P023C: CHARGE AIR COOLER COOLANT PUMP CONTROL CIRCUIT HIGH

OVERVIEW

Severity	:	Low
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$50-$100**
Can I Still Drive?	:	**Yes**

What Does The P023C Code Mean?

In forced inducted systems, they use a Charge Air Cooler or what I am going to call it, an Intercooler (IC) to help in cooling the charge air the engine uses. These work similar to a radiator.

In the IC's case, instead of cooling antifreeze, it cools air to make for a more efficient air/fuel mixture in turn, better fuel mileage, performance, etc. In some of these systems, the IC uses a combination of air and coolant to aid in cooling the charge air being forced into the cylinders via forced induction (supercharger or turbocharger).

In those cases, to accommodate additional coolant flow needs, a coolant pump is used. Generally speaking these are electronic fluid pumps that basically supply a coolant flow needed to the IC that the water pump cannot supply independently.

The MIL (Malfunction Indicator Lamp) illuminates the instrument cluster with P023C and associated codes when it monitors a condition outside of a specific range within the IC's coolant pump control circuit. Off the top of my head i can think of two causes, one is an obstruction within the pump's openings causing an electrical value to go out of range. The other, is a chafed control wire that wore through the electrical connection causing an open circuit. Point being, both mechanical and electrical faults are equally possible.

Code P023C Charge Air Cooler Coolant Pump Control Circuit High is active when there is a high

electrical value within the charge air cooler coolant pump and/or its circuit

What Are The Symptoms Of The P023C Code?

Symptoms of a P023C engine code may include:

- MIL (Malfunction Indicator Lamp) illuminated
- Poor engine performance
- Poor fuel mileage
- Erratic/abnormal engine temperatures

What Are The Potential Causes Of The P023C Code?

Causes for this code may include:

- Internal mechanical obstruction in coolant pump
- Broken or damaged Coolant pump wiring harness
- ECM (Engine Control Module) issue
- Pin/connector problem. (e.g. corrosion, broken lock tab, etc.)

How Can You Fix The P023C Code?

Be sure to check for technical service bulletins (TSBs) for your vehicle. Getting access to a known fix can save you time and money during diagnosis.

Basic Step #1

First you will need to locate your IC (Intercooler. AKA Charge Air Cooler) . Generally speaking, these are located in a location where they can receive optimal air flow (e.g front of radiator, inside front bumper, under hood). Once located, you will have to find the coolant lines/ pipes in order to trace back to the coolant pump. It could be difficult to find because they are generally mounted inline of coolant flow so keep that in mind. Given the temperatures that the coolant system is exposed to, it would be wise to inspect the harness around the area thoroughly for signs of melting harness' or things of that nature.

NOTE: Make sure to let engine cool before testing or repairing the cooling system.

Basic Step #2

Verify the integrity of your cooling system. Check your coolant levels and also the health of the coolant. Make sure it is clean and full before proceeding.

NOTE: Refer to your service manual to verify what specific antifreeze is used for your particular make and model.

Basic Tip #3

Measure and record the integrity of the charge air cooler control circuit. Equipped with a multimeter and the appropriate wiring harness, you may be able to independently test the control circuit. This may involve disconnecting the connector at the ECM (Engine Control Module) and the other end at the coolant pump. Refer to your wiring diagram for specific wiring colors and test procedures.

NOTE: Make sure to disconnect battery before performing any electrical repairs.

Basic Step #4

You may be able to independently test the coolant pump depending on your particular system. After all, they are just electric pumps. Refer to service manual before proceeding, because this very well may not be applicable to you. Equipped with a 12 volt source and a good ground you could remove the coolant pump from the vehicle (this may include draining the system), and power it up to see if it fires up at all. If so, you may want to make sure it can transfer fluid as well (FYI these pumps are not meant to have a massive amount of pressure or flow, so just inspect for general operation here).

Basic Step #5

ECM diagnosing is always a last resort but sometimes it can be done with relative ease. It usually involves doing a pinout test at the ECM itself and compare your recordings to desired values. I will stress the point that every other diagnostic strategy should be exhausted beforehand.

Severity Description

Severity in this case would be low. In most cases, this fault will not present any immediate safety concerns. That said, the drivability and performance of the vehicle may suffer, especially if left unattended long enough.

Reference Sources

ENGINE CONTROL SYSTEM [GASOLINE ENGINE (V-6)] SERVICE MANUAL for P023C - Pages 512-515.