




2013-2023
Turbo Actuator



DDP 2013-2023 Turbo Actuator User Guide

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Turbo Actuator Guide

*Please keep in mind that every situation is unique, and it may not always be the actuator causing the issue. A sticking turbocharger can cause an actuator to fail. It's important to note that you may not always receive a code for a sticking turbocharger, as there is only one sensor on the turbocharger (Turbo Speed Sensor). Additionally, even if you have a low mileage truck, the turbo can still get clogged with soot, regardless of whether you drive it easy as a grocery getter or hard as a hot shot driver with somewhere to be.

The "Arm Test" is a commonly used method to check the condition of turbochargers. However, it is not a reliable way to determine whether the problem lies with the actuator or the turbocharger itself. Those test involves moving the small arm to the left and right to check for unusual resistance, but it is typically performed when the turbocharger is cold and not at operating temperature. Unfortunately, metal contracts in cold temperatures and expands in hot temperatures. Therefore, the arm test can produce misleading results.

It's possible for a turbo to stick without displaying any warning codes, which can cause damage to the actuator over time. Replacing only the actuator may solve the problem temporarily, but it's not a permanent solution. We've encountered situations where customers who only replace the actuator had it fail again within a short period of time, ranging from 1 month to 1.5 years. If you are looking for a long-term solution, we highly recommend upgrading both the turbo and the actuator to avoid finding yourself in a similar situation in the near future.

If a turbocharger begins to stick, then the actuator has to work harder to function properly. This can lead to a decrease in the actuator's lifespan. The actuator is designed to work with a clean and nonsticking turbocharger. When it has to work harder than usual, the circuit board may overheat, causing the actuator to fail. The gears can also become stressed and either wear down or have teeth broken off, which can ultimately result in actuator failure.

What happens if I just replace the actuator?

It has been found that replacing the actuator is an effective solution for fixing the problem. However, the duration of its effectiveness may vary from as little as a week to as long as two years. In some cases, replacing the actuator may not solve the issue if it turns out to be a sticking turbocharger. Even if the new actuator appears to work for a few months to a year, the same problem may resurface over time. The turbocharger will continue to stick, and every time the new actuator powers through, it puts a strain on the device, which eventually leads to failure. This condition is evident when the device is submitted for warranty claims, and if this is the case, it will not be covered under the warranty.

Codes

Code U010C or P0046 – The issue may be related to either the turbocharger actuator or the power, ground, or communication wires going to the actuator. However, a bad turbocharger is not the cause of this error code. Thus, it is advisable to examine the wiring to ensure that the connector terminals are not corroded or damaged. Additionally, check that you have a good power and ground connection to the actuator (power and ground are the two outside terminals).

To perform a resistance check, ensure the key is turned off and wait around 1 minutes to allow the ECM to shut down. Afterward, unplug the actuator and check the ohms between the two middle pins of the connector on the harness side. The reading should be between 115-125 ohms. Please note that this is with the actuator unplugged. While performing the check, it is essential to shake the wiring to ensure that there are no damaged wires.

Furthermore, check the ohms on those two pins on the actuator itself (with the harness still unplugged). The reading should be between 115-125 ohms. It is also worth noting that the wiring order is different between the early and late models. On the late model, the wire order goes "Ground, Can Low, Can High, and Power," whereas on the early model, it goes "Power, Ground, Can High, Can Low." The resistance check should be between "Can High and Can Low."

Code P003A – This indicates that the actuator could not find the end stops. This issue is usually caused by a problem with the actuator, but it could also be the result of removing the actuator without recalibrating it.

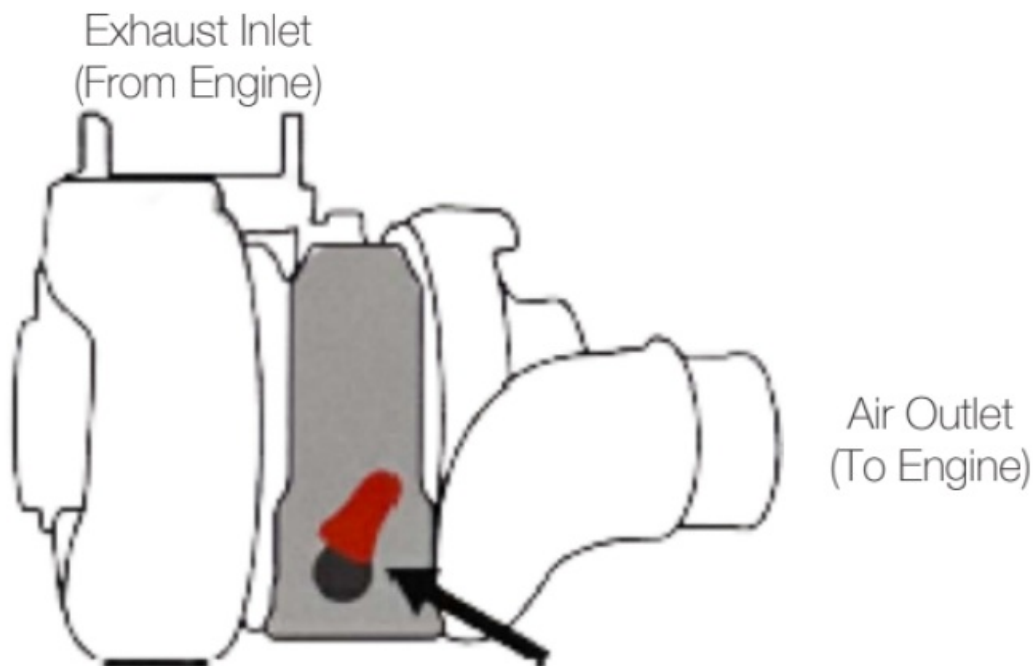
Code P00AF – This code may indicate a faulty actuator or wiring. Please review Code P0046.

Code P226C – This code refers to the turbocharger and indicates that the desired position of the vanes does not match the actual position. This issue usually occurs when the vanes get stuck and may not remain stuck all the time. To avoid any further complications, we suggest rebuilding the turbocharger, regardless of how the vanes feel. In some rare cases, a bad actuator can also lead to this problem. However, if that's the case, the P00AF or P003A code will also be displayed. Please note that even if all three codes are displayed, we do not recommend replacing the actuator alone as it could be both a bad actuator and stuck vanes.


Instructions

1. Begin with the engine off and the Key in the Off position
2. Drain the coolant from the engine cooling system
3. Disconnect the actuator from the vehicle by unplugging the cable
4. Remove the 4 bolts that hold the actuator in place and remove the actuator
5. Rotate the sector gear clockwise until it stops (see image below)
6. Ensure that the gaskets are properly seated on the new actuator and the mounting surface on the turbo is clean
7. With the actuator mounted and calibrated, refill the coolant system with new coolant

Push Sector Gear in the Direction indicated until it stops



Documents / Resources

 <small>Turbo Actuator Guide</small> <small>The DDP 2013-2023 Turbo Actuator is a high-performance, low-emission, and low-noise actuator. It is designed to provide precise control of the turbocharger vanes, ensuring optimal engine performance and emissions. The actuator is made of high-strength materials and is built to last. It is easy to install and maintain. For more information, please refer to the user guide.</small> <small>What's new in this version?</small> <small>This version of the user guide contains the following changes:</small> <ul style="list-style-type: none">Added new information about the actuator's performance and emissions.Updated the installation and maintenance instructions.Added new information about the actuator's warranty.	<p>DDP 2013-2023 Turbo Actuator [pdf] User Guide</p> <p>2013-2023 Turbo Actuator, 2013-2023, Turbo Actuator, Actuator</p>
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References

- [User Manual](#)

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