | Min.: -327.68 deg/sec<br>Max.: 327.67 deg/sec | Turning right: -327.68 to 0.00 deg/sec<br>Turning left: 327.68 to 0.00 deg/sec | - |
| Yaw Rate Sensor 2 Higher Resolution Signal | Yaw rate sensor 2 higher resolution signal | Min.: -327.68 deg/sec<br>Max.: 327.67 deg/sec | Turning right: -327.68 to 0.00 deg/sec<br>Turning left: 327.68 to 0.00 deg/sec | - |
| GL1 GX Sensor Higher Resolution Signal | GL1 GX sensor higher resolution signal | Min.: -32768 mG<br>Max.: 32767 mG | During deceleration: -32768 to 0 mG<br>During acceleration: 0 to 32767 mG | - |
| GL2 GY Sensor Higher Resolution Signal | GL2 GY sensor higher resolution signal | Min.: -32768 mG<br>Max.: 32767 mG | Turning right: -32768 to 0 mG<br>Turning left: 0 to 32767 mG | - |
| Request Acceleration of Upper Limit from Toyota Safety Sense | Request acceleration of upper limit from Toyota safety sense | Min.: -32.768 $m/s^2$<br>Max.: 32.767 $m/s^2$ | During deceleration: -32.768 to 0 $m/s^2$<br>During acceleration: 0 to 32.767 $m/s^2$ | - |
| Request Acceleration of Lower Limit from Toyota Safety Sense | Request acceleration of lower limit from Toyota safety sense | Min.: -32.768 $m/s^2$<br>Max.: 32.767 $m/s^2$ | During deceleration: -32.768 to 0 $m/s^2$<br>During acceleration: 0 to 32.767 $m/s^2$ | - |
| Request Acceleration and Deceleration ID | Request acceleration and deceleration ID of upper | Min.: 0<br>Max.: 63 | Not during control: 0 | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| of Upper Limit from Toyota Safety Sense | limit from Toyota safety sense | | | |
| Request Acceleration and Deceleration ID of Lower Limit from Toyota Safety Sense | Request acceleration and deceleration ID of lower limit from Toyota safety sense | Min.: 0<br>Max.: 63 | Not during control: 0 | - |
| Target Acceleration of Upper Limit from Vehicle Motion Control | Target acceleration of upper limit from vehicle motion control | Min.: -1310.72 $m/s^2$<br>Max.: 1310.68 $m/s^2$ | During deceleration: -1310.72 to 0.00 $m/s^2$<br>During acceleration: 0.00 to 1310.68 $m/s^2$ | - |
| Target Acceleration of Lower Limit from Vehicle Motion Control | Target acceleration of lower limit from vehicle motion control | Min.: -1310.72 $m/s^2$<br>Max.: 1310.68 $m/s^2$ | During deceleration: -1310.72 to 0.00 $m/s^2$<br>During acceleration: 0.00 to 1310.68 $m/s^2$ | - |
| Target Acceleration and Deceleration ID of Upper Limit from Vehicle Motion Control | Target acceleration and deceleration ID of upper limit from vehicle motion control | Min.: 0<br>Max.: 63 | Not during control: 0 | - |
| Target Acceleration and Deceleration ID of Lower Limit from Vehicle Motion Control | Target acceleration and deceleration ID of lower limit from vehicle motion control | Min.: 0<br>Max.: 63 | Not during control: 0 | - |
| Target Driving Force of Upper Limit from Vehicle Motion Control | Target driving force of upper limit from vehicle motion control | Min.: -65536 N<br>Max.: 65534 N | • When the shift state is other than R (reverse)<br>During deceleration: -65536 to 0 N | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | | During acceleration: 0 to 65534 N<br>• When the shift state is R (reverse) During deceleration: 0 to 65534 N During acceleration: -65536 to 0 N | |
| Target Driving Force of Lower Limit from Vehicle Motion Control | Target driving force of lower limit from vehicle motion control | Min.: -65536 N<br>Max.: 65534 N | • When the shift state is other than R (reverse) During deceleration: -65536 to 0 N During acceleration: 0 to 65534 N<br>• When the shift state is R (reverse) During deceleration: 0 to 65534 N During acceleration: -65536 to 0 N | - |
| Brakes Specifications Change by C-BEST | Brakes specifications change by C-BEST | None / Exist | - | - |
| SLM2 Refresh Drive Completed Status | Linear solenoid (SLM2) refresh complete/incomplete | Not Complete / Complete | Complete: Linear solenoid (SLM2) refresh complete<br>Not complete: Linear solenoid (SLM2) refresh incomplete | - |
| Zero Point of G Sensor Learning Status | G sensor zero point learning complete/incomplete | Complete / Not Complete | Complete: G sensor zero point learning complete<br>Not complete: G sensor zero point learning incomplete | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Zero Point of Yaw Rate Sensor Learning Status | Yaw rate sensor zero point learning complete/incomplete | Complete / Not Complete | Complete: Yaw rate sensor zero point learning complete<br>Not complete: Yaw rate sensor zero point learning incomplete | - |
| Linear Solenoid Valve Offset Learning Status | Linear solenoid valve offset learning complete/incomplete | Complete / Not Complete | Complete: Linear solenoid valve offset learning complete<br>Not complete: Linear solenoid valve offset learning incomplete | - |
| Zero Point of Stroke Sensor Learning Status | Stroke sensor zero point learning complete/incomplete | Complete / Not Complete | Complete: Stroke sensor zero point learning complete<br>Not complete: Stroke sensor zero point learning incomplete | - |
| System Variant Learning Status | System variant learning complete/incomplete | Complete / Not Complete | Complete: System variant learning complete<br>Not complete: System variant learning incomplete | - |
| Drive Mode Select Customize Item EPS Available | Drive mode select customize item EPS available | Not Applicable / Applicable | - | - |
| Drive Mode Select Customize Item Adaptive Variable Suspension System Available | Drive mode select customize item adaptive variable suspension system available | Not Applicable / Applicable | - | - |
| Drive Mode Select Customize Item Brake Available | Drive mode select customize item brake available | Not Applicable / Applicable | - | - |

*1: for performing Dealer Mode (Signal Check): Click here INFO

*2: for entering Dealer Mode (Calibration): Click here INFO

**Chassis > Steering Angle Sensor > Data List**

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Total Distance Traveled | Total distance traveled | Min.: 0<br>Max.: 16777215 | - | - |
| Total Distance Traveled - Unit | Total distance traveled unit | km / mile | - | - |
| Steering Angle Signal Information | Steering angle value<br>(Rotation to the left side is positive) | Min.: -3072.0 deg<br>Max.: 3070.5 deg | Turning left: 0.0 to 3070.5 deg<br>Turning right: -3072.0 to 0.0 deg | During steering operation: Changes in proportion with steering wheel rotation |
| Sensor Malfunction Factor (Current) | Sensor malfunction factor (current) | Normal / Angle Velocity / AD / Sensor Element / Steering Angle Value / Steering Angle Value of RAM Stuck | - | - |
| Sensor Malfunction Factor (Past) | Sensor malfunction factor (past) | Normal / Angle Velocity / AD / Sensor Element / Steering Angle Value / Steering Angle Value of RAM Stuck | - | - |
| Total Distance Traveled (When Sensor Malfunction occurred) | Total distance traveled (when sensor malfunction occurred) | Min.: 0<br>Max.: 16777215 | - | - |
| Total Distance Traveled - Unit (When Sensor Malfunction occurred) | Total distance traveled unit (when sensor malfunction occurred) | km / mile | - | - |

## CHECK FOR INTERMITTENT PROBLEMS

**HINT:**

A momentary interruption (open circuit) in the connectors and/or wire harnesses between the sensors and ECUs can be detected using the Data List function of the GTS.

(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 / Data List.

(f) Enter the following menus: Chassis / Brake/EPB* / Data List.

*: Electric Parking Brake System

(g) Follow the directions on the GTS to display the Data List and select areas where momentary interruptions should be monitored.

**HINT:**

A momentary interruption (open circuit) cannot be detected for 3 seconds after the ignition switch is turned to ON (initial check).

**Chassis > Brake Booster > Data List**

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Stop Switch Open | Momentary interruption (open circuit) status in wire harness between No. 1 skid control ECU (brake booster with master cylinder assembly) and stop light switch assembly status | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Stroke Open | Brake pedal stroke sensor 1 open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Servo Pressure Sensor Open | Servo pressure sensor open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Gap Hold Chamber Pressure Sensor Open | Gap pressure sensor open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |

**Chassis > Brake/EPB > Data List**

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| FR Speed Open | Front speed sensor RH open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| FL Speed Open | Front speed sensor LH open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| RR Speed Open | Rear speed sensor RH open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| RL Speed Open | Rear speed sensor LH open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Yaw Rate Open | Yaw rate sensor (airbag ECU assembly) open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Deceleration Open | Acceleration sensor (airbag ECU assembly) open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Steering Open | Steering angle sensor open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Master Cylinder Open | Master cylinder pressure sensor open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| FR Speed Sensor Voltage Open | Front speed sensor RH voltage open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | | Momentary interruption | |
| FL Speed Sensor Voltage Open | Front speed sensor LH voltage open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| RR Speed Sensor Voltage Open | Rear speed sensor RH voltage open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| RL Speed Sensor Voltage Open | Rear speed sensor LH voltage open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| M/C Pressure Sensor Noise | Master cylinder pressure sensor noise detection | Normal / Under intermittent | Normal: Noise is not detected<br>Under intermittent: Noise is detected | - |
| Yaw Rate Sensor Voltage Open | Yaw rate sensor (airbag ECU assembly) voltage open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Master Cylinder Pressure Sensor Power Supply Open | Master cylinder pressure sensor power supply voltage status | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Solenoid Power Supply Open | Solenoid power supply voltage status | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |

| TESTER DISPLAY | MEASUREMENT ITEM | RANGE | NORMAL CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| Motor Power Supply Open | Motor power supply voltage status | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Stop Switch Open | Momentary interruption (open circuit) status in wire harness between No. 2 skid control ECU (brake actuator assembly) and stop light switch assembly status | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| A/C ECU Communication Open | Air conditioning amplifier assembly communication open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Air Bag ECU Communication Open | Airbag ECU assembly communication open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Stroke2 Open | Brake pedal stroke sensor 2 open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| HV Communication Open | Hybrid vehicle control ECU communication open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |
| Body ECU Communication Open | Main body ECU (multiplex network body ECU) communication open detection | Normal / Under intermittent | Normal: Normal<br>Under intermittent: Momentary interruption | - |

(h) Push the line graph button to display the line graph.

(i) Check for intermittent shorts, etc.

OK:

Normal is displayed.

**HINT:**

If "Under intermittent" remains displayed on the GTS, measure the resistance between the skid control ECU and each sensor, hybrid vehicle control ECU or airbag ECU assembly.

(j) While observing the screen, gently jiggle the connectors or wire harnesses between the ECUs and sensors, or between ECUs.

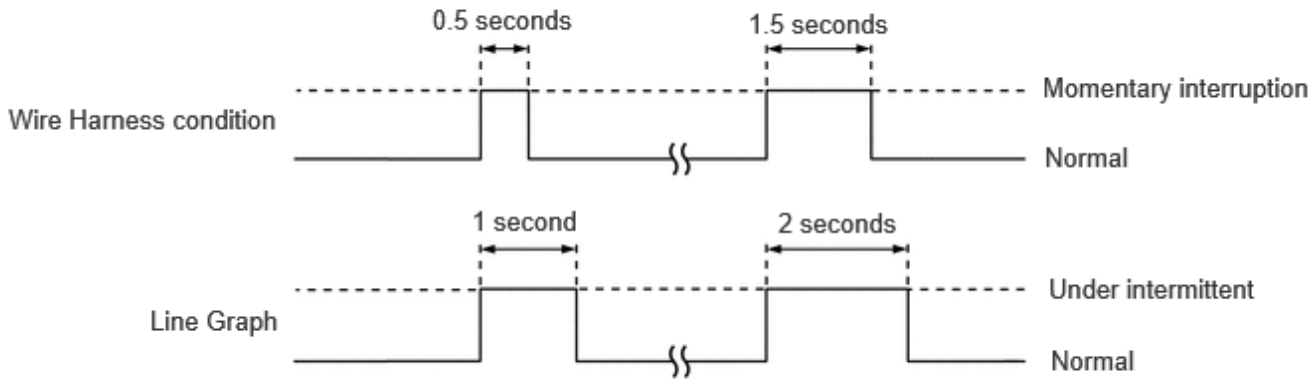
OK:

Normal is displayed.

**HINT:**

- If a momentary interruption occurs and Under intermittent is displayed on the GTS, Under intermittent will remain displayed on the GTS for 1 second after the circuit returns to normal.

Reference: GTS display at momentary interruption




- If the display changes, this indicates that there has been a momentary interruption (open circuit) in the connector and/or wire harness. In this case, repair or replace the connectors and/or wire harnesses as one of them is faulty.

## ACTIVE TEST

**HINT:**

Using the GTS to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the GTS to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the GTS on.

(f) Enter the following menus: Chassis / Brake Booster / Active Test.

(g) Enter the following menus: Chassis / Brake/EPB* / Active Test.

*: Electric Parking Brake System

(h) According to the display on the GTS, perform the Active Test.

**NOTICE:**

- Although the Active Test automatically turns off the actuator after approximately 5 seconds in order to protect the actuator, do not operate the actuator repeatedly without sufficient waiting time in between.
- To protect the solenoids, do not operate the solenoids repeatedly without sufficient waiting time in between.

- Do not depress the brake pedal when only the pressure release solenoids valves are ON.
- Do not operate more than one solenoid at the same time, except for when operating the pressure hold solenoid and pressure release solenoid of the same wheel.

**Chassis > Brake Booster > Active Test**

| TESTER DISPLAY | MEASUREMENT ITEM | CONTROL RANGE | RESTRICT CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| ECB Solenoid | Switching solenoid (SSA, SGH) | Solenoid Start (Activate)<br>Solenoid SSA / SGH | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake<br>**HINT:**<br>To protect actuator and Solenoid(s), this test will continue for 25 seconds. | • Check that the GTS display for the solenoid (SSA or SGH) changes to ON/OFF during Solenoid Start (Activate)<br>• ECB: Electronically Controlled Brake System |
| ECB Main Relay | Main relay | OFF / ON | Vehicle condition: Vehicle stopped<br>**HINT:**<br>To protect this Actuator and Solenoid, this test will only last 5 seconds. | ECB: Electronically Controlled Brake System |
| Brake Booster Motor | Brake booster motor | OFF / ON | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake<br>**HINT:**<br>To protect this Drive Circuit and Solenoid, this test will only last 10 seconds. | - |
| Linear Solenoid (SLM1) | Linear solenoid (SLM1) | Solenoid Start (Activate)<br>Solenoid SLM1 | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake<br>**HINT:**<br>To protect this Drive Circuit and Solenoid, | - |

| TESTER DISPLAY | MEASUREMENT ITEM | CONTROL RANGE | RESTRICT CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | | this test will only last 2 seconds. | |
| Linear Solenoid (SLM2) | Linear solenoid (SLM2) | Solenoid Start (Activate)<br>Solenoid SLM2 | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake<br>**HINT:**<br>To protect this Drive Circuit and Solenoid, this test will only last 2 seconds. | - |

**Chassis > Brake/EPB > Active Test**

| TESTER DISPLAY | MEASUREMENT ITEM | CONTROL RANGE | RESTRICT CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| EBS Relay | Emergency brake signal operation | Relay Start | Vehicle condition: Vehicle stopped<br>**HINT:**<br>To protect this Actuator and Solenoid, this test will only last 5 seconds. | Whether the hazard warning lights blink when the EBS Relay is on can be confirmed. (w/ Emergency Brake Signal) |
| ABS Solenoid | Pressure holding solenoid (SFRH, SFLH, SRRH, SRLH)<br>Pressure reduction solenoid (SFRR, SFLR, SRRR, SRLR) | Solenoid Start (Activate)<br>Solenoid SFRH / SFLH / SRRH / SRLH / SFRR / SFLR / SRRR / SRLR | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake<br>**HINT:**<br>To protect actuator and Solenoid(s), this test will continue for 25 seconds. | Check that the GTS display for the solenoid (SRLR, SRLH, SRRR, SRRH, SFLR, SFLH, SFRR or SFRH) changes to ON/OFF during Solenoid Start (Activate) |
| VSC Solenoid | Master cylinder cut solenoid (SM1, SM2) | Solenoid Start (Activate)<br>Solenoid SM1 / SM2 | Vehicle condition:<br>• Vehicle stopped<br>• Shift position is in the P or N<br>• Apply the parking brake | Check that the GTS display for the solenoid (SM1 or SM2) changes to ON/OFF during Solenoid Start (Activate) |

| TESTER DISPLAY | MEASUREMENT ITEM | CONTROL RANGE | RESTRICT CONDITION | DIAGNOSTIC NOTE |
|---|---|---|---|---|
| | | | **HINT:**<br>To protect actuator and Solenoid(s), this test will continue for 25 seconds. | |
| Motor Relay | ABS motor relay | OFF / ON | Vehicle condition: Vehicle stopped<br>**HINT:**<br>To protect this Actuator and Solenoid, this test will only last 5 seconds. | Operating sound of motor can be heard |
| Solenoid Relay | Solenoid relay | OFF / ON | Vehicle condition: Vehicle stopped<br>**HINT:**<br>To protect this Actuator and Solenoid, this test will only last 5 seconds. | Perform the Active Test and check that the voltage displayed for the solenoid power supply voltage Data List item changes. |
| Stop Lamp Relay | Stop light control relay (stop light switch assembly) | OFF / ON | Vehicle condition: Vehicle stopped<br>**HINT:**<br>To protect this Actuator and Solenoid, this test will only last 5 seconds. | With the brake pedal released, check that the stop lights illuminate and the value of Stop Light Relay on the GTS changes to ON when Stop Lamp Relay is ON |