



P/N # 5494878

INSTALLATION MANUAL

TURBO ACTUATOR

Compatible with 2013-2018 Ram
2500 3500 4500 5500 6.7L

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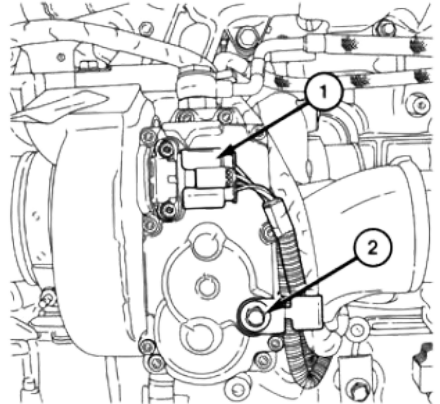
REMOVAL

Disconnect both vehicle batteries before installation for safety.

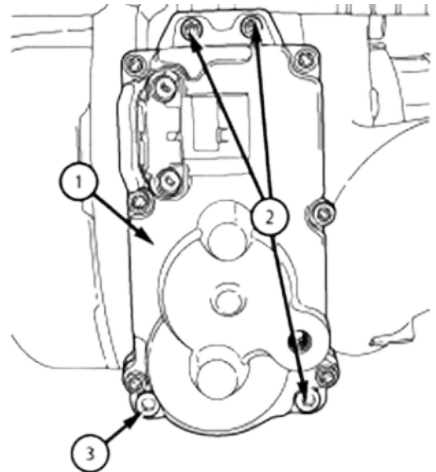
Raise and support the vehicle. Drain the cooling system. Remove the right wheel house splash shield.

Remove the bolt (2) securing the wire harness to the turbocharger actuator.

Disconnect the turbocharger actuator wire harness connector (1) from the turbocharger by cleaning the connector to remove debris, pulling the light gray release lever away from the locked position with your thumb nail until it clicks into the unlocked position, then holding the light grey release lever down while pulling the connector apart.



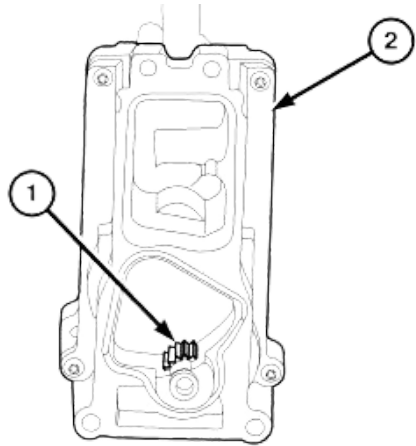
Remove the bolts (2, 3) and the turbocharger actuator (1).



INSTALLATION

Clean turbocharger mounting surfaces.

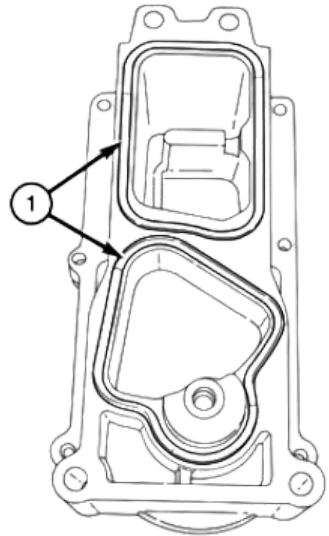
Position the new turbocharger actuator (2) into the engine compartment so the actuator gear (1) will be free to rotate



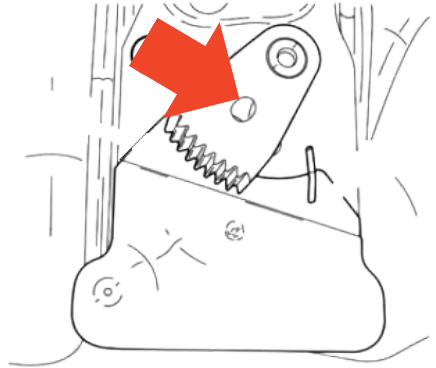
Connect turbocharger actuator wire harness connector. Connect both batteries.

WARNING Keep fingers clear as the gear may move when powered up.

Install a NEW O-ring seals (1) on the turbocharger actuator.



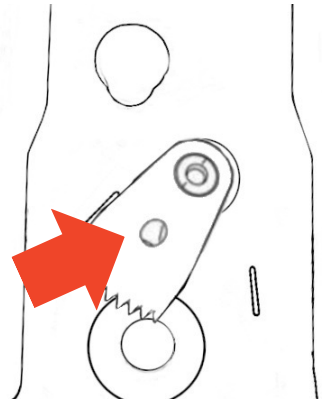
Grasp the sector gear by hand and rotate the sector gear back and forth, checking for tightness or resistance. If there is resistance, your turbocharger is damaged and should be replaced.



Align the hole on the sector gear to the hole in the CHRA towards the turbine side. Keep in place, do not allow movement.

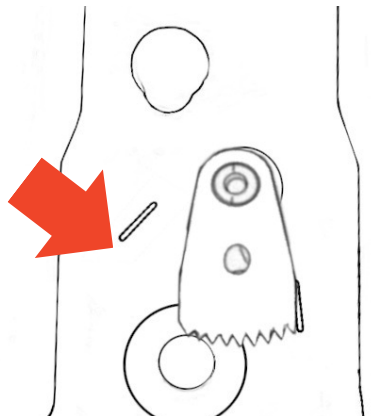
Apply a bean-sized amount of grease.

Coat the teeth on the sector gear (1) with the full amount of grease.



Line up the side of the sector gear, with the notch on the turbine side of the CHRA. Keep in place, do not move.

Note: Some model years may have alignment holes and not notches. Please see previous alignment method.



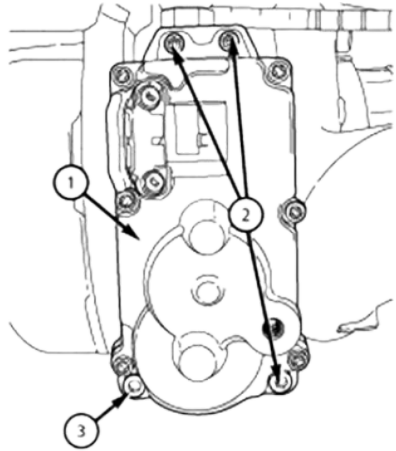
Install the guide pins onto turbocharger top two mounting screw holes.

Insert the bottom two NEW screws into actuator mounting holes before placing onto turbocharger.

Remove the two guide pins from top holes and install NEW bolts finger tight.

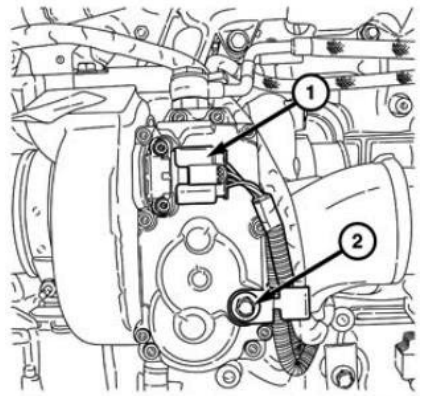
These are the only three screws that are accessible in the 3500 Chassis.

Tighten the three screws (2) to 9 N·m (80 in. lbs.).



Using an Allen Wrench, tighten the remaining cap screw (3) until it is flush with the actuator body. After screw (3) has been brought flush with the actuator housing, tighten the screw an additional 90° turn.

Install the bolt (2) securing the wire harness to the turbocharger actuator and tighten the bolt to 11 N·m (8 ft. lbs.).



Install the right wheelhouse splash shield. Install the air cleaner body. Fill the cooling system.

ACTUATOR GUIDE

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 non sticking 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.

WARRANTY STATEMENT

Ultimate Turbos (the "Seller") warrants the following product(s):

All products manufactured or rebuilt by the Seller are to be free from defects in material or workmanship. The Seller warrants to the original buyer of the product (the "Buyer") that it will repair or replace, free of charge, any product which has a defect in material or workmanship within the warranty period described below. Copy of original invoice is required to qualify for warranty.

A defect is defined as a condition within the product that would render the product inoperable under normal conditions of use and service. The Seller's responsibility under this Warranty is limited to the repair or replacement, at the Seller's option, of any warrantable product returned prepaid with complete service history and proof of purchase. A valid proof of purchase is a dated bill of sale or receipt.

A Return Material Authorization (RMA) number, obtained in advance from a customer service representative of the Seller and the dated bill of sale or receipt, must accompany any product returned by the Buyer for warranty determination. The Seller will be the final authority on the approval of all warranty claims hereunder. The issuance of a RMA number does not represent an approval of a warranty claim. Ultimate Turbos reserves the right to return or replace Warranty Approved items freight Prepaid. While warranty denied or rejected, claims will be returned freight collect. Accepted warranty products, which have been replaced, will become the sole property of Ultimate Turbos.

Until the Seller has approved a warranty claim, the Buyer will be responsible for all costs. Replacement parts and the labor costs incurred by the removal and replacement of the product while performing warranty work will be the responsibility of the Buyer. In no case does the obligation of the Seller exceed the original purchase price of the product as indicated on the original bill of sale or receipt. Under no circumstances will the Seller be liable for any travel time incurred in diagnosis for defects, or any other contingent expenses.

Only once the claim is approved, and depending on if the warrantable product is eligible, labor costs will be considered for the removal and replacement if an eligible part at an hourly rate of \$100.00 per hour. The end user may be responsible for the difference between the Ultimate Turbos warranty labor rate and the authorized service dealer's labor rate. Ultimate Turbos recommends the end user negotiate these conditions before the service is performed. As well the end user may be responsible for additional freight charges.

To the extent permitted by law, the Buyer hereby waives all rights other than those expressly set out herein and acknowledges that this warranty sets out the Buyer's exclusive remedies with respect to products covered by it. This warranty shall not be extended, amended or varied except by written instrument signed by the Seller and the Buyer. If the buyer replaces the product from the Seller with another from another manufacturer, the Buyer-Seller warranty contract is void and the RMA Claim will be terminated. Any claim for remuneration will be rejected.

The Seller will administer warranty requests on products sold by the Seller and not manufactured by the Seller by forwarding claims made by a Buyer under the manufacturer's warranty to the manufacturer. The final disposition of such claims will be made by the manufacturer and ruled by the laws of Alberta, Canada.

Customer assumes risk in purchasing product with in 30 days may return the product for exchange of other Ultimate Turbos products or services only. No cash refunds are available.

The installation of Ultimate Turbos aftermarket parts may void the OE warranty. Ultimate Turbos is not responsible for OE warranties or how they are administered. Residents of the U.S.A. can reference the Magnuson- Moss warranty act that protects the consumer on the installation of aftermarket parts, please research this act to base your decisions accordingly.

In the case the warranty is denied, Ultimate Turbos at its discretion, may offer to refurbish (where applicable) the product at discounted rate for the end user.

NOT COVERED UNDER THIS WARRANTY

This warranty is limited to the original purchaser of the product and is not transferable to subsequent owners. Specifically excluded from this warranty are failures of products caused by misuse, misapplication, negligence of the Buyer, accidents, modification, abuse, improper storage, installation, repair or operation, use of unauthorized parts or other mistreatment of the Buyer or his agent. Any competitive use, sled pulling, drag racing will void warranty on product. Damage caused from debris in oil contaminated coolers, improper fluids and filters or damage caused from fuel or air contamination, Biodiesel, low fluid levels are also not covered. This warranty does not cover deterioration of plating, paint or any other coating, linings or parts that are subject to normal wear and tear, such as light bulbs, fuses, bearing wear, seal wear, etc.

The Seller also disclaims any liability for incidental or consequential damages including but not limited to, repair labor, rental vehicles, hotel cost or any other inconvenience cost. To the extent permitted by law, this warranty is in lieu of all other warranties or guaranties, either expressed or implied, included the implied warranties of merchantability and fitness for a particular purpose and shall not extend to any Buyer or to any person other than the original purchaser residing within the boundaries of the continental U.S. or Canada. As well the seller is not responsible or obligated to update previously manufactured parts that are currently under the above warranty.

NOTE THAT THIS GUARANTEE WILL BE VOID IF THE USER BREACHES THE CONDITIONS IN THE SECTION LABELED "NOT COVERED UNDER THIS WARRANTY" AND IS ONLY APPLICABLE ON THE PRODUCTS THE SELLER MANUFACTURES.

DISCLAIMER OF LIABILITY

Other than as expressly set forth herein, the Seller, together with its distributors, jobbers and dealers shall in no way be responsible for the product's proper use and service. In no event shall the Seller be liable for any special, incidental, indirect or consequential damages of any kind or nature, whether or not the Buyer was advised of the possibility of damage, arising or resulting from the use or performance of the product, and the Buyer hereby waives any and all such claims.

The Buyer acknowledges that he/she/it is not relying on the Seller's skill or judgment to select or furnish goods suitable for any particular purpose and that the Seller has no liability that will extend beyond the scope of the limited warranty contained herein, and the Buyer hereby waives all remedies or liabilities, expressed or implied, arising by operation of law or otherwise, (including, without limitation, any obligations of the Seller with respect to fitness for any particular purpose; merchantability; and special,

incidental, indirect or consequential damages) or whether or not occasioned by the Seller's negligence.

The Seller disclaims any warranty and expressly disclaims any liability for personal injury or damages related to the Buyer's use of the product. The Buyer acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this Agreement and the Buyer agrees to indemnify the Seller and hold the Seller harmless from any claim related to the product and its use or performance. Under no circumstances will the Seller be liable for any damages, liabilities, costs or expenses incurred as a result of by reason of the use, performance or sale of the product, including without limitation, any damages, liabilities, costs or expenses incurred by reason of the Buyer's negligence related to those uses of the product as a result of the removal of the speed limiter.

The Seller assumes no liability regarding the improper installation or misapplication of the product. It is the installer's responsibility to check for proper installation, and, if in doubt, contact the manufacturer.

