Instructions for Continued Airworthiness

of:

T3 Tailwheel Suspension Systems

Manufactured by ABI, LLC

Doc No.: ABI-DST3-ICA

REV C

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List of Revisions

Revision	Date	Page	Description
-	1/13/2017	ALL	Initial Release
A	7/18/2019	5	Updated 4.1.2 and 4.1.3
B	11/30/2022	8	Added Section 5 (Troubleshooting) and Section 6 (Airworthiness Limitations)
C	12/29/2023	4 5 8	Added Figure 1, removed pre-flight comments. Removed comments that might suggest field adjustments from factory settings. Clarified Section 4.1. Removed pilot pre-flight requirements. Added Section 4.2 to clarify the 100 / Annual Inspection tasks Added clarity to troubleshooting table regarding spring travel.

1 Introduction

This manual addresses the instructions for continued airworthiness for the dual coil-over shock variants of the T3 Tailwheel Suspension System. It is published for the guidance of qualified maintenance personnel responsible for the installation and continued airworthiness of a dual shock T3 Tailwheel Suspension System.

1.1 Purpose

This manual provides the necessary procedures to accomplish the continued airworthiness of an ABI, LLC dual shock T3 Tailwheel Suspension System. The manual should be retained by the owner or the maintenance facility for future reference.

2 Applicability

The dual shock ABI, LLC T3 Tailwheel Suspension System is applicable to the aircraft models listed in the ABI, LLC Approved Model List, ABI-DST3-AML. Each aircraft model will have a corresponding ABI, LLC part number for the approved assembly that it is compatible with.

3 Equipment Description

The suspension system consists of a coil-over style tail spring assembly as a direct replacement for the leaf spring style tail springs currently used. The design features dual coil springs and oil shocks that work in tandem to absorb landing energy and reduce rebound. The result is less stress on the fuselage and improved aircraft control on landing rollout, take off, and taxi.

The suspension system incorporates structural mounting brackets and side fixture plates to provide a stable basis upon which the suspension system operates. Standard AN hardware is used to fasten the assembly together and to secure the assembly to the fuselage. There are two adjustable portions of the assembly, one is the pre-load, and the other is the rebound (Figure 1). The pre-load is adjusted by turning the spring perch nut to either compress or extend the spring's static length. Rebound damping is adjusted by turning the adjustment knob at the top of the shock. Both settings are preset at the optimum setting from the factory and are not intended to be adjusted.

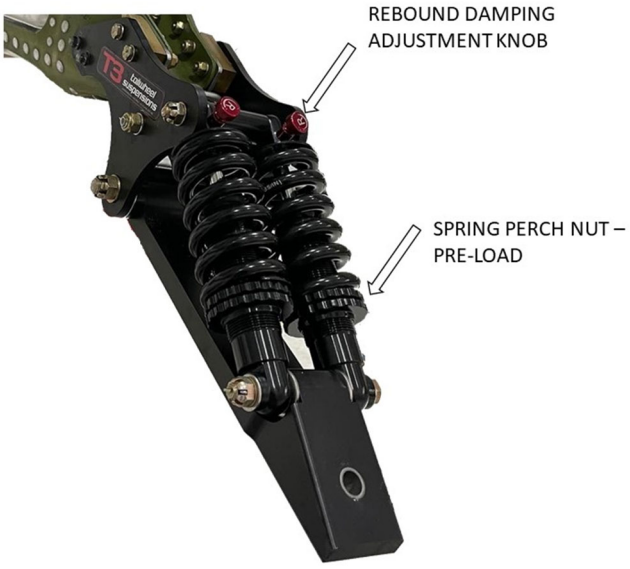

Figure 1: Shock Adjustment Locations

4 Instructions for Continued Airworthiness

This section is designed to provide aircraft technicians with sufficient information to inspect, troubleshoot, adjust, repair, test and remove the dual shock T3 Tailwheel Suspension System.

4.1 100 hour / Annual Inspection

4.1.1 Visually inspect the T3 Suspension Assembly to ensure that all fasteners are secure; there is no corrosion, cracks, or visible damage. Any indication of these requires the spring assembly to be further inspected in accordance with the Inspection & Repair procedures presented below. No routine lubrication of the assembly is necessary.

4.1.2 Verify that the preload nut has not loosened by grabbing the spring and checking that there is no free play up and down between the coil spring and the spring perches. Looseness from the nut could result in the spring no longer being held captive to the spring perch.

4.1.3 Visually verify that the factory settings of the suspension system are maintained during annual inspections or anytime system performance is suspect . Factory settings are listed below:

Rebound Damping: The preset factory setting for shock rebound is for the knob to be turned all the way to “Slow” or negative “-“ and then backed off one click in the “Fast” or positive “+” direction.

Preload: Factory preload is set with the lower spring perch preload nut tightened up to its initial engagement with the spring plus one additional full turn. This setting is set in the unloaded condition, not while the plane is resting with weight on the tail.

4.1.4 Inspect and service the T3 Suspension Assembly in accordance with the Inspection and Repair procedures laid out in this document. It is recommended to check these adjustments with the tail lifted off the ground or while the T3 Tailwheel Suspension System is uninstalled from the aircraft to verify the settings are maintained.

4.1.5 For replacement parts, contact the manufacturer using the contact information listed in Section 5.

4.2 Remove T3 Tailwheel Suspension System from Aircraft

The dual shock T3 Tailwheel Suspension System is removed from the aircraft as a unit in the same manner as the original leaf spring. It retains the factory attachment points and steering mechanisms.

For detailed instructions, refer to the specific ABI, LLC Installation Instruction document listed for your aircraft and T3 Tailwheel Suspension System combination from document ABI-DST3-AML. Verify that any special conditions for tailspring removal are also followed as listed in your specific aircraft's maintenance manual.

4.3 T3 Tailwheel Suspension System Disassembly

4.3.1 Remove all cotter pins, castle nuts, nylon lock nuts, and bolts; ensure each fastener stack is kept separate.

4.3.2 Pull side plates apart from shock and swing arm.

4.4 T3 Tailwheel Suspension System Inspection and Repair

4.4.1 Inspect all parts for corrosion or non-cosmetic wear. Any parts that do not pass a visual inspection require replacement. For replacement parts, contact the manufacturer using the contact information listed in Section 5.

4.4.1.1 To check shock damping effectiveness while T3 Suspension System is installed on aircraft: Turn the adjustment knob all the way to "Slow" or Negative "-" (the most damped case). Lift the tail of the empty aircraft to waist-height and drop it. The coil spring within the T3 Suspension System should compress and then return to its original static position within 1 to 2 oscillations depending on the application. If the tail bounces for more than two oscillations, then the shock should be replaced.

4.4.1.2 The bushings pressed into the side plates at the pivot points should be inspected for wear. If bushing I.D. has worn to larger than .010" above nominal bolt size for that attach point, then ABI, LLC recommends replacement of bushing.

4.5 Assemble T3 Tailwheel Suspension System

4.5.1 Inspect all hardware and parts for corrosion, non-cosmetic wear or damage. Do not assemble the T3 Suspension System with any parts that do not pass a visual inspection.

4.5.2 To verify all parts are present, follow the exploded diagram shown in the specific ABI, LLC Installation Instruction document for your aircraft model shown in document ABI-DST3-AML. Assemble according to the appropriate diagram and torque all bolts in accordance with Appendix A, aside from the two bolts that locate the fuselage attach brackets. These two can be torqued only hand-tight until installed on aircraft to ease in lining up the attach holes. At which point, they are to also be torqued to the appropriate value in shown in Appendix A.

4.6 Install T3 Tailwheel Suspension System Back onto Aircraft

The T3 Tailwheel Suspension System is installed as a unit in the reverse order as it was removed in Section 4.2.

For detailed instructions, refer to the specific ABI, LLC Installation Instruction document listed for your aircraft and T3 Tailwheel Suspension System combination from document ABI-DST3-AML. Verify that any special conditions for tailspring installation are also followed as listed in your specific aircraft's maintenance manual.

5 Troubleshooting

The following steps are to aid in identifying installation or unit performance related issues.

Problem	Cause	Remedy
No rebound damping	Incorrect rebound setting	Adjust rebound damping to factory specifications per Section 4.1.2
	Damaged shock(s)	Replace shock(s)
Springs bottom out or provide none to limited travel	Incorrect spring pre-load	Adjust spring pre-load to factory specifications per Section 4.1.2.
	Damaged or broken spring(s)	Replace spring(s)
T3 suspension assembly moves with respect to airframe	Loose or damaged mounting hardware	Remove and replace damaged hardware. Inspect components and aircraft structure visually for cracks, damage, or deformation.
	Damaged T3 Suspension System attachment components.	Replace damaged T3 Suspension System components.
	Damaged aircraft tailwheel attach structure.	Inspect aircraft structure visually for cracks, damage, or deformation. Repair aircraft structure in accordance with AC43.13-1B

6 Airworthiness Limitations

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. There are no new (or additional) airworthiness limitations associated with T3 Tailwheel Suspension Systems

7 Document Distribution

Copies of this document will be distributed to all known purchasers of the T3 Tailwheel Suspension System. Replacement copies and the latest revision of this document are available on the Airframes Alaska website or by using the following contact information below.

Website: www.airframesalaska.com

To request a paper or electronic copy to be sent to you please contact:

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Chugiak, AK 99567

Phone: 907-331-4480

8 Appendices

8.1 Appendix A – Bolt Torque Specifications

CAUTION THE FOLLOWING TORQUE VALUES ARE DERIVED FROM OIL FREE CADMIUM PLATED THREADS.				
	TORQUE LIMITS RECOMMENDED FOR INSTALLATION (BOLTS LOADED PRIMARILY IN SHEAR)		MAXIMUM ALLOWABLE TIGHTENING TORQUE LIMITS	
Thread Size	Tension type nuts MS20365 and AN310 (40,000 psi in bolts)	Shear type nuts MS20364 and AN320 (24,000 psi in bolts)	Nuts MS20365 and AN310 (90,000 psi in bolts)	Nuts MS20364 and AN320 (54,000 psi in bolts)
FINE THREAD SERIES				
8-36	12-15	7-9	20	12
10-32	20-25	12-15	40	25
1/4-28	50-70	30-40	100	60
5/16-24	100-140	60-85	225	140
3/8-24	160-190	95-110	390	240
7/16-20	450-500	270-300	840	500
1/2-20	480-690	290-410	1100	660
9/16-18	800-1000	480-600	1600	960
5/8-18	1100-1300	600-780	2400	1400
3/4-16	2300-2500	1300-1500	5000	3000
7/8-14	2500-3000	1500-1800	7000	4200
1-14	3700-5500	2200-3300*	10,000	6000
1-1/8-12	5000-7000	3000-4200*	15,000	9000
1-1/4-12	9000-11,000	5400-6600*	25,000	15,000
COARSE THREAD SERIES				
8-32	12-15	7-9	20	12
10-24	20-25	12-15	35	21
1/4-20	40-50	25-30	75	45
5/16-18	80-90	48-55	160	100
3/8-16	160-185	95-100	275	170
7/16-14	235-255	140-155	475	280
1/2-13	400-480	240-290	880	520
9/16-12	500-700	300-420	1100	650
5/8-11	700-900	420-540	1500	900
3/4-10	1150-1600	700-950	2500	1500
7/8-9	2200-3000	1300-1800	4600	2700
The above torque values may be used for all cadmium-plated steel nuts of the fine or coarse thread series which have approximately equal number of threads and equal face bearing areas. * Estimated corresponding values.				

*Table from AC 43.13-1B, Table 7-1, Page 7-9