

P0171 & P0174 (lean condition banks 1 & 2)

These 2 codes are stored when the long term fuel trim goes to 25%. A positive number means a lean condition and a negative number indicates a rich condition. If you have a scan tool you can monitor this before you begin repairs to get base line readings. After the repair you can use these readings to confirm the validity of the repair. The long term fuel trim in a perfect world would be at 0%, and the short term fuel trim would be fluctuating from approximately -.8 to +.8 After any repair attempt test drive the vehicle for a while then check the long term fuel trim. If you fixed the cause of the concern it will be moving towards "0". It is important to note that this is a learned value so it will not just magically go to "0" on its own you will have to let it relearn by driving the car to see the new numbers.

Step 1) Check the engine vacuum. I would "T" into the vacuum line that goes to the map sensor behind the throttle body and mounted on the firewall. If the readings are below 18 inches, you either have a mechanical concern or an intake leak. Go to step #2. If vacuum is good go to step #3

Step 2) Perform smoke test to isolate intake leak or leaks, if machine is available to you. If you do not have access to a smoke machine try to listen closely to the intake area for a hissing sound while the engine is running. A squirt bottle filled with soapy water may help you with this. Spray the soapy water around the intake manifold and all connections, vacuum lines, etc... If the engine changes how it runs when you spray in any specific area, investigate further in that area for leaks. Fix any leaks found and test drive to see if condition is improved.

Note; Other conditions that can cause a low vacuum reading besides an intake leak would be engine timing cylinder misfire, timing chain issue, or low compression. If any of these were present they would likely be accompanied by other stored codes.

Step 3) If vacuum is good you can eliminate the concern coming from the engine itself and move on to checking the readings coming from the MAP sensor and the MAS. If the MAS readings alone are out of the norm, check the inlet pipe that runs from it to the throttle body. You want to focus on the bellows and the seal on each end. A leak from either of these will cause this concern. If there are no leaks in the pipe you are looking at a probable MAS failure. If the MAP readings are out of the norm alone and you already tested the vacuum line going to it and it passed the vacuum test, it points toward the sensor itself.

I would strongly advise getting a scan tool, if you own this car for any length of time you will need one.

I am using an "ACTRON CP185" available at Autotzone. It is under \$300.00 dollars and has the capability of recording data and printing it. It also can be set to record data and be triggered up to 5 frames before the check engine light comes on. It also gives you the ability to connect it to your printer and print out the data for future use. This can lead to finding the concern much easier on intermittent concerns. It can also get you home because you can erase codes and restricted performance with it no matter where you are. I keep mine in the trunk. I recommend recording base readings while the vehicle is not acting up, then set it to trigger 5 frames before the cel light is tripped, and you can simply compare readings before and after. Look for anomalies and with that info you will find the concern. On my particular vehicle I found the MAP sensor going out of range at idle when acting up. Since this sensor measures engine vacuum, I knew I had a leak. In closing by taking these readings and posting them I can lead you to finding the answer.