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› Dorman 904-5503 Turbocharger Actuator User Manual

Dorman 904-5503

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Compatible with Select Mack/Volvo Models

1. PRODUCT OVERVIEW

The Dorman 904-5503 Turbocharger Actuator is a direct replacement component designed to restore accurate boost control to the turbocharger system. This 100% new construction actuator helps in restoring lost fuel efficiency and functionality in compatible Mack and Volvo models.

Key Features

- **Direct Replacement:** Engineered to match the original equipment actuator's fit and function, ensuring seamless integration.
- **100% New Construction:** Manufactured from all new components, eliminating the need for core returns and ensuring optimal performance.
- **Cost-Effective Solution:** Allows for the replacement of only the actuator, rather than the entire turbocharger assembly, reducing repair costs.
- **Quality Tested:** Undergoes rigorous vehicle simulation and material testing to guarantee a quality fit and extended service life.
- **Vehicle Fitment:** Designed for specific Mack and Volvo models. Users should verify compatibility using their vehicle's make, model, and trim level.

2. WHAT'S IN THE BOX

The Dorman 904-5503 Turbocharger Actuator package includes the following components:

- 1 x Dorman 904-5503 Variable Geometry Turbocharger (VGT) Actuator
- Installation hardware (bolts, gasket, zip ties) for a complete repair



Image: The Dorman 904-5503 Turbocharger Actuator shown with its electrical connector and the complete set of installation hardware, including bolts, a gasket, and zip ties.

3. INSTALLATION GUIDE

Installation of the Dorman 904-5503 Turbocharger Actuator requires specialized tools and knowledge. It is highly recommended that this procedure be performed by a certified automotive technician to ensure proper function and vehicle safety.

General Installation Steps (Professional Installation Recommended):

1. **Safety First:** Ensure the vehicle is turned off, cooled down, and properly secured. Disconnect the battery.
2. **Access the Turbocharger:** Locate the turbocharger assembly and the existing actuator. This may require removing other engine components.
3. **Disconnect Old Actuator:** Carefully disconnect the electrical connector and remove any mounting bolts securing the old actuator.
4. **Remove Old Actuator:** Detach the old actuator from the turbocharger. Note its orientation and any linkages.
5. **Prepare New Actuator:** Inspect the new Dorman 904-5503 actuator and included hardware. Ensure the gasket is correctly positioned.
6. **Install New Actuator:** Mount the new actuator onto the turbocharger, ensuring proper alignment with the variable geometry mechanism. Secure it with the provided new bolts.
7. **Connect Electrical:** Reconnect the electrical connector to the new actuator, ensuring a secure and tight fit.
8. **Reassemble Components:** Reinstall any engine components that were removed to gain access.
9. **Test System:** Reconnect the battery. Perform diagnostic checks and test drive the vehicle to ensure the turbocharger and actuator are functioning correctly and no fault codes are present.

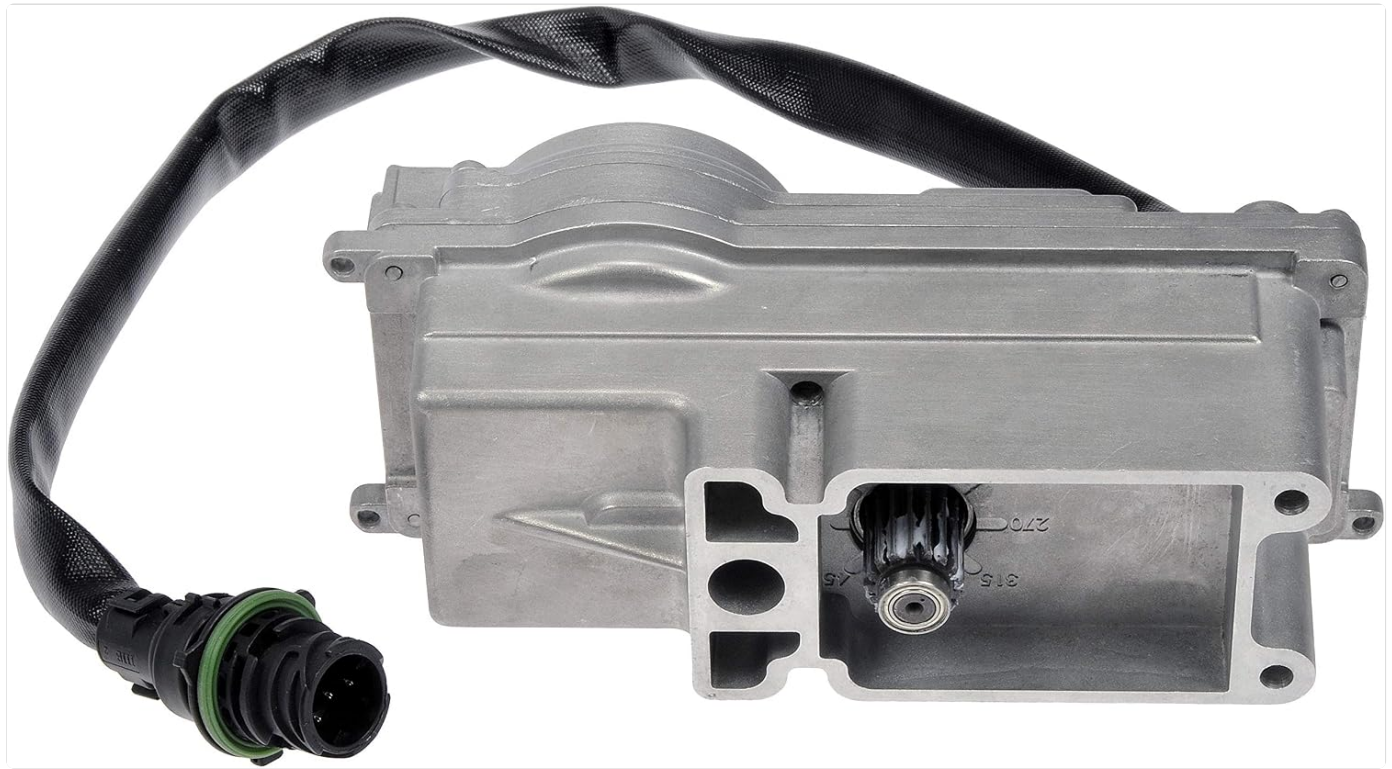


Image: Side view of the Dorman 904-5503 Turbocharger Actuator, highlighting its robust housing and integrated wiring harness.



Image: Bottom view of the Dorman 904-5503 Turbocharger Actuator, revealing the internal gear mechanism that interfaces with the turbocharger's variable geometry vanes.



Image: A close-up view of the installation hardware, including several mounting bolts, a shaped gasket, and multiple zip ties, all essential for securing the actuator.



Image: A detailed close-up of the multi-pin electrical connector, featuring a green seal, which ensures a secure and weather-resistant connection to the vehicle's wiring harness.

4. OPERATION

The turbocharger actuator is a critical component in modern diesel engines, particularly those equipped with Variable Geometry Turbochargers (VGTs). Its primary function is to control the position of the turbocharger's vanes, which in turn regulates the exhaust gas flow to the turbine.

By precisely adjusting the vane angle, the actuator optimizes boost pressure across various engine speeds and loads. This allows the engine to achieve optimal performance, improved fuel efficiency, and reduced emissions. The actuator receives signals from the engine control unit (ECU) and responds by moving the vanes to maintain the desired boost level.

A properly functioning actuator ensures that the turbocharger spools up quickly at low RPMs and prevents over-boosting

at high RPMs, contributing to smooth power delivery and engine longevity.

5. MAINTENANCE

The Dorman 904-5503 Turbocharger Actuator is designed for durability and long service life. While it does not typically require routine user maintenance, adherence to general vehicle maintenance practices can help ensure its longevity:

- **Regular Engine Servicing:** Follow the vehicle manufacturer's recommended service intervals for oil changes and filter replacements. Clean engine oil and air are crucial for turbocharger health.
- **Inspect for Leaks:** Periodically check for any oil or exhaust leaks around the turbocharger and actuator area. Address any leaks promptly.
- **Wiring Inspection:** During routine inspections, ensure the electrical connector and wiring harness to the actuator are free from damage, corrosion, or loose connections.
- **Professional Inspection:** If any issues related to turbocharger performance or engine warning lights arise, have the system professionally inspected.

6. TROUBLESHOOTING

If you experience issues that you suspect are related to the turbocharger actuator, consider the following common symptoms. Due to the complexity of turbocharger systems, professional diagnosis is strongly recommended.

Common Symptoms of a Faulty Actuator:

- **Reduced Engine Power:** A malfunctioning actuator can lead to incorrect boost pressure, resulting in a noticeable loss of engine power or acceleration.
- **Check Engine Light (CEL):** The engine control unit (ECU) may detect an issue with boost control or actuator operation and illuminate the Check Engine Light. Diagnostic trouble codes (DTCs) related to turbocharger or boost pressure may be stored.
- **Excessive Smoke from Exhaust:** Incorrect boost pressure can affect the air-fuel mixture, potentially leading to black or white smoke from the exhaust.
- **Unusual Noises:** While less common for the actuator itself, issues with the turbocharger system can sometimes manifest as whistling, whining, or grinding noises.
- **Poor Fuel Economy:** Inefficient turbocharger operation due to an actuator fault can negatively impact fuel consumption.

Troubleshooting Steps (Professional Assistance Advised):

1. **Scan for DTCs:** Use an OBD-II scanner to retrieve any stored diagnostic trouble codes. These codes can provide specific information about the fault.
2. **Visual Inspection:** Check the actuator's electrical connector and wiring for any visible damage, corrosion, or loose connections.
3. **Actuator Movement:** A technician can use specialized diagnostic tools to command the actuator to move and observe its response.
4. **Boost Pressure Test:** Verify actual boost pressure against specified values using a pressure gauge or diagnostic software.

If you suspect a problem with your turbocharger actuator, it is crucial to consult a qualified mechanic for proper diagnosis and repair.

7. SPECIFICATIONS

Specification	Detail
Manufacturer	Dorman Products
Brand	Dorman
Model	Dorman 904-5503
Item Weight	0.01 ounces
Product Dimensions	10.59 x 5.35 x 7.09 inches
Item Model Number	904-5503
Exterior Finish	Black
Manufacturer Part Number	904-5503
OEM Part Number(s)	21754439; 85013731
Date First Available	January 5, 2019

8. WARRANTY AND SUPPORT

For detailed information regarding the warranty coverage for your Dorman 904-5503 Turbocharger Actuator, please refer to the official Dorman warranty policy or contact Dorman customer support directly.

Dorman provides comprehensive support for its products. If you have questions about installation, compatibility, or require technical assistance, please visit the official Dorman website or contact their customer service department.

You can find more information and contact details on the [Dorman Brand Store](#).

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