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## Installation Tips & Instructions

### **TURBOCHARGERS**



Turbochargers operate at high speed and high temperatures. To avoid injury and equipment damage caution should be used at all times when operating turbochargers. Keep fingers and foreign objects away from openings. Avoid contact with hot turbocharger surfaces and other hot connecting parts.



Operating turbochargers at any speed above idle immediately after startup can result in bearing damage as a result of oil lag, especially in cold weather or after an extended period of non operation.

LEAVE PROTECTIVE COVERINGS ON OIL PORTS IN PLACE UNTIL FITTINGS ARE INSTALLED. AFTER FITTINGS ARE INSTALLED, USE CAPS TO COVER OIL INLET AND OUTLET BEFORE STARTING INSTALLATION PROCESS.

Every effort is made during assembly of an overhauled turbocharger to rotate the housings to their respective positions but it is good practice to rotate the housings to match each individual engine. This practice will ensure there are not any bending loads to ducts and/or brackets.



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### ***REALIGNMENT OF COMPRESSOR AND TURBINE HOUSINGS***

Install brackets (if used) to the turbine housing in the same location as the unit that was removed.

1. Loosen the six turbine housing bolts (400 series) or the center v-band clamp (600 series) just enough to allow rotation of the housing
2. Loosen the compressor housing bolts or v-band clamp (400 series only) just enough to allow rotation of the housing.
3. Temporarily install the turbine housing to the exhaust transition/manifold and secure with two bolts (400 series) or v-band clamp (600 series).
4. Rotate the center housing so the oil lines will mate up with the oil inlet (top) and oil outlet (bottom) flanges. (If the centerline of the oil outlet hole is more than 35 degrees from vertical it is an indication that the oil line is routed incorrectly or has suffered some type of damage).
5. Tighten at least two of the turbine housing bolts (400 series) or v-band nut (600 series) to keep the housing from rotating further.
6. Rotate the compressor housing so it lines up with the induction manifold or intercooler duct.
7. Tighten the v band nut or bolts to keep the compressor housing from rotating further.
8. Check the alignment of the brackets with attaching supports. Make sure there are not any bending loads applied to the bracket or related supports. It is especially important on the 200 series Cessna installations as the mounting ear of the turbine housing separate from the housing and cause exhaust gas leakage.
9. Remove the turbocharger from the engine and tighten all bolts and v-band nuts. If the airframe and/or engine manual are not available refer to the torque table in these instructions. It must be noted that the values listed in these instructions are secondary to the airframe and/or engine torque recommendations.
10. After achieving proper torque on the turbine housing bolts on 400 series turbochargers you can bend up the locktabs against a flat of the bolt. Bend up such that the locktab is positioned to tighten the bolt.



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### ***PRE-LUBRICATION FOR SHELF STOCK***

ATC recommends this procedure every 6 months for units that are going to be stored on the shelf for future use or sale.

1. Remove protective plug from oil inlet port and fill with clean oil.
2. Apply minimal clean air pressure to inlet port to force oil to the bearing and shaft journals.
3. Rotate wheel several revolutions in each direction to thoroughly coat bearings and journals.
4. Drain excess oil from inlet and outlet port and reinstall protective plugs.
5. Enclose entire unit in poly bag or other protective covering to prevent dust buildup and foreign matter from entering the housings.

REFER TO KELLY AEROSPACE SERVICE INFORMATION LETTER NO A-117 CONCERNING HANDLING THO8A SERIES TURBOCHARGERS. (A copy may be viewed at [www.approvedturbo.com](http://www.approvedturbo.com) or [www.kellyaerospace.com](http://www.kellyaerospace.com))  
THO8A SERIES TURBOCHARGERS THAT ARE AFFECTED BY THE BULLETIN INCLUDE PART NUMBERS 407810-0001, 409170-0001, 465680-0001, 465680-0003, 465680-0004, 465680-0005, 465930-0001, 465930-0002, 407810-0003, 465680-0006 AND 465448-0004 (Turbochargers which are not new may incorporate a "9" after the dash like 407810-9001)



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### ***MOUNTING TURBOCHARGER ON ENGINE***

1. If the engine manufacturer publications indicate an exhaust inlet flange gasket install new gasket.
2. Position turbocharger on exhaust manifold with the same orientation used in Re-Alignment of compressor and turbine housings as mentioned above.
3. Coat the threads of the bolts and/or studs with MRO solution 2000 (previously Fel-Pro C5A) or equivalent, install and tighten the hardware on the mounting flange to the torque values recommended in the engine manufacturer maintenance publications.
4. Inspect oil supply and oil drain lines for kinking, restrictions and other signs of deterioration.
5. Inspect inlet check valves for proper cracking pressure and freedom of flow.
6. Inspect oil drain check valves for proper return spring condition. The check valve "flapper" should return to a closed position when pushed open. Applying air pressure in both directions is not an appropriate check for these valves.
7. Fill the oil inlet port with oil

### **CYA STATEMENT**

The technical information presented in this file for use only to aid properly qualified persons in the maintenance of the equipment covered within and in no way whatsoever replaces or changes the appropriate airframe, engine or turbocharger manufacturer's service publications for the proper procedures on any maintenance performed. All information is furnished solely as a helpful reference and is based on information available to Approved Turbo Components, Inc.