P0393: CAMSHAFT POSITION SENSOR B CIRCUIT HIGH INPUT (BANK 2)

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$200-$400**
Can I Still Drive?	:	No

What Does The P0393 Code Mean?

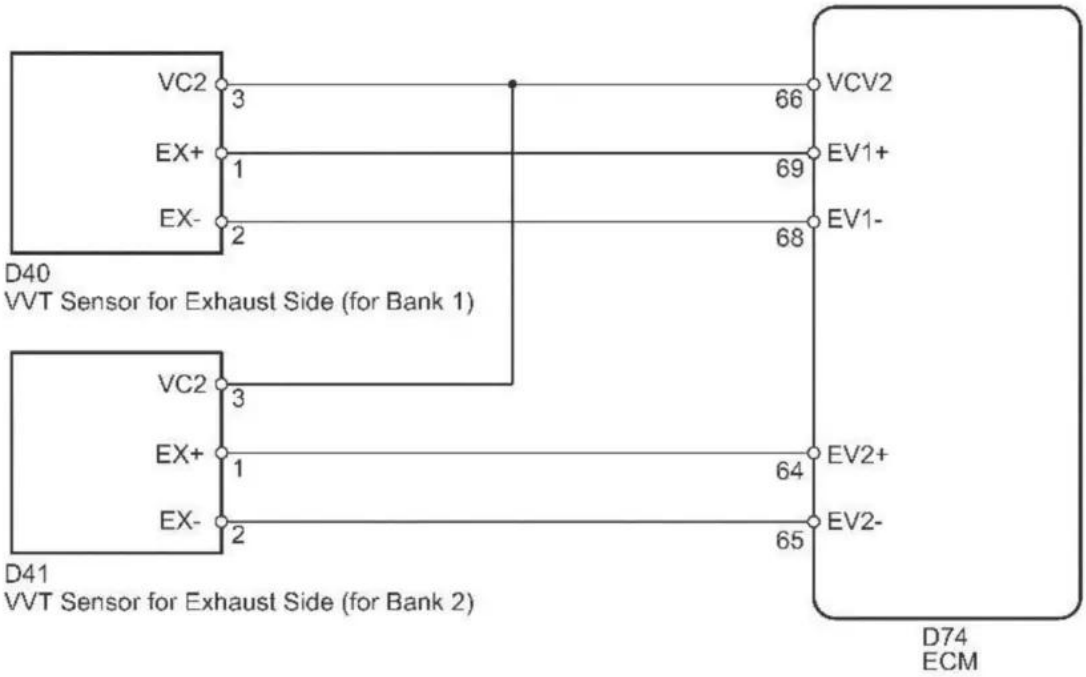
This is a generic powertrain diagnostic trouble code (DTC), which means it covers all makes/models starting around 2003. The code seems more common on Kia, Hyundai, Chevrolet, Toyota, and Ford vehicles, but any make vehicle can be affected.

Specific troubleshooting steps will vary depending on the vehicle.

These vehicles can have a single camshaft in block, or a single (SOHC) or dual (DOHC) overhead camshafts, but this code is strictly concerned about the incoming signal from the camshaft position sensor(s) “B” from Bank 1 being missing, typically at engine start up. This is an electrical circuit fault. Bank #2 is the bank of the engine that does not contain cylinder #1.

The PCM uses the Camshaft Position Sensor to tell it when the Crankshaft Sensor signal is correct, when a given Crankshaft Position Sensor signal is timed to Cylinder #1 for timing, and it is also used for fuel injector synchronization / start of injection.

Codes P0390 or P0391 may also be present at the same time as the P0393. The only difference between these 3 codes is how long the problem lasts and the type of electrical problem that the sensor/circuit/engine controller is having. Troubleshooting steps may vary depending upon manufacturer, type of camshaft position sensor and wire colors.



P0393 wiring diagram

What Are The Symptoms Of The P0393 Code?

Symptoms of a P0393 engine code may include:

- Check Engine Light on
- Bucking or Surging
- Dies out, but may restart if the problem is inconsistent
- May run fine, until it is restarted; then will not restart

What Are The Potential Causes Of The P0393 Code?

Typically the causes for this code are:

- Open in the ground circuit to the camshaft position sensor “B” on Bank 2
- Open in the signal circuit between the camshaft position sensor “B” and the PCM
- Short to 5 volts in the signal circuit to the camshaft position sensor
- Occasionally-Camshaft Position Sensor faulty – internally shorted to voltage

How Can You Fix The P0393 Code?

Step 1

A good starting point is always a technical service bulletin (TSB) search for your particular vehicle. The vehicle manufacturer may have a PCM flash/reprogram to cover this issue, and it pays to check on this before you find you've gone down a long/wrong path.

Step 2

Next, locate both Camshaft and Crankshaft Position Sensors on your particular vehicle. Since they share common power and ground circuits, and this code focuses around the power and ground circuits of the Camshaft Position Sensor, it only makes sense to check them to see if there is damage to either one.

Once located, visually inspect the connectors and wiring. Look for chafing, rubbing, bare wires, burn spots or melted plastic. Pull the connectors apart and carefully inspect the terminals (the metal parts) inside the connectors. See if they look corroded, burnt or possibly green in color versus the normal metal color you are probably used to seeing. You can get some Electrical Contact cleaner at any parts store if cleaning of the terminals is needed. If this is not possible, find some 91% rubbing alcohol and a light plastic bristle brush to clean them with.

Afterwards let them air dry, get some dielectric silicone compound (same stuff they use for light bulb sockets and spark plug wires) and put some where the terminals come into contact.

Step 3

If you have a scan tool, clear the diagnostic trouble codes from memory, and see if this code returns. If it does not, then the connections were most likely your problem.

If the code does return, we will need to test the sensor and its associated circuits. Typically there are 2 types of Camshaft Position Sensors: Hall Effect or Magnetic Pick up. You can typically tell which one you have by the number of wires coming from the sensor. If there are 3 wires from the sensor, it is a Hall Effect sensor. If it has 2 wires, it will be a Magnetic Pick up style sensor.

This code will only set if the sensor is a Hall Effect sensor. Disconnect the harness going to the Camshaft Position Sensor. With a Digital Volt Ohm Meter (DVOM), test the 5V power supply circuit going to the sensor to insure it is being powered up (Red lead to the 5V/12V power supply circuit, black lead to a good ground). Verify with a wiring diagram or diagnostic chart if this sensor is powered up with 5 volts or 12 volts. If there is 12 volts to the sensor when there should be 5 volts, repair the wiring from the PCM to the sensor for a short to 12 volts, or possibly a bad PCM.

Step 4

If that's OK, with a DVOM, check to make sure you have 5V on the Camshaft Position Sensor signal

circuit (Red lead to the sensor signal circuit, black lead to a good ground). If there is no 5 volts to the sensor, or if you see 12 volts to the sensor, repair the wiring from the PCM to the sensor, or once again a possible bad PCM.

Step 5

If that's OK, check to make sure you have a good ground at each sensor. Connect a test light to 12V battery positive (red terminal) and touch the other end of the test light to the ground circuit going to the Camshaft Sensor circuit ground. If the test light does not light up, this would indicate the problem circuit. If it does light up, wiggle the wiring harness going to each sensor to see if the test light flickers, indicating an intermittent connection.

Related Camshaft Trouble Codes: P0340, P0341, P0342, P0343, P0345, P0346, P0347, P0348, P0349, P0365, P0366, P0367, P0368, P0369, P0390, P0391, P0392, P0394.

Reference Sources

P0393 Camshaft Position Sensor "B" Circuit Low Bank 2, OBD-Codes.