

ABI-51526  
Glasair Sportsman  
T3 Tailwheel Suspension System  
Installation Instructions

Installation Instructions for  
**Glasair Sportsman**  
**T3 Tailwheel Suspension System**

**P/N: ABI-51526**

Manufactured by ABI, LLC



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**List of Revisions**

<b><u>Revision</u></b>	<b><u>Date</u></b>	<b><u>Page</u></b>	<b><u>Description</u></b>
-	5/31/2018	ALL	Initial Release
A	10/4/2018	ALL	Updated the attachment of the saddle instructions and assembly drawing.

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## 1 Introduction

This manual addresses the installation instructions for the Glasair Sportsman T3 Tailwheel Suspension System, P/N ABI-51526. It is published for the guidance of qualified maintenance personnel responsible for the installation and continued airworthiness of a T3 Tailwheel Suspension System.

### 1.1 Purpose

This manual provides the necessary procedures to accomplish the installation of the ABI, LLC T3 Tailwheel Suspension System, P/N ABI-51526 onto a Glasair Sportsman. The manual should be retained by the owner or the maintenance facility for future reference.

## 2 Kit Components

The ABI, LLC T3 Tailwheel Suspension System assembly contains all the components required to replace the existing tail spring on a Glasair Sportsman. The ABI-51526 assembly is shown in Appendix A.

## 3 Applicability

The ABI, LLC T3 Tailwheel Suspension System, P/N ABI-51526 is applicable to the Glasair Sportman.

## 4 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 a coil spring and an oil shock 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. 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. 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

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not intended to be adjusted. Pilots should regularly check to verify the factory settings are maintained during routine pre-flight inspections.

## 5 Installation Instructions

### 5.1 Remove Existing Equipment

- 5.1.1** Chock the aircraft's front tires and lock brakes so the aircraft cannot roll
- 5.1.2** Properly raise the aircraft tail off the ground following the airframe manufacturer's instructions.
- 5.1.3** Unbolt existing tail spring from fuselage.
- 5.1.4** Disconnect the steering chains and spring from the rudder horn.
- 5.1.5** Remove existing tail spring assembly from airplane.
- 5.1.6** Remove the bolt securing the tailwheel assembly to the spring and inspect for wear. ABI, LLC recommends replacing any hardware that appears to have any non-cosmetic wear or damage.

### 5.2 Install T3 Tailwheel Suspension System

- 5.2.1** Laminate over the existing aft tail spring bolt holes and the tail strike wheel holes (if present), according to the airframe manufacturers guidelines.
- 5.2.2** Install an appropriate length AN6 bolt through the slot and bushing of the T3 forward attachment block (Items No. 2 and 26) and into the aircrafts mounting bracket. Tighten the bolt with a MS21044N6 nut until snug. Do not fully torque just yet.
  - 5.2.2.1** If the mounting bracket is too worn an AN7 bolt may be used if the slot bushing is removed. In this case, a larger hole may need to be drilled and a MS21044N7 nut will be used. Insure there are two threads protruded past the nut when fully torqued in either case.
- 5.2.3** Support the aft portion of the T3 Tailwheel Suspension System against the tail.
- 5.2.4** Match drill the two holes of the saddle mount (Item No. 1) to the fuselage. Use a new 5/16-inch drill bit and apply minimal pressure. Make sure the forward and rear mount of the T3 is aligned and centered on the aircraft.

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- 5.2.5** Use an AN5 bolt, AN970-5 washer on the inside of the tail, and MS21044N5 nut to fasten the saddle mount to the tail. AN5-16A bolts are provided but longer bolts may be needed depending on the thickness of the tail. Again, insure there is two threads protruded past the nut in either case.
- 5.2.6** Torque both the forward and two rear attachment bolts. Use torque specs as listed in Appendix B. Torque all other bolts in the T3 assembly to spec as well. Bolts are shipped with minimum torque to allow free rotation of the brackets to ensure ease of aligning attachment holes with those on the fuselage.
- 5.2.7** Reinstall the tailwheel assembly to the T3 suspension system.
- 5.2.8** Attach tailwheel steering chains to rudder steering horns. Use the additional length of chain provided in the optional install kit as necessary to achieve proper installation length. Steering chains should be just slack while in the statically loaded position with the tailwheel resting on the ground (also check chain tension with tail unloaded in the air to make sure the spring extension doesn't cause too much tightness and resistance in the rudder controls).
- Note: ABI, LLC recommends the use of a bent tailwheel steering arm in conjunction with the T3 Tailwheel Suspension System for optimum steering chain angle.
- 5.2.9** Verify all hardware is tightened to the torque specs shown in Appendix B.
- 5.2.10** Verify all castle nuts are secured with a cotter pin.
- 5.2.11** Ensure the tailwheel has no lateral free movement. If lateral movement is not eliminated by torqueing the tailwheel attach bolt per Appendix B, then remove the tailwheel assembly from the T3 Suspension System and install optional ABI, LLC tailwheel head shims (ABI-51270) as needed to ensure a tight fit. Reassemble and re-torque tailwheel head attach hardware.
- 5.2.12** Lower the aircraft to the ground.

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### 5.3 Weight and Balance Computation

The Glasair Sportsman T3 weighs approximately 6.8 lbs. Revise weight and balance. Make any necessary log book and maintenance record entries.

## 6 Document Distribution

Copies of this document will be distributed to all known purchasers of the T3 Tailwheel Suspension System, P/N ABI-51526. 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](http://www.airframesalaska.com)

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

Airframes Alaska  
PO Box 670989  
20130 Birchwood Spur Road  
Chugiak, AK 99567

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# 7 Appendices

## 7.1 Appendix A – ABI-51526 Assembly Drawing

**NOTES:**

- BUSHINGS (8) AND (21) ARE PRESS-FIT INTO SIDE PLATE (5) PRIOR TO ASSEMBLY. LIKEWISE (7) AND (22) INTO SWINGARM (4).
- ALL CASTLE NUTS MUST HAVE COTTER PINS WHEN INSTALLED (PINS NOT SHOWN VISUALLY).
- DOUBLE UP WASHERS AS NEEDED TO LINE UP COTTER PIN HOLE WITH CASTLE NUT.
- IT IS PERMISSIBLE TO SUBSTITUTE "THICK" AND "THIN" WASHERS AS NEEDED TO ACHIEVE A MINIMUM OF TWO THREAD PROTRUSION ON NYLON LOCKNUTS, AND ONE THREAD ON CASTLE NUTS.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	ABI-51534	T3 - GLASAIR SPORTSMAN AFT FUSELAGE ATTACH BLOCK	1
2	ABI-51535	T3 - GLASAIR SPORTSMAN T3 SWINGARM FUSELAGE ATTACH BLOCK	1
3	ABI-51537	OPTIONAL: T3 - GLASAIR SPORTSMAN TAILWHEEL HEAD SPACER BRACKET	1
4	ABI-51536	T3 - GLASAIR SPORTSMAN SWINGARM	1
5	ABI-51518	T3 - GLASAIR SPORTSMAN SIDE PLATE	2
6	REF-51343	WASHER, OVERSIZED, 3/8" ID.	2
7	REF-51542	OILED BRONZE BUSHING 9/8" ID, 1/2" OD, 3/4" LG	2
8	REF-51256	OILED BRONZE BUSHING 3/8" ID, 1/2" OD, 1/4" LG	2
9	REF-51539	WASHER, OVERSIZED, 5/16" ID	2
10	ANS-254	ANS BOLT, UNDERDRILLED	1
11	NAS11149R0548P	THICK WASHER FOR ANS, PLATED STEEL	8
12	MS2104ANS	ANS NYLON INSERT LOCKNUT	3
13	ABI-51370	T3-WIN CUT SHOCK BUSHING ASSY	2
14	ANS-25	ANS BOLT, DRILLED FOR COTTER PIN	1
15	ANS11149F0648P	THICK WASHER FOR ANS, PLATED STEEL	2
16	REF-51254-3	T3 TW SUSPENSION COLLAR ASSY, 1200 LBS	2
17	ANS10-5	ANS CASTLE NUT	1
18	ANS10-5	ANS CASTLE NUT	2
19	REF-51540	WASHER, OVERSIZED, 5/16" ID, .688 OD	6
20	ANS-42	ANS BOLT, DRILLED FOR COTTER PIN	2
21	REF-51257	OILED BRONZE BUSHING, 5/16" ID, 3/8" OD	2
22	REF-51541	OILED BRONZE BUSHING, 5/16" ID, 3/8" OD, 3/4" LG	2
23	ANS-24A	OPTIONAL: AN8 BOLT, UNDERDRILLED	1
24	MS2104ANS	OPTIONAL: AN8 NYLON INSERT LOCKNUT	1
25	ANS-60-31-6L	OPTIONAL: THIN WASHER FOR AN8	2
26	ABI-51543	OPTIONAL: 7/16 TO 3/8 BOLT SPACER	1
27	ANS-16A	OPTIONAL: ANS BOLT, UNDERDRILLED	2
28	ANS-970-5	UNLESS OTHERWISE SPECIFIED	2

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REVISIONS

DATE: 5/18/2018

APPROVED

SCALE: 1:3

WEIGHT:

SHEET: 1 OF 1

TITLE: GLASAIR SPORTSMAN T3 TW SHOCK  
 DRAWING NO.: ABI-51526  
 REV: -

COMMENTS:

THIS DRAWING IS THE PROPERTY OF BUSHWHEELS. IT IS TO BE USED ONLY FOR THE PURPOSES SPECIFIED. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF BUSHWHEELS.

DO NOT SCALE DRAWING



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## 7.2 Appendix B – Bolt Torque Specifications

<b>CAUTION</b>				
<b>THE FOLLOWING TORQUE VALUES ARE DERIVED FROM OIL FREE CADMIUM PLATED THREADS.</b>				
		<b>TORQUE LIMITS RECOMMENDED FOR INSTALLATION (BOLTS LOADED PRIMARILY IN SHEAR)</b>	<b>MAXIMUM TORQUE LIMITS</b>	<b>ALLOWABLE TIGHTENING</b>
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)
<b>FINE THREAD SERIES</b>				
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
<b>COARSE THREAD SERIES</b>				
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
<p>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.</p> <p>* Estimated corresponding values.</p>				

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