Service Instruction

TAT SI15-02
Issued: 08/16/2015
Revised:
Model: noted below

Models:
Beechcraft 33/35/36 series turbonormalized per STC's SA5223NM and SE5222NM
Cirrus Design SR22 turbonormalized per STC's SA10588SC and SE10589SC
Cessna A185E/F turbonormalized per STC's SA00214DE and SE00215DE
Cessna 177RG turbonormalized per STC's SA4081NM and SE4082NM

COMPLIANCE

RECOMMENDED: Tornado Alley Turbo considers compliance with these Service Instructions to be of assistance to owners in managing maintenance of their aircraft. These instructions are effective on the date of issue.

EFFECTIVITY

All aircraft listed above with Tornado Alley Turbo, Inc. turbonormalizing systems with new or low time turbochargers.

PURPOSE

The purpose of this Service Instruction is to provide maintenance guidance and assistance to owners to mitigate issues with low manifold pressure on new or recently overhauled turbocharger(s).

DESCRIPTION

After installation of a new or overhauled turbocharger and for a short time after installation of a new or overhauled turbocharger rust deposits may build up on the turbine shaft and turbine shaft piston ring seal as a result of water vapor accumulation.

This condition occurs when the turbocharger is new or newly overhauled and heat and normal operation have not yet formed a protective layer on the internal parts that protects them against oxidation.

During periods of prolonged inactivity (typically several days to weeks, and more frequently in humid weather) these deposits from oxidation may cause a restriction so that on initial engine start up, the turbocharger does not spin up.

This condition will normally be detected by the pilot during initial engine full power application on the runway. In that event, the pilot should reduce power and return the aircraft to the ramp for brief maintenance, as described below.

It is recommended that owners operate their aircraft frequently without undue prolonged idle periods of time for the first 100 hours after installation of new or overhauled turbocharger(s) to mitigate the possibility of this issue.

FREQUENCY

This Service Instruction applies to turbonormalized aircraft with low time turbochargers. The procedures listed may need to be performed more than once, depending on engine run time, area humidity conditions, and engine operation procedures.

WARRANTY INFORMATION

Compliance with this Service Instruction is not covered under warranty.

MANPOWER REQUIREMENTS

For removal and replacement of induction tube: One mechanic, ½ hour
For removal and replacement of a tailpipe: One mechanic, 1 hour

WEIGHT AND BALANCE

Weight change: None.

MATERIAL INFORMATION

It is recommended that the nut on the T-bolt be replaced when reinstalling the tailpipe V-band clamp:
1 each per V-band clamp: SPS 72412-428 high temp nut .2500 - 28

Penetrating Oil (if needed):

Kano Aerokroil or
Mouse Milk Penetrating Oil or
WD-40 or
Crown Penetrating and Cleaning Oil or
Sprayon No. 203 Penetrating Oil

TROUBLESHOOTING

When advancing throttle to full power prior to takeoff, if the engine does not achieve its full 29.6 inches or more of manifold pressure, the turbocharger may be sticking due to rust deposits in the area of turbine shaft piston ring seal. This may be accompanied by oil leakage past the turbocharger seal. However, the oil leakage may be due to other factors such as inadequate scavenging caused by leaks in the scavenging line or a malfunctioning check valve at the turbocharger shaft housing inlet or outlet.

ACCOMPLISHMENT INSTRUCTIONS

If the low time turbocharger shows signs of dragging or freezing perform the following steps:

1. Gain access to the turbocharger.
2. Remove ducting to the inlet of the compressor side of the turbocharger.
3. Try turning the turbocharger shaft with your fingers or a wooden dowel to loosen the stuck shaft. The turbine should turn freely. If that frees the turbocharger shaft, reinstall the inlet ducting and go to step 9.

If that doesn't free the turbocharger shaft, then

4. Remove tailpipe.
5. Apply penetrating oil liberally to the area behind the wheel around the turbine shaft seal. Allow penetrating oil a few minutes to loosen the turbine shaft.
6. Attempt to turn the shaft. A light rap on the shaft end with a soft mallet may help free the shaft.
7. Repeat steps 5 and 6 as required.
8. Reinstall tailpipe and compressor inlet duct.
9. Start engine and run at full power to verify turbocharger is providing proper output.

ADDITIONAL INFORMATION

See Continental Motors Service Bulletin M71-21 for Continental Motors' instructions regarding this subject.