

IMPORTANT: Before starting installation, please be sure that all items which were supplied with the kit are accounted for.

Required Parts:

- [Garrett TP38 Journal Bearing Rebuild Kit 94.5-97 \(472617-0000\)](#)
- [Borg Warner Anti-Surge Compressor Wheel \(Optional\) \(170293\)](#)
- [Garrett TP-38 Compressor Housing O-ring \(Optional\) \(GZ-9-012\)](#)



Recommended Tools:

- Metric sockets and wrenches
- Loctite® medium or high strength.

Instructions:

- 1) Thoroughly clean the turbo assy. of grime and build-up. Soaking the turbo bolts with PB Blaster® or equivalent is suggested. (Break the torque on all the bolts now, this will help later.)
- 2) Mark the orientation of the turbo for reassembly. A line marked on each component will aid in making sure all the segments are put back together properly. (Fig 1)
- 3) Remove the (4) compressor housing bolts using an 8mm socket or wrench. Once the bolts are removed, you can remove the compressor housing from the back plate. It may be sealed on so take your time working it loose. You need to be careful so you do not damage the compressor wheel. (Fig 2)
- 4) Remove the Exhaust Back Pressure Valve (EBPV) from the turbine housing by removing the (3) bolts with an 8mm socket or wrench.
- 5) Remove the compressor wheel using a 16mm socket on the compressor wheel and an 18mm socket on the turbine wheel. Once loose, the compressor wheel should spin off freely. (Fig 3)

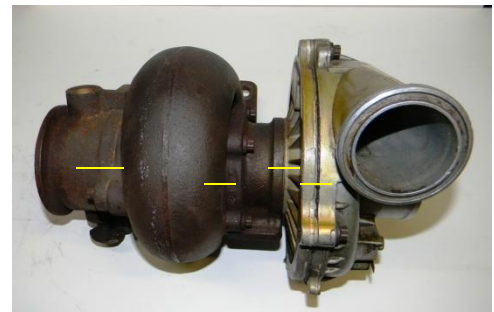


Fig 1

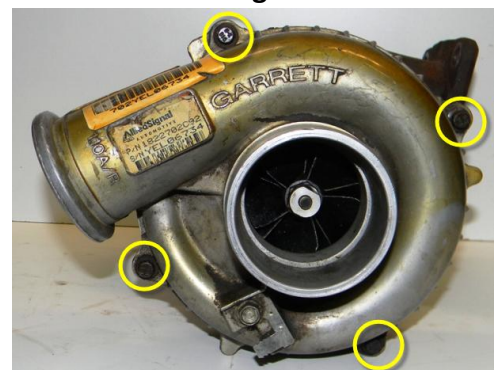


Fig 2

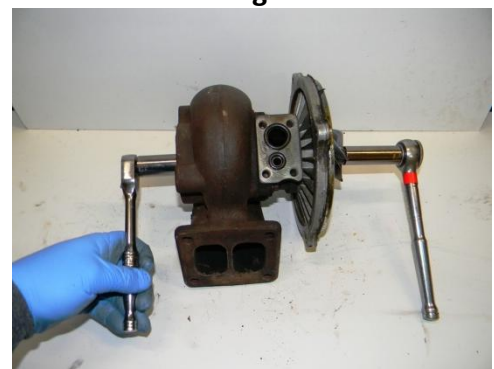


Fig 3

- 6) Remove the (4) bolts holding the compressor housing back plate onto the center cartridge using an 8mm socket or wrench. (Fig 4)
- 7) Remove the back plate from the center cartridge. The thrust bearing and washer may come out with the back plate or they may stay with the cartridge. (Fig 5)
- 8) Remove the thrust bearing and washer noting which way they were installed.
- 9) Remove the (4) bolts holding the center cartridge onto the turbine housing using an 8mm socket or wrench.
- 10) Remove the center cartridge from the turbine housing. It will be a little difficult to get out. Careful tapping with a rubber mallet and working the cartridge out being careful not to damage the turbine fins is required. (Fig 6)
- 11) Holding the cartridge, lightly tap on the exposed shaft where the compressor wheel was attached with a soft rubber mallet to free the shaft from the journal bushings and oil seal ring. (Fig 6)
- 12) Once the shaft is loose, you should be able to hold it with the turbine wheel up and remove the two bushings and the spacer from the shaft. (Fig 7)
- 13) Remove the turbine wheel and shaft from the cartridge now.
- 14) Clean the cartridge of all built up oil (coked oil). It often gets into the grooves and needs to be cleaned thoroughly before reassembly.
- 15) Remove the oil seal ring (c ring) from the turbine shaft. Carefully pry it open with a scribe to remove it. Slide the new oil seal ring onto the shaft and carefully work it into the groove. (Fig 8)

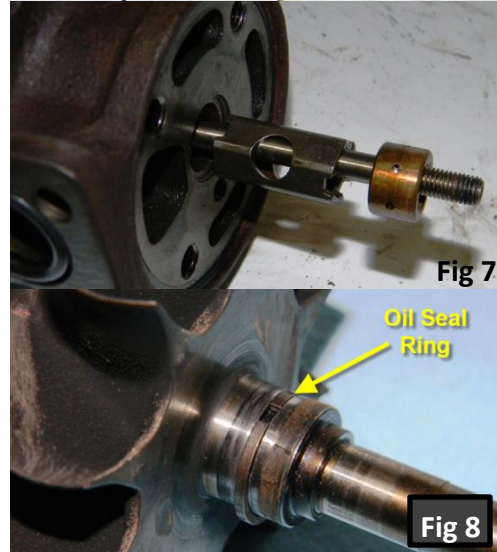
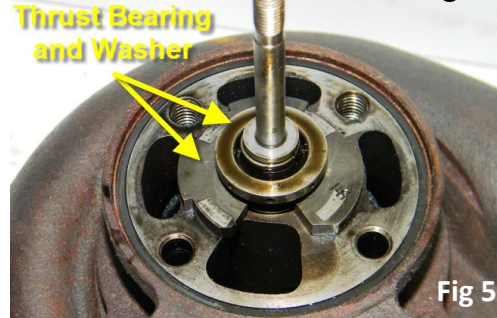


Fig 8

- 16) Reinstall the turbine wheel and shaft into the cartridge. Lightly tap the turbine wheel to seat the oil seal ring into the cartridge bore. The bore is chamfered so the ring will line up automatically.
- 17) Slide a journal bushing onto the shaft, then the spacer, then the other bushing. Coat these and the shaft with clean motor oil. Then align them into the cartridge bore. (Fig 9)
- 18) Keeping a hold of the shaft to keep it seated in the cartridge, install the cartridge into the turbine housing. Make sure it is installed straight into the housing and the turbine wheel is not binding. Install the (4) new bolts using medium or high strength Loctite®. Tighten the bolts to 30 ft-lbs. Make sure the shaft spins freely.
- 19) Using the new thrust bearing from the kit, install the smaller oil seal ring onto the thrust bearing. (Fig 10)
- 20) Install the thrust bearing into the thrust washer. The washer grooves must face the cartridge when installed on the bearing. (this is a critical step and must be done correctly or damage will occur). Coat the bearing and washer with clean motor oil. (Fig 11a & 11b)
- 21) Install the thrust bearing and washer into the compressor housing back plate. The washer can only go into the housing one way. This will ensure it is indexed properly. (Fig 12)
- 22) Using a scribe, remove the seal from the cartridge and replace with a new one from the kit. Apply a thin layer of clean oil to the seal. (Fig 13)
- 23) Slide the compressor back plate onto the shaft and line up the marks made before disassembly. The back plate can only be installed one way due to bolt hole location.

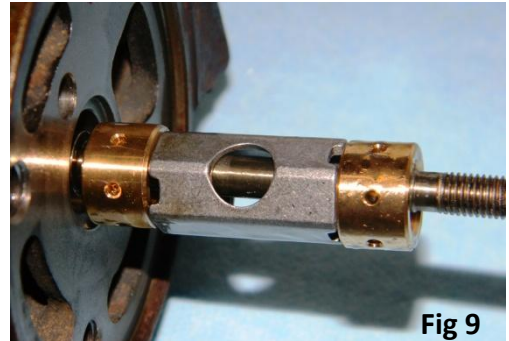


Fig 9

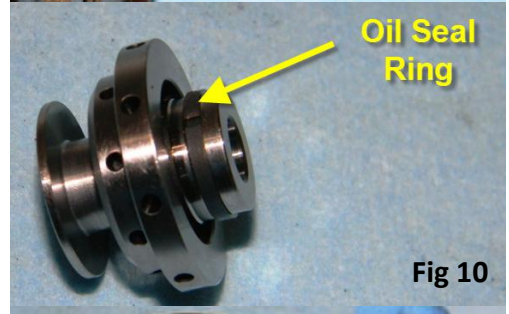


Fig 10



Fig 11a

Fig 11b



Fig 12

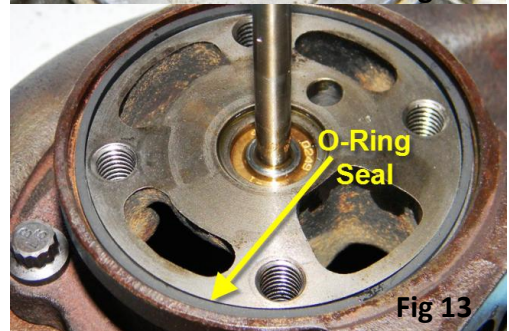


Fig 13

- 24) Install the (4) bolts through the back plate into the cartridge. Torque them to 12 ft-lbs. (Fig 14)
- 25) Install the compressor wheel onto the shaft. Thread it down on the shaft and torque to 10 ft-lbs. Make sure the wheel turns freely after torquing. (Fig 15)
- 26) Install the o-ring around the flange of the back plate. Carefully install the compressor housing (remove old sealant from housing) making sure to align the marks made on disassembly to correctly orientate the housing. Make sure the compressor wheel turns freely and does not contact the housing. (Fig 16)
- 27) Install the (4) bolts to the housing and torque to 12 ft-lbs using a criss-cross pattern. Make sure the compressor wheel turns freely after torquing. (Fig 2)
- 28) Install the EBPV onto the turbine housing and install the (3) bolts using Loctite®. Torque the bolts to 30 ft-lbs.
- 29) Your turbo is now complete. It is ready to re-install now. Use the kit supplied pedestal o-rings, housing o-ring and exhaust gasket when installing back on the engine.

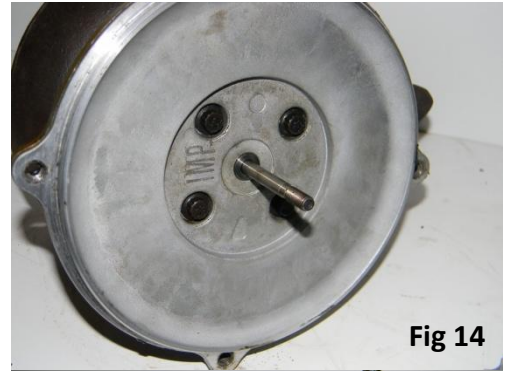


Fig 14



Fig 15

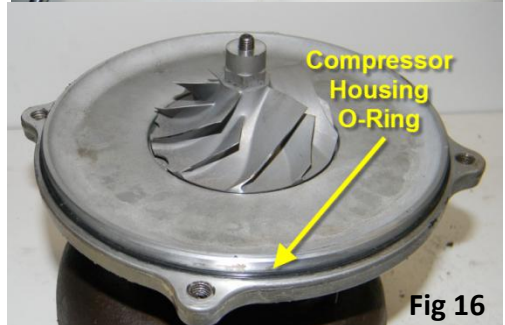


Fig 16

Special thanks to Ken (Woodnthings of FTE) for photos and instructions.

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