P0478: EXHAUST PRESSURE CONTROL VALVE "A" HIGH

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$100-$300**
Can I Still Drive?	:	**Yes**

What Does The P0478 Code Mean?

A valve is placed in the exhaust stream after the exhaust manifold to generate heat in the form of back pressure in the exhaust. This heat and/or back pressure can be used to assist in cold start warm up.

It can also be used to oppose cylinder pressure coming from the engine cylinders out of the exhaust, thereby slowing the engine down and the vehicle along with it. This is especially useful during towing operations.

This code is strictly concerned about the incoming signal from the exhaust pressure sensor not matching intake manifold pressure or ambient air pressure during normal driving. This can be a mechanical or an electrical circuit fault, depending upon vehicle manufacturer.

Troubleshooting steps may vary depending upon manufacturer, type of exhaust back pressure control, and wire colors to the control solenoid.

What Are The Symptoms Of The P0478 Code?

Symptoms of a P0478 engine code may include:

- Malfunction Indicator Lamp (MIL) illuminated

- Lack of power
- Lack of engine braking
- Longer than normal cold engine warmup time

What Are The Potential Causes Of The P0478 Code?

Typically the causes for this code to set are:

- Stuck Exhaust Back Pressure Valve
- Restricted exhaust
- Open in the ground circuit to the exhaust pressure sensor
- Open in the signal circuit between the exhaust pressure sensor and the PCM
- Short to voltage in the signal circuit to the exhaust pressure sensor
- Exhaust Pressure Sensor faulty – internally shorted to voltage
- Plugged Exhaust Pressure Sensor sensing tube
- Possibly turbocharger overboost
- Possibly the PCM has failed (highly unlikely)

How Can You Fix The P0478 Code?

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.

Next, locate the Exhaust 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.

Also, if your vehicle is equipped, remove the sensing tube that connects the exhaust backpressure sensor to the exhaust manifold. Attempt to blow through it. If unable to, this is also a possible cause for this code.

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, you will need to verify proper turbocharger boost operation. You will need a scan tool that can read turbocharger boost pressure. You may have to watch intake manifold pressure, as this will give the same information.

Note the pressure at Key On, but with the Engine Off. After that start the engine, drive the vehicle at a safe speed, and then momentarily accelerate the engine to wide open throttle, insuring engine RPM does not exceed 2500-3000 RPMs. You should note a change of at least 18 PSI, possibly more depending upon the vehicle manufacturer and year the vehicle was made.

If this test passed, or if you were unable to check turbocharger boost, we will need to test the sensor and its associated circuits. Typically there are 3 wires at the Exhaust Pressure sensor.

Disconnect the harness going to the Exhaust Pressure 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 power supply circuit, black lead to a good ground). 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.

If that's OK, with a DVOM, check to make sure you have 5V on the Exhaust Pressure 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.

If that's OK, check to make sure you have a good ground at the Exhaust Pressure 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 Exhaust Pressure 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 the exhaust pressure sensor to see if the test light flickers, indicating an intermittent connection.

If all prior tests have passed and you continue to get a P0478 code this would most likely indicate a failed Exhaust Pressure sensor, although a stuck closed Exhaust Backpressure Valve or a failed PCM could not be ruled out until the sensor had been replaced.

Reference Sources

P0478 Exhaust Pressure Control Valve "A" High, OBD-Codes.