



# Service Instruction

TAT SI11-03, Revision None

Issued: 06/28/2011

Model SR22 w/ Turbonormalizer

Installed per STC SA10588SC

And SE10589SC

## COMPLIANCE

**HIGHLY RECOMMENDED:** Tornado Alley Turbo considers compliance with these Service Instructions to be a very important part of the aircraft maintenance program that should not be ignored. These instructions are effective on the date of issue. First inspection should be completed concurrent with the exhaust system inspection of Service Instruction SB11-01. The inspections may occur more often if turbo support system conditions warrant it.

## EFFECTIVITY

All Cirrus Design SR22 aircraft equipped with a Tornado Alley Turbo Inc. Turbonormalizing System installed per STC SA10588SC and SE10589SC.

## APPROVAL

Engine Technologies, Inc., the Turbonormalizing System STC holder, has approved all technical data in this Service Instruction that affect the type design.

## PURPOSE

The purpose of this Service Instruction is to instruct owners of Turbonormalized Cirrus Design SR22 airplanes to have the turbocharger support assemblies inspected on a regular basis to ensure that the turbo system support rods and bolts do not wear to a point of failure.

## DESCRIPTION

The turbocharger support systems on Cirrus SR22 aircraft with the turbonormalizing system installed per STC's SA10588SC and SE10589SC employ spring dampened support structures to accommodate expansion and contraction of the exhaust system as well as normal vibrations experienced during normal operation of the aircraft. Over time, the support rods and bolts and brackets may show signs of wear that is difficult to detect unless the support rods and bolts are disassembled for proper inspection.

## FREQUENCY

The initial turbo system support inspection is recommended to be completed in conjunction with the exhaust system inspections of Service Instruction SB11-01 but not to exceed 450 hours since initial installation of the turbo support system or the last thorough exhaust inspection. Inspection intervals after the initial inspection should coincide with the Service Instruction SB11-01 inspection intervals. Monitor the condition of the turbocharger supports during every maintenance event that requires removal of the cowling and adjust the interval times for this procedure as required.

## WARRANTY INFORMATION

Initial and repetitive inspection labor time is not covered under warranty. The turbo support system parts are considered wear items that need to be replaced based upon condition. If turbo support system is installed and aligned properly, the parts have been shown to last hundreds of hours without signs of wear. However, if turbo support system is misaligned, wear of the turbo support parts may occur quickly and require replacement much sooner depending on the amount of misalignment.

## MANPOWER REQUIREMENTS

For removal, inspection, and installation of turbo support system: One mechanic, 1 to 1½ hours. However, when the turbo system support rods and bolts are inspected in conjunction with the exhaust system inspections of Service Instruction SB11-01, there are no additional manpower requirements.

## WEIGHT AND BALANCE

Weight change: None.

## ACCOMPLISHMENT INSTRUCTIONS

1. Remove compressor ducts from turbochargers to intercoolers to gain access to the turbo support rods and wastegate support bolts.
2. Remove turbocharger support rods and wastegate support bolts on both sides of the turbo system exhaust.
3. Inspect the turbocharger support rods for wear. Inspect the turbo support bracket bushings for wear. Inspect the wastegate support bolts for wear. Inspect the wastegate support bracket bushings for wear.
4. The wear limits for the turbo support system components are listed below. The wear limits only apply to the metal parts, not the heat-shrink wear sleeve on the turbo support rods.
5. Repair or replace metal turbocharger support components as needed. There are no wear limits on the heat-shrink wear sleeve. The heat-shrink may be replaced if desired as shown in Figure 1.
6. Reinstall turbocharger support system and compressor ducts using applicable sections of Report 22-6460006 as a guide (available at [www.taturbo.com/drawings/](http://www.taturbo.com/drawings/)).
7. Verify that all nuts and bolts are torqued to values listed in Instructions for Airworthiness, TATI Report 22-6460004 (also available at [www.taturbo.com/drawings/](http://www.taturbo.com/drawings/)).

Item	Part Number	Wear Limit	Action
Turbocharger support rod	ETI-G2-600-35 Left Hand ETI-G2-600-36 Right Hand	Maximum of .050 inch total wear at any point on metal rod (does not apply to heat-shrink wear sleeve)	Replace with new rod if beyond wear limit or is expected to exceed wear limit before next inspection
Upper rod support bracket bushing	ETI-G2-600-134 Replaced by 22-6200021	Wear must not extend beyond bushing into bracket	If wear does not extend into bracket press out old bushing and press new one in place
Upper rod support bracket assembly	ETI-G2-600-103-1 Replaced by 22-6250005 (2 per engine)	Wear must not extend beyond bushing into bracket	If wear extends beyond bushing into bracket, replace bracket assembly
Wastegate support bracket bushing	ETI-G2-600-134 Replaced by 22-6200023	Wear must not extend beyond bushing into bracket	If wear does not extend into bracket press out old bushing and press new one in place
Wastegate support bracket assembly	ETI-G2-600-103-1 Replaced by 22-6250006 (4 per engine)	Wear must not extend beyond bushing into bracket	If wear extends beyond bushing into bracket, replace bracket assembly
MS21250-05020 (grip length = 1.250) or MS20005-25 (grip length = 1.5625)	Bolt (2 per engine)	Maximum of .050 inch total wear at any point on bolt shank	Replace with new bolt if beyond wear limit or is expected to exceed wear limit before next inspection

## PARTS AVAILABILITY

Contact Tornado Alley Turbo Inc. for replacement turbocharger support system components.

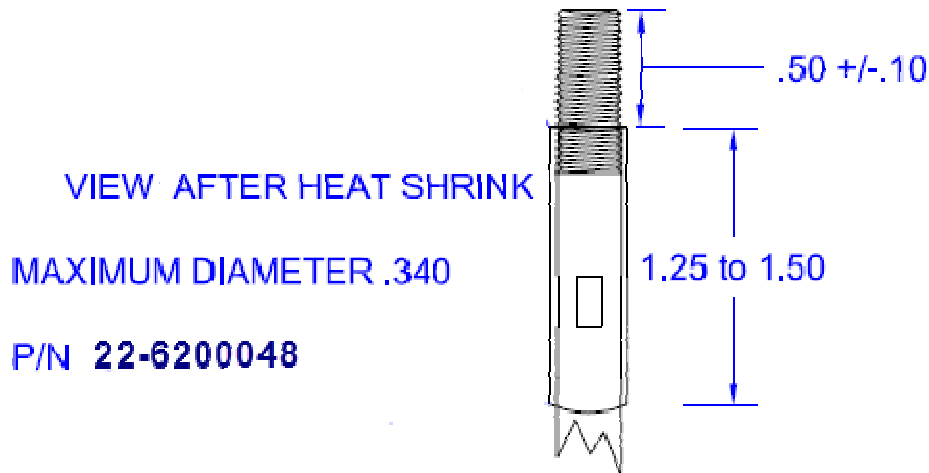


Figure 1  
Heat-Shrink Installation on Turbo Support Rod

The heat-shrink wear sleeve is made of PTFE (Teflon™) – shrink temperature: 650°F ± 25° (340°C ± 5°).

Installation of heat shrink wear sleeve on turbo support rod:

1. Slide 1.50 inch length of tubing over end of rod as shown above.
2. Heat uniformly around the shrink tubing at the shrink temperature listed above until the tubing becomes clear (gel state). It is necessary to heat to the gel state because recovery will not take place unless this is done.
3. Remove the heat source. Allow the shrink tubing to cool slowly. Rapid quenching in water may prevent complete recovery.

If the tubing cracks, you probably over heated the tubing.