

<- Back

Forward ->

**Document ID# 670707
2001 Chevrolet/Geo Corvette**

Print

DTC C1287 or C1288

Circuit Description

The vehicle stability enhancement system (VSES) is activated by the electronic brake control module (EBCM) calculating the desired yaw rate and comparing it to the actual yaw rate input. The desired yaw rate is calculated from measured steering wheel position, vehicle speed, and lateral acceleration. The difference between the desired yaw rate and actual yaw rate is the yaw rate error, which is a measurement of oversteer or understeer. If the yaw rate error becomes too large, the EBCM will attempt to correct the vehicle's yaw motion by applying differential braking to the left or right front wheel.

The amount of differential braking applied to the left or right front wheel is based on both the yaw rate error and side slip rate error. The side slip rate error is a function of the lateral acceleration minus the product of the yaw rate and vehicle speed. The yaw rate error and side slip rate error are combined to produce the total delta velocity error. When the delta velocity error becomes too large and the VSES system activates, the driver's steering inputs combined with the differential braking will attempt to bring the delta velocity error toward zero.

The VSES activations generally occur during aggressive driving, in the turns or bumpy roads without much use of the accelerator pedal. When braking during VSES activation, the brake pedal will feel different than the ABS pedal pulsation. The brake pedal pulsates at a higher frequency during VSES activation.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

C1287

One of the following conditions exists:

- The steering wheel position sensor is synchronized and the steer rate (speed that the steering wheel appears to be turning) is greater than 1100 degrees/second.
- The steer rate is less than 80 degrees/second and the difference in the phase angle between Phase A and Phase B is greater than 20 degrees.
- The 2 steering sensor signals (Phase A and Phase B) do not agree for 1 second. Under this condition, this DTC will set along with DTC C1281.

C1288

One of the following conditions exists:

- Both Phase A and Phase B are greater than 4.9 volts for 1.6 seconds.
- Both Phase A and Phase B are less than 0.2 volts for 1.6 seconds.
- The difference in the changes in Phase A and Phase B is greater than 35.2 degrees for 9.76 milliseconds.

Action Taken When the DTC Sets

- The EBCM disables the VSES for the duration of the ignition cycle.
- The Traction Control and Active Handling indicator turns ON.
- The DIC displays the Service Active Handling message.
- The ABS remains functional.

Conditions for Clearing the DTC

- The condition for the DTC is no longer present and the DTC is cleared with a scan tool.
- The EBCM automatically clears the history DTC when a current DTC is not detected in 100 consecutive drive cycles.

Diagnostic Aids

- The scan tool may display 2 additional characters after the DTC. Take note of the 2 character code and any other DTCs that are set. The 2 character code is an engineering aid used in order to determine the specific criteria which caused the DTC to set.
- During diagnosis, park the vehicle on a level surface.
- Check the vehicle for proper alignment. The car should not pull in either direction while driving straight on a level surface.
- Find out from the driver under what conditions the DTC was set (when the DIC displayed the Service Active Handling message). This information will help to duplicate the failure.
- The Snapshot function on the scan tool can help find an intermittent DTC.

Test Description

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

2. Perform the Steering Position Sensor Test in order to verify if the steering wheel position sensor (SWPS) is operating properly.
3. Tests for the proper operation of the steering wheel position signal A circuit in the low voltage range.
4. Tests for the proper operation of the steering wheel position signal B circuit in the low voltage range.
5. Tests for the proper operation of the steering wheel position signal A circuit in the high voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to ground.
6. Tests for the proper operation of the steering wheel position signal B circuit in the high voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to ground.

7. Tests for a short to voltage in the 5 volt reference circuit.
8. Tests for a high resistance or an open in the low reference circuit.

Step	Action	Values	Yes	No
<i>Schematic Reference: ABS Schematics</i>				
1	Did you perform the ABS Diagnostic System Check?	--	Go to Step 2	Go to Diagnostic System Check - ABS
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With the scan tool, perform the Steering Position Sensor Test. Did the SWPS pass the test?	--	Go to Diagnostic Aids	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the steering wheel position sensor (SWPS) connector. 3. Turn ON the ignition, with the engine OFF. 4. With the scan tool, observe the Dual Analog SWPS Input A parameter in the VSES data list. Does the scan tool indicate the Dual Analog SWPS Input A parameter is less than the specified value?	0.2 V	Go to Step 4	Go to Step 13
4	With the scan tool, observe the Dual Analog SWPS Input B parameter. Does the scan tool indicate the Dual Analog SWPS Input B parameter is less than the specified value?	0.2 V	Go to Step 5	Go to Step 14
5	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Connect a 3 amp fused jumper wire between the 5 volt reference circuit of the steering wheel position sensor (SWPS) and the signal A circuit of the steering wheel position sensor (SWPS). 3. Turn ON the ignition, with the engine OFF. 4. With the scan tool, observe the Dual Analog SWPS Input A parameter. Does the scan tool indicate that the Dual Analog SWPS Input A parameter is greater than the specified value?	4.9 V	Go to Step 6	Go to Step 10
6	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the fused jumper wire. 3. Connect a 3 amp fused jumper wire between the 5 volt reference circuit of the steering wheel position sensor (SWPS) and the signal B circuit of the steering wheel position sensor (SWPS). 4. Turn ON the ignition, with the engine OFF. 	4.9 V		

	<p>5. With the scan tool, observe the Dual Analog SWPS Input B parameter.</p> <p>Does the scan tool indicate that the Dual Analog SWPS Input B parameter is greater than the specified value?</p>		Go to Step 7	Go to Step 10
7	<p>1. Disconnect the fused jumper wire.</p> <p>2. Measure the voltage between the 5 volt reference circuit of the steering wheel position sensor (SWPS) and the low reference circuit of the steering wheel position sensor (SWPS).</p> <p>Does the voltage measure less the specified value?</p>	5 V	Go to Step 8	Go to Step 9
8	<p>1. Turn OFF the ignition.</p> <p>2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnect/Connect Procedure in Engine Electrical.</p> <p>3. Measure the resistance from the low reference circuit of the steering wheel position sensor (SWPS) to a good ground.</p> <p>Does the resistance measure less than the specified value?</p>	5 ohms	Go to Step 16	Go to Step 15
9	<p>Test the 5 volt reference circuit of the steering wheel position sensor (SWPS) for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 17
10	<p>Test the 5 volt reference circuit of the steering wheel position sensor (SWPS) for the following conditions:</p> <ul style="list-style-type: none"> • An open • A short to ground • A high resistance <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 11
11	<p>Test the signal A circuit of the steering wheel position sensor (SWPS) for the following conditions:</p> <ul style="list-style-type: none"> • An open • A short to ground • A high resistance <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 12

12	<p>Test the signal B circuit of the steering wheel position sensor (SWPS) for the following conditions:</p> <ul style="list-style-type: none"> • An open • A short to ground • A high resistance <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 17
13	<p>Test the signal A circuit of the steering wheel position sensor (SWPS) for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 17
14	<p>Test the signal B circuit of the steering wheel position sensor (SWPS) for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 17
15	<ol style="list-style-type: none"> 1. Disconnect the EBCM harness connector. 2. Install the J 39700 universal pinout box using the J 39700-300 cable adapter to the EBCM harness connector only. 3. Test the low reference circuit of the steering wheel position sensor (SWPS) for a high resistance or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 17
16	<p>Inspect for poor connections at the harness connector of the steering wheel position sensor (SWPS). Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 18
17	<p>Inspect for poor connections at the harness connector of the EBCM. Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 20	Go to Step 19
18	<p>Replace the steering wheel position sensor (SWPS). Refer to Steering Shaft, Lower Bearing, and Jacket - Disassemble - Off Vehicle and Steering Shaft, Lower Bearing, and Jacket - Assemble - Off Vehicle in Steering Wheel and Column - Tilt.</p>	--	Go to	--

	Did you complete the repair?		Step 20	
19	Replace the EBCM. Refer to Electronic Brake Control Module (EBCM) Replacement . Did you complete the repair?	--	Go to Step 20	--
20	1. Clear the DTCs using the scan tool. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	--	Go to Step 2	System OK

<- Back

Forward ->

Document ID# 670707
2001 Chevrolet/Geo Corvette

Print