



Service Instruction

TAT SI15-01

Issued: 08/16/2015

Revised: 04/01/2022

Model SR22 w/ Turbonormalizer

Installed per STC SA10588SC

And SE10589SC

COMPLIANCE

RECOMMENDED: Tornado Alley Turbo considers compliance with these Service Instructions to be a potential help in remedying consistent overboost issues. These instructions are effective on the date of issue.

EFFECTIVITY

All Cirrus Design SR22 aircraft equipped with a Tornado Alley Turbo Inc. Turbonormalizing System installed per STC SA10588SC and SE10589SC where the wastegate return oil is routed through the manifold pressure controller and scavenged by a pump located either on the accessory case or as part of the starter drive adapter. If the wastegate return oil is routed from the manifold pressure controller directly to the accessory case, this service instruction does not apply. If the oil line from the wastegate actuator outlet to the manifold pressure controller inlet is a -6 size hose, this service instruction does not apply.

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 provide a potential reduction in manifold pressure overshoot on take-off.

DESCRIPTION

The Absolute Pressure Controller and wastegates work in conjunction with each other to provide proper boost pressure to the engine on Cirrus SR22 aircraft with the turbonormalizing system installed per STC's SA10588SC and SE10589SC. The wastegate is actuated using engine oil pressure to operate a small hydraulic cylinder which redirects the engine by-pass exhaust flow around the turbocharger. The absolute pressure controller utilizes an aneroid bellows and spring connected to a valve that regulates the amount of oil flowing out of the wastegate actuator hydraulic control cylinder. If that oil flow out of the wastegate controller is restricted, the wastegate controller may not operate as accurately as desired.

There have been some reports of turbonormalized Cirrus SR22 aircraft overboosting by up to 4 inches manifold pressure on take-off even when the oil is warm. This may be due to the small diameter of the oil line between the wastegate controller and the manifold pressure controller. A larger diameter oil hose in this application may help alleviate the overboost on takeoff. Many turbonormalized SR22 aircraft have a -4 size hose from the wastegate controller oil outlet to the manifold pressure controller oil inlet. Those aircraft may replace that hose with a -6 size hose to potentially reduce manifold pressure overshoot on take-off.

FREQUENCY

This is considered a one-time activity. However, it does not remove the requirement for replacing fluid carrying flexible hoses used in the turbonormalizing system every ten years or sooner depending on condition.

WARRANTY INFORMATION

Compliance with this Service Instruction is not covered under warranty.

MANPOWER REQUIREMENTS

For removal and replacement of oil hose and fittings: One mechanic, 2 hours

WEIGHT AND BALANCE

Weight change: None.

MATERIAL INFORMATION

The following items should be replaced when replacing the wastegate outlet hose:

1 each AE1014037G0200 hose (alternate: 101005-6CR-0200 light weight hose) replaces hose from wastegate outlet to manifold pressure control oil inlet

1 each 6MJ-6MB90 fitting replaces existing oil inlet fitting on manifold pressure controller

1 each AN837-6 45° fitting, AN924-6 nut, and MS28778-6 O-ring replace oil outlet fitting on wastegate actuator

These items may be obtained by ordering Kit No. 22-5680001 from Tornado Alley Turbo, Inc.

TROUBLESHOOTING

When troubleshooting overboost issues refer to the Instructions for Continued Airworthiness, document number 22-6460004, for causes of overboost and actions to remedy them. If all those methods have been tried and the manifold pressure continues to overshoot excessively, then consider replacing the -4 wastegate outlet hose with a -6 hose as detailed in accomplishment instructions of this service instruction. There is no guarantee that replacing the -4 wastegate outlet hose with a -6 hose will prevent overshoot of manifold pressure on take-off. However, it may reduce the amount of overshoot on take-off. Keep in mind that a slight overboost to 32.0 inches of manifold pressure is not considered detrimental to the engine as long as its duration is less than 2 minutes. No corrective action is required when momentary overboost corrects itself and is followed by normal engine operation as the engine warms up.

ACCOMPLISHMENT INSTRUCTIONS

1. Remove cowling.
2. Remove flexible oil line from left hand wastegate actuator oil outlet to the absolute manifold pressure controller oil inlet. Remove fittings from wastegate actuator oil outlet and absolute manifold pressure controller oil inlet.
3. Install 6MJ-6MB90 fitting in absolute manifold pressure controller oil inlet. After orienting fitting in desired direction, tighten nut on fitting to 125 to 145 in-lb.
4. Install AN837-6 45° fitting, AN924-6 nut, and MS28778-6 O-ring in wastegate actuator oil outlet. After orienting fitting in desired direction, tighten nut on fitting to 125 to 145 in-lb.
5. Install new flexible oil line, AE1014037G0200 or 101005-6CR-0200, from left hand wastegate actuator oil outlet to the absolute manifold pressure controller oil inlet.
6. Run engine to check for oil leaks and proper operation of wastegates.
7. Reinstall cowling.