P0194: FUEL RAIL PRESSURE SENSOR "A" CIRCUIT INTERMITTENT/ERRATIC

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$287-$320**
Can I Still Drive?	:	**Yes** (Short-term only)

What Does The P0194 Code Mean?

This generic powertrain/engine diagnostic trouble code typically applies to most fuel injected engines, both gas and diesel since 2000. The code applies to all manufacturers such as Volvo, Ford, GMC, VW, etc.

This code is strictly concerned about the incoming signal from the fuel rail pressure (FRP) sensor not matching what is being delivered to the engine. This can be a mechanical or an electrical circuit fault, depending upon vehicle manufacturer, fuel type and fuel system.

Troubleshooting steps may vary depending upon manufacturer, type of fuel rail pressure system, and type of fuel rail pressure sensor and wire colors.

What Are The Symptoms Of The P0194 Code?

Symptoms of a P0194 engine code may include:

- Malfunction Indicator Lamp (MIL) illuminated
- Lack of power
- Engine cranks but won't start

What Are The Potential Causes Of The P0194 Code?

Potential causes for this code to set are:

- High fuel pressure
- Low fuel pressure
- Damaged FRP fuel rail pressure sensor
- Excessive resistance in the circuit
- Vacuum leaks
- Low or no fuel

How Can You Fix The P0194 Code?

Step 1

A good starting point is always to check for technical service bulletins (TSB) for your particular vehicle. Your issue may be a known issue with a known fix put out by the manufacturer and can save you time and money during diagnosis.

Also, with this particular code, make sure you have no fuel pump/fuel pressure related codes. If you have any other codes that point to a fuel pump related issue, diagnose that code first and disregard the P0194 code.

Step 2

Next, locate Fuel Rail Pressure Sensor on your particular vehicle.

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

Next, make sure that the vacuum hose that connects the sensor to the intake manifold is not leaking (if used). Visually inspect all vacuum hose connections at the fuel rail pressure sensor and intake manifold. Replace as needed.

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 against a mechanical gauge. First turn the key off, then hook up the fuel pressure gauge. Next connect the scan tool and monitor fuel pressure on the scan tool. Turn the key on and note the pressure on the gauge versus what the scan tool reads. The scan tool and the gauge should be within 5 psi of each other.

Step 4

If all tests have passed so far, and you continue to get a P0194 code, the last thing to check is the connections at the PCM. 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. Wiggle all connections at the sensor, the PCM, and any other associated connector to check for looseness to find the cause for the intermittent condition.

Step 5

If all tests have passed and you still get a code P0194, this would most likely indicate a failed PCM. A hard reset (battery disconnect) would be recommended before any PCM replacement could be justified. A FRP Sensor may have to be replaced as well.

CAUTION! On diesel engines with Common Rail Fuel Systems: if a fuel rail pressure sensor is suspected, you may want to have a professional technician install the sensor for you. This sensor may be installed by itself, or it may be part of the fuel rail. In either case, fuel rail pressure on these diesel engines at warm idle generally runs no less than 2000 psi and under load can well exceed 35,000 psi. If not sealed properly, this fuel pressure can cut skin open and diesel fuel has bacteria in it that can cause blood poisoning.

Reference Sources

Technical Service Bulletin for P0194