

# ***T-34 Spar Corporation***

## **T-34 AIRFRAME LIFE EXTENSION CABLE SYSTEM**

### **Continued Airworthiness Manual**

This report applies to T-34 Spar Corp. Airframe Life Extension Cable systems per STC SA10362SC.

# T-34 Spar Corporation

## LOG OF REVISIONS

<u>Pages</u>	<u>Revision</u>	<u>Date</u>	<u>Remarks</u>
1-10	NC	06 Apr 10	Initial Release
4,6	A	14 May 10	Cable tension nut now turn 4½ to 4¾ turns – was 4¼ to 4½. Revised inspection intervals. Add bolt and nut replacement every 10,000 hours.
4,6,7	B	01 July 10	Clarify inspection/replacement interval timing
1, 6	C	20 Jul 10	Add STC number and clarify logbook entry
6	D	05 Aug 10	Clarify cable retension interval
6	E	10 Aug 10	Revise cable retension interval

### Revisions

Lettered revisions of this document may be issued periodically. Each revision will cover the entire document. Changes to data in the previous revisions will be identified by revision bars in the outer margins of the pages. Change bars will be shown only against the immediate prior revisions. Extensive changes will not be accompanied by change bars but will be identified on Log of Revisions page under the Remarks section.

### Revision Distribution

The latest revision of this document in its entirety will be posted at [www.taturbo.com/drawings/](http://www.taturbo.com/drawings/)

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### Referenced Instructions for Continued Airworthiness and other Publications

The latest revision to the following publications should be used in conjunction with this manual:

<b>Vendor</b>	<b>Manual Title</b>	<b>Part Number</b>
T-34 Spar Corporation	Installation Instructions For T-34, T-34A, And T-34B Main Wing Spar Lower Wing Bolt Replacement And Tension Cable Per T-34 Spar Corp. AMOC To AD 2004-25-51	45-6460002
T-34 Spar Corporation	T-34A/B Main Spar Carry-through Rotating Probe, Bolt-hole Eddy Current Inspection Procedure and Cold Work	TSC 3507
T-34 Spar Corporation	T-34A/B Main Spar Carry-through Surface Eddy Current Inspection Procedure	TSC 3505

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## AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations Section is FAA approved and specifies inspection and maintenance required under paragraphs 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

Every 2900 hours of accumulated flight time: Perform "Surface" eddy current inspection in accordance with T-34 Spar Corp. TSC-3505.

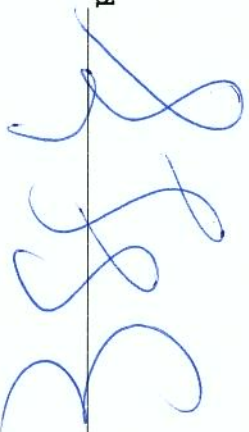
Every 2900 hours of accumulated flight time: Perform "Bolt Hole" eddy current inspection in accordance with T-34 Spar Corp. TSC-3507.

The lower front spar wing attach bolts and nuts, T-34 Spar Corporation Part Numbers 45-133A and 45-132, are life limited and must be replaced on or before accumulating 10,000 hours of flight time. This a repetitive requirement.

All inspection interval and replacement times are referenced from initial installation of ALEC system. Each subsequent inspection or replacement interval time is referenced from time of last inspection or replacement time.

**A. There are no other limiting inspections and/or maintenance items.**

FAA Approved



Date

8.27.10



# ***T-34 Spar Corporation***

## **ALEC SYSTEM DESCRIPTION**

T-34 Spar Corp has developed a tension cable system to be installed in the lower front spar carry through structures of the Hawker Beechcraft T-34 aircraft, Models 45 (YT-34), A45 (T-34A, B-45), and D45 (T-34B). The tension cable system is intended to reduce tension loading and to also produce beneficial compression stresses at identified critical fastener holes in the center fuselage carry through structure. The results of the cable installation is to extend the life of the spar carry through structure in order to eliminate the restrictions placed upon the structure by AD 2004-25-51.

Specific modifications to the fuselage wing carry through structure include the replacement of OEM 160-180 ksi carbon steel bolt system (bolt nut combination) with a modified 220 ksi Inconel 718 bolt system (new bolt nut combination). These are tension bolts used to attach the lower wing main spars to the fuselage center section carry through structure. These tension bolts have holes through the length of the bolts for the ALEC cable to pass through. The pre-tensioned ALEC cable is designed to apply approximately 7,500 pounds of compressive pre-loading to the center spar carry through structure. The intent of the modification is to lower the peak cyclic maximum tension stress through the front center spar carry through structure. The pre-loading is further supplemented during aircraft maneuver loading so that when the airframe experiences a six (6) g "event" the lower spar carry through structure will have approximately 10,000 to 12,000 lbs of load carried by the tension cable that would otherwise pass through the front center spar carry through structure.

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## MAINTENANCE PRACTICES

### TIME LIMITS AND MAINTENANCE CHECKS

Airframe Group	Interval		Initials
	100 hrs	Special	
1. Visually inspect the carry through structure	X		
2. Visually inspect the forward and aft webs and high shear fasteners of the forward spar carry through structure	X		
3. Visually inspect the lower belly skins for any signs of loose or missing rivets, deformed or buckling skins or any other signs of failure.	X		
4. Visually inspect all wing bolt bath tub fittings for corrosion, cracks or any other sign of failure and to make sure that the drain holes of the upper bathtub fittings are unobstructed.	X		
5. Inspect the outside fuselage skins above the top wing skin in the area of the forward and aft carry thru structure for missing or loose rivets, deformed or buckling skins or any other signs of failure.	X		
6. Perform "Surface" eddy current inspection in accordance with T-34 Spar Corp. TSC-3505		Every 2900 hours	
7. Perform "Bolt Hole" eddy current inspection in accordance with T-34 Spar Corp. TSC-3507		Every 2900 hours	
8. De-tension the ALEEC cable tension nut in one of the bathtub fittings and re-apply 50-in-lbs of torque and then turn the nut 4½ to 4¾ turns in accordance with T-34 Spar Corp. ALEEC Installation Instructions, 45-6460002. Alternate this on the right and left side each time this is performed. Re-install safety wire as outlined in T-34 Spar Corp. ALEEC Installation Instructions, 45-6460002. Report any cables found to be loose to T-34 Spar Corp. before de-tensioning of the tension nut. Record which tension nut (right or left) was retorqued in the aircraft logbook each time ALEEC cable is retensioned.		Every 3 <sup>rd</sup> annual inspection, or 300 hours of accumulated flight time, whichever occurs first	
9. Replace 45-133A bolts and 45-132 nuts. Install new nuts and bolts in accordance with T-34 Spar Corp. ALEEC Installation Instructions, 45-6460002.		On or before accumulation of 10,000 hours flight time.	

All service, inspection, and replacement interval times are to be referenced from initial installation of ALEEC system. Each subsequent service, inspection, or replacement interval time is referenced from time of last service, inspection, or replacement time.



# **T-34 Spar Corporation**

## **ALEC REMOVAL AND REINSTALLATION**

Under normal operations there is no need to remove the ALEC system or its components. On the occasion that a wing or the wings are removed, or for the performance of the "Surface" eddy current inspection and the "Bolt Hole" eddy current inspection listed in this document, detension the ALEC cable prior to removal of the wing(s) or performance of the inspections. Applicable portions of instructions below for Wing Removal, Wing Installation, and Adjustments also apply to displacement of ALEC for proper access to the areas of inspection for the "Surface" eddy current inspection and the "Bolt Hole" eddy current inspection.

Remove wings in accordance with the appropriate T-34 Maintenance Manual.

### **A. Wing Removal**

- 1) Remove lower forward wing mounting bolt access plates to gain access to the ALEC cable bolts.
- 2) Remove safety wire and detension the ALEC cable tension nut.
- 3) Remove the tension nut and collar from the active end.
- 4) Remainder of steps is the same as those listed in the appropriate T-34 Maintenance Manual.
- 5) The ALEC cable may remain loose inside the lower spar center carry through section until the wing(s) are reinstalled.

### **B. Wing Installation**

- 1) Reinstall the wing as outlined in the appropriate T-34 Maintenance Manual except use the wing attachment hardware of the ALEC system in the front spar lower wing attachments.
- 2) Install and adjust ALEC system in accordance with T-34 Spar Corp. ALEC Installation Instructions, 45-6460002.

**Torque values are located in T-34 Spar Corp. ALEC  
Installation Instructions, 45-6460002.**

### **C. Adjustments -Post Wing Installation**

There are no further adjustments required prior to or after first flight after reinstallation of ALEC system as long the installation and adjustments have been made in accordance with T-34 Spar Corp. ALEC Installation Instructions, 45-6460002.