

Installation: Turbocharger Actuator

Please read the instructions completely.

Improper installation can and will damage the turbocharger.

- 1** Open the hood and remove the radiator cap and on '07.5-'12 trucks, the coolant vent plug. (The coolant vent plug is sticking straight up on the passenger side of the valve cover.)
- 2** Drain the radiator. There is a drain valve on the bottom driver's side of the radiator. You will need a 4.5 gallon container to drain the coolant.
- 3** Remove the passenger side inner fender cover. Disengage any component retaining clips, remove the screws and plastic clips holding the inner fender cover on.
- 4** Wait for coolant to completely finish draining before proceeding.
- 5** Remove (4) 5mm allen head screws* holding the actuator onto the turbocharger and pull actuator straight back from turbo. Unplug the actuator harness from the engine harness.
- 6** With the actuator removed check the gear lever for movement. It should be able to easily be moved full travel with one finger. (Full travel is approximately 1 inch). We then suggest pushing the vanes against each stop. This is done to make sure that when the vanes are moved with one finger to the extreme ends of their travel, they do not stick. If the actuator lever cannot be moved easily by hand or if any resistance is found when pushing at either end of its fullest travel, the turbo must be replaced.
- 7** Now check the turbo vein actuator sector gear for proper timing.

2007.5-2012 turbos, move the turbo vein actuator gear all the way to the compressor side (front of turbo) travel stop. Look straight down the alignment hole in the gear comparing to the alignment hole in the turbo housing. There should be no overlap on either side of the opening.

2013-2018 turbos, the alignment hole that will be used is with the turbo vein actuator gear moved all the way against the stop that is closer to the turbine (rear of turbo). Look straight down the alignment hole in the gear comparing to the alignment hole in the turbo housing. There should be no overlap on either side of the opening.

If you would like to accurately and precisely check the gear to turbo housing timing and alignment, a "no go gauge" that is .0186 outside diameter is the appropriate size tool to use. This will be inserted into the vein actuator gear hole and into the turbo housing. If the no go gauge does not slide into the turbo housing at full travel of the gear using the year range information above, then the turbo is not usable. This misalignment has been seen on many used and remanufactured turbos.

If you find that the hole in the turbo vein actuator gear lines up with both holes in the turbo housing at the furthest travel in each direction, then the timing is also off and the turbo should not be used.

Some turbo remanufacturing facilities may use a bearing housing that is different from the original year range application. The only way we know to determine the difference in bearing housings is listed below.

2007.5-2012 - smooth surface below the vein sector gear.

2013-2019 - small straight lines machined into the bearing housing that are visible when moving the vein sector gear back and forth.



If you need more assistance, we are only a phone call away.

(770) 886-2500

Monday-Friday
8:30am-5:30pm EST

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- 8** Remove the (4) T20 six-sided Torx screws** holding the 2 actuator halves together and separate the two halves. (2013 and up trucks have Torx T20 tamper-resistant screws.)
- 9** Mount the new actuator half to its mate and use either the (4) removed T20 Torx screws to secure or use the included (4) T15 Torx screws. Torque the screws to around 25 in-lbs. Do not over torque.
- 10** Be sure to dry off all components and make sure both pieces are completely moisture-free before bolting to the turbo. Verify that the mounting surface of the actuator housing does not have any recessed grooves that would not allow the gaskets to seal off the coolant. **IMPORTANT: Do not grease the actuator gears!**
- 11** Mount the actuator to the turbocharger using the supplied gasket. (Do not use any type of gasket sealer.) The gear positioning will take care of itself. Make sure the actuator is sitting flush against the turbo before screwing it on. Using the (4) new allen head bolts that are included, tighten the actuator to the turbocharger. **IMPORTANT: Do not use the screws to force the two halves together. Make sure they are flush before tightening! This can cause binding of the vanes and slow response codes.**
- 12** Plug the actuator connector back into the engine harness. Be careful to avoid routing it against the hot side of the turbo or exhaust. **Do not use any kind of dielectric grease!**
- 13** Close the radiator drain and refill the coolant system. On 2005.5-2012 leave the coolant vent plug out until you get most of the coolant back in and it starts coming out of the vent. This isn't necessary on 2013 and newer Ram Cummins Turbo Diesel trucks because the cooling system will self bleed the air out.
- 14** Re-install the fender cover and radiator cap.

* 5mm bit included, In tight areas you can use a 1/4" wrench to turn it.

** T20 Torx tamper-resistant bit included. You can use a 1/4" wrench to turn it.

**For a very helpful installation video, go to: https://www.genosgarage.com/install_instructions
INSTALLATION & TECH VIDEOS ► Electronic Turbo Actuator**