

## **DTC B3593**

### **Circuit Description**

The rear wheel steering control module monitors the rear wheel steering mode select switch 5-volt reference circuit for out of range voltage conditions. When the mode select switch button is depressed the switch is in the active state. When the mode select switch is released the switch is in the inactive state. The following conditions will help determine if there is a malfunctioning rear wheel steering mode select switch:

- The resistance of the load in the active state is 500 ohms with an additional 1,000 ohms pull-up resistor.
- The resistance of the load in the inactive state is 2,000 ohms with an additional 1,000 ohms pull-up resistor.
- The pull-up voltage is 12 volts.

### **DTC Descriptor**

This diagnostic procedure supports the following DTC:

DTC B3593 Steering System Mode Switch Circuit Malfunction

### **Conditions for Running the DTC**

Turn ON the ignition, with engine ON.

### **Conditions for Setting the DTC**

- The mode select switch 5-volt reference circuit is open, shorted to ground or voltage.
- The mode select switch signal circuit is open or shorted to voltage.

### **Action Taken When the DTC Sets**

- The Service 4-Wheel Steer indicator on instrument panel cluster (IPC) will be displayed.
- The code is displayed on the scan tool as DTC B3593.
- The output to the motor is ramped down slowly at a rate of 1 degree/second back to center and held.
- The rear wheels will be returned to the centered position.

### **Conditions for Clearing the DTC**

- The conditions for DTC are not currently present.
- The module receives a clear code command from the scan tool.
- The DTC clears after 100 malfunction free ignition cycles.

## Diagnostic Aids

- Inspect for poor connections at the harness connector of the rear wheel steering control module and Rear Wheel Steering Select Switch. Refer to **Testing for Intermittent Conditions and Poor Connections** , and to **Connector Repairs** in Wiring Systems.
- Observe the rear wheel steering mode select switch. If all of the mode indicator LEDs are illuminated the rear wheel steering control module has lost its alignment memory settings and the scan tool must be used to re-calibrate the rear wheel steering alignment data in the rear wheel steering control module.

## Test Description

The numbers below refer to the step numbers on the diagnostic table.

**2:** The normal state of the switch is the state of the switch input before activation. The terminology used by the scan tool is OFF.

**3:** Tests for the proper operation of the switch in the normally open position.

**4:** Tests for the proper operation of the switch in the closed position.

**8:** Tests the 5-volt reference circuit for an open or a short to ground.

## DTC B3593

Step	Action	Value	Yes	No
<b>Schematic Reference: <u>Rear Wheel Steering Schematics</u></b> <b>Connector End View Reference: <u>Rear Wheel Steering Connector End Views</u></b>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to <b>Step 2</b>	Go to <b><u>Diagnostic System Check - Vehicle</u></b> in Vehicle DTC Information
2	1. Install a scan tool. 2. Turn the ignition switch to the ON position, with the engine OFF. 3. Activate the rear wheel steer mode select switch. 4. With a scan tool, observe the Rear Wheel Steer Mode Select Switch Data parameter.  Does the parameter change?	ON/OFF	Go to Diagnostic Aids	- Go to <b>Step 3</b>

3	<ol style="list-style-type: none"> <li>1. Turn the ignition switch to the OFF position.</li> <li>2. Disconnect the rear wheel steer mode select switch.</li> <li>3. Measure the resistance between the 5-volt reference circuit and the mode select switch signal circuit on the rear wheel steer mode select switch.</li> </ol> <p>Does the resistance measure within the specified parameter?</p>	1.8 k-2.2 k ohms	Go to <b>Step 4</b>	Go to <b>Step 14</b>
4	<ol style="list-style-type: none"> <li>1. Depress the rear wheel steer mode select switch.</li> <li>2. Measure the resistance between the 5-volt reference circuit and the mode select switch signal circuit on this switch.</li> </ol> <p>Does the resistance measure within the specified parameter?</p>	450 -550 ohms	Go to <b>Step 5</b>	Go to <b>Step 14</b>
5	<ol style="list-style-type: none"> <li>1. Turn the ignition to the ON position, with the engine OFF.</li> <li>2. Measure the voltage between the 5-volt reference circuit of the rear wheel steer mode select switch harness connector and a good ground.</li> </ol> <p>Is the voltage at the 5-volt reference circuit within the specified parameter?</p>	4.75-5 V	Go to <b>Step 7</b>	Go to <b>Step 6</b>
6	Is the voltage at the 5-volt reference circuit less than the specified parameter?	4.75-5 V	Go to <b>Step 8</b>	Go to <b>Step 9</b>
7	<ol style="list-style-type: none"> <li>1. Turn the ignition switch to the OFF position.</li> <li>2. Measure the resistance between the mode select switch signal circuit of the rear wheel steer mode select switch connector and a good ground.</li> </ol> <p>Is the resistance at the mode select switch signal circuit less than the specified parameter?</p>	1,500 ohms	Go to <b>Step 12</b>	Go to <b>Step 10</b>
8	<p>Test the 5-volt reference circuit of the rear wheel steer mode select switch for an open or a short to ground. Refer to <b>Circuit Testing</b> and <b>Wiring Repairs</b> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 15</b>	Go to <b>Step 11</b>

9	<p>Test the 5-volt reference circuit of the rear wheel steer mode select switch for a short to voltage. Refer to <b><u>Circuit Testing</u></b> and <b><u>Wiring Repairs</u></b> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 15</b>	Go to <b>Step 11</b>
10	<p>Test the mode select switch signal circuit of the rear wheel steer mode select switch for an open, high resistance or short to voltage. Refer to <b><u>Circuit Testing</u></b> and <b><u>Wiring Repairs</u></b> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 15</b>	Go to <b>Step 11</b>
11	<p>Inspect for poor connections at the harness connector of the rear wheel steering control module. Refer to <b><u>Testing for Intermittent Conditions and Poor Connections</u></b> and <b><u>Connector Repairs</u></b> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 15</b>	Go to <b>Step 12</b>
12	<p>Inspect for poor connections at the harness connector of the rear wheel steer mode select switch. Refer to <b><u>Testing for Intermittent Conditions and Poor Connections</u></b> and <b><u>Connector Repairs</u></b> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 15</b>	Go to <b>Step 13</b>
13	<p>Replace the rear wheel steering control module. Refer to <b><u>Control Module References</u></b> in Computer/Integrating Systems for replacement, setup, and programming.</p> <p>Did you complete the replacement?</p>	-	Go to <b>Step 15</b>	-
14	<p>Replace the rear wheel steer mode select switch. Refer to <b><u>Rear Wheel Steering Mode Switch Replacement</u></b>.</p> <p>Did you complete the replacement?</p>	-	Go to <b>Step 15</b>	-
15	<ol style="list-style-type: none"> <li>1. Use the scan tool in order to clear the DTCs.</li> <li>2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</li> </ol> <p>Does DTC B3593 reset?</p>	-	Go to <b>Step 2</b>	System OK