INSTALLATION INSTRUCTIONS

and

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

for the installation of

ABI-180/185 TAIL GEAR ASSEMBLY

for

CESSNA AIRCRAFT
SERIES 180 & 185

Doc No.: ABI 12-5 – REV A
7/10/2014

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ABI 180/185
TAIL GEAR ASSEMBLY
INSTALLATION AND ICA MANUAL

LIST OF REVISIONS

Revision	Date	Page	Description
IR	11-20-2013		Initial Release
A	7-10-14	All	ABI LLC update, - Added lubrication detail to para. 5.2.10. - Updated parts list page 4 and Figure 1.

1.0 INTRODUCTION

This manual addresses the installation and instructions for continued airworthiness for the ABI 180/185 Tail Gear Assembly. It is published for the guidance of qualified maintenance personnel responsible for the installation and/or continued airworthiness of an ABI LLC Tail Gear Assembly on Cessna Series 180 and 185 aircraft.

1.1 PURPOSE

This manual provides the necessary procedures to accomplish the installation and continued airworthiness of an ABI Tail Gear Assembly. The manual should be passed on to the owner or retained by the maintenance facility for future reference.

2.0 180/185 TAIL GEAR COMPONENTS

The ABI Tail Gear Assembly contains all the components required to replace the existing tail gear for one aircraft. The ABI 180/185 Tail Gear Assembly contains the following components (See Figure 1 at the end of this document: ABI-0742152 Tail Gear Assembly):

ABI 0742152 Tail Gear Assembly Parts List

Part Number	Description	Qty.	Reference
ABI-0742152-2	Tail Gear Spring	1	Fig. 1
ABI-0742146-10	Saddle Assembly	1	Fig. 1
ABI-0742150-2	Saddle Tube-Long	1	Fig. 1
ABI-0742151-1	Spring Stopper	1	Fig. 1
ABI-0742112	Bushing	2	Fig. 1
ABI-0742100-6	Washer	AR	Fig. 1
ABI-0742179-1	Washer	2	Fig. 1
NAS6205-31	Bolt	2	Fig. 1
AN960-516L or NAS1149F0532P	Washer	4	Fig. 1
MS21042-5	Nut	2	Fig. 1
MS20392-1C33	Clevis Pin	2	Fig. 1
MS24665-134	Cotter Pin	2	Fig. 1

3.0 APPLICABILITY

The ABI 180/185 Tail Gear Assembly is applicable to the following aircraft:

Make	Models
Cessna	180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K
Cessna	185, 185A, 185B, 185C, 185D, 185E, A185E, A185F

4.0 180/185 TAIL GEAR ASSEMBLY DESCRIPTION

The ABI 180/185 tail spring is functionally identical to the OEM parts with the exception of the increased end diameter for the older model aircraft and the change in spring angle from 14.5° to 16.5°. The purpose of these changes is to provide an approved means of installing the heavier duty spring on the older aircraft and to reduce the incidence of tail wheel shimmy problems with this installation. The installation of the ABI spring is identical to the OEM parts and no changes to the maintenance manual are required.

5.0 INSTALLATION INSTRUCTIONS

5.1 REMOVE EXISTING TAIL GEAR ASSEMBLY

5.1.1 Place a suitable padded stand under the aft fuselage to raise the tail gear off the ground.

5.1.2 Disconnect the steering cables from the tail-wheel assembly (not included in the ABI 180/185 Tail Gear Assembly.

5.1.3 Remove the tail cone from the fuselage.

5.1.4 Remove the cotter pins that retain the clevis pins in the saddle tube.

5.1.5 Remove the clevis pins that retain the saddle tube.

5.1.6 Remove the saddle tube.

5.1.7 Remove the tail gear assembly from the fuselage.

5.1.8 Remove the tail wheel assembly from the tail gear.

5.1.9 Retain the tail wheel assembly to be reused with the new ABI 180/185 Tail Gear Assembly (not included with the ABI 180/185 tail gear assembly). If the tail wheel assembly is not combatable with a 1-1/8" diameter tail spring, a new tail wheel head will be needed that can accommodate the new 1-1/8" spring.

5.2 INSTALL NEW ABI 180/185 TAIL GEAR ASSEMBLY

Assemble the new ABI 180/185 tail gear assembly according to ABI-0742152 (page 10).

5.2.1 Ensure that the fuselage aft structure is sound including the castings that support the saddle and saddle tube as well as the receptacle that supports the end of the tail spring. Remove any and all dirt, corrosion, and contaminates from these areas.

5.2.2 Insert the spring stopper (ABI-0742151-1) onto the end of the tail spring that does not have bolt through holes (ABI-0742152-2). Ensure that the stopper is fully seated onto the spring.

5.2.3 Bolt the saddle assembly (ABI-0742146-10) onto the spring (ABI-0742152-2) as shown in Figure 1. Use the (2) NAS6205-31 bolts supplied with the assembly along with the (4) NAS1149F0532P washers and (2) MS21042-5 nuts supplies with the assembly. Torque the bolts to 160 in-lbs.

5.2.4 Insert both angled Bushings (ABI-0742112) into the fuselage aft saddle castings so that the bushings are flush with the exterior of the aircraft.

5.2.5 Insert the assembled spring assembly into the spring receptacle in the aft fuselage, ensure that it is seated to the stop.

5.2.6 Insert the (2) thick ABI-0742179-1 washers between the spring saddle and the casting on the aft fuselage (one on each side).

5.2.7 Insert as many ABI-0742100-6 washers as necessary to fill in the gap between the thick ABI-0742179-1 washers and the fuselage saddle castings. Note: it is possible that no washers will be required.

5.2.8 Insert the saddle tube (ABI-0742150-2) through the aft fuselage saddle castings. Note ensure that the clevis holes in the saddle tube align with the clevis holes in the saddle.

5.2.9 Insert the (2) MS20392-1C33 clevis pins through the saddle and saddle tube to ensure that the saddle tube is retained. Capture each clevis pin with a MS24665-134 cotter pin to retain the clevis pin.

5.2.10 Mount the removed tail wheel assembly onto the new tail gear assembly.

CAUTION! LUBRICATE UNPAINTED END OF TAIL SPRING WITH RUST PREVENTATIVE OIL OR GREASE BEFORE INSTALLING TAIL WHEEL ASSEMBLY. THIS WILL HELP PREVENT FUTURE CORROSION AND GALLING OF THE ALUMINUM DURING INSTALLATION.

5.2.11 Re-attach the steering cables onto the tail wheel assembly. Ensure that the tail wheel rotates freely and that the tail gear assembly is secure.

5.2.12 Re-assembly the tail cone assembly to the aft fuselage.

5.2.13 Lower the aft fuselage and remove the padded stand.

5.3 WEIGHT AND BALANCE COMPUTATIONS

Weigh the tail gear assembly that was removed. Subtract from new weights to derive weight increase/decrease created by the ABI 180/185 tail gear assembly installation. Multiply weight increase/decrease by applicable aircraft moment and revise weight and balance information in the aircraft records.

5.3.1 WEIGHT AND BALANCE DATA

ABI 180/185 tail gear assembly installed weight: 11.13 LBS

6.0 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

This section is designed to provide aircraft technicians with sufficient information to inspect and repair the ABI 180/185 tail gear assembly

6.1 INSPECTION BEFORE FLIGHT

6.1.1 Prior to each flight, visually inspect the tail gear assembly to ensure that there is no excessive corrosion, cracks or other visible damage. Any indication of these would require the tail gear assembly to be further inspected in accordance with the Inspection and Repair procedures presented below.

6.1.2 At each 100 hour and annual inspection, inspect and service the tail gear assembly in accordance with the Inspection and Repair procedures in Section 6.2.

6.2 TAIL GEAR INSPECTION AND REPAIR

6.2.1 Inspect the spring assembly for corrosion, cracks, nicks or other physical damage. Obvious cracks and severe corrosion are cause for rejection of the part. A further inspection using the dye penetrant method should be performed on any part whose serviceability is questionable. Small nicks, scratches and pits may be blended out and polished with fine (400 grit) sandpaper and then painted for corrosion resistance.

6.2.2 Move the tail of the aircraft side to side and visually inspect for play between the fuselage and the tail gear assembly. If excessive play is observed check the torque of the saddle bolts and the bolts attaching the tail wheel assembly. If after checking the saddle bolts and tail wheel bolts torque, excessive play is still present, remove the tail gear assembly from the fuselage. Remove the saddle assembly and tail wheel assembly from the spring. Check the saddle, tail wheel, and spring bolt holes for wear. If the bolt holes are worn on the spring, replace the saddle and spring assembly. If the bolt holes are worn on the saddle, replace the saddle. If the bolt holes are worn on the tail wheel assembly, replace the tail wheel assembly.

Note: The spring is a heat treated and stress relieved component so drilling or reaming oversized holes in the spring is not acceptable.

With the tail gear assembly removed from the fuselage check all washers, bushings, and stoppers for wear and overall condition. Replace all worn components with new ABI parts.

6.2.3 Remove and Install according to Section 5.0 “Installation Instructions” of this document.

AIRWORTHINESS LIMITATIONS

The airworthiness Limitations section is FAA approved and specifies maintenance required under Sec. 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

There are no limitations associated with this modification

ITEM	PartNo	DESCRIPTION	QTY
1	ABI-0742152-2	TAILGEAR SPRING	1
2	ABI-0742146-10	SADDLE ASSEMBLY	1
3	ABI-0742150-2	SADDLE TUBE - LONG	1
4	ABI-0742151-1	SPRING STOPPER	1
5	ABI-0742112	BUSHING	2
6	ABI-0742100-6	WASHER	2
7	ABI-0742179-1	WASHER	2
8	NAS6205-31	BOLT	2
9	AN960-516L OR NAS1149F0532P	WASHER	4
10	MS21042-5	NUT	2
11	MS20392-1C33	CLEVIS PIN	2
12	MS24665-134	COTTER PIN	2

FIGURE 1, Page 10 of 10

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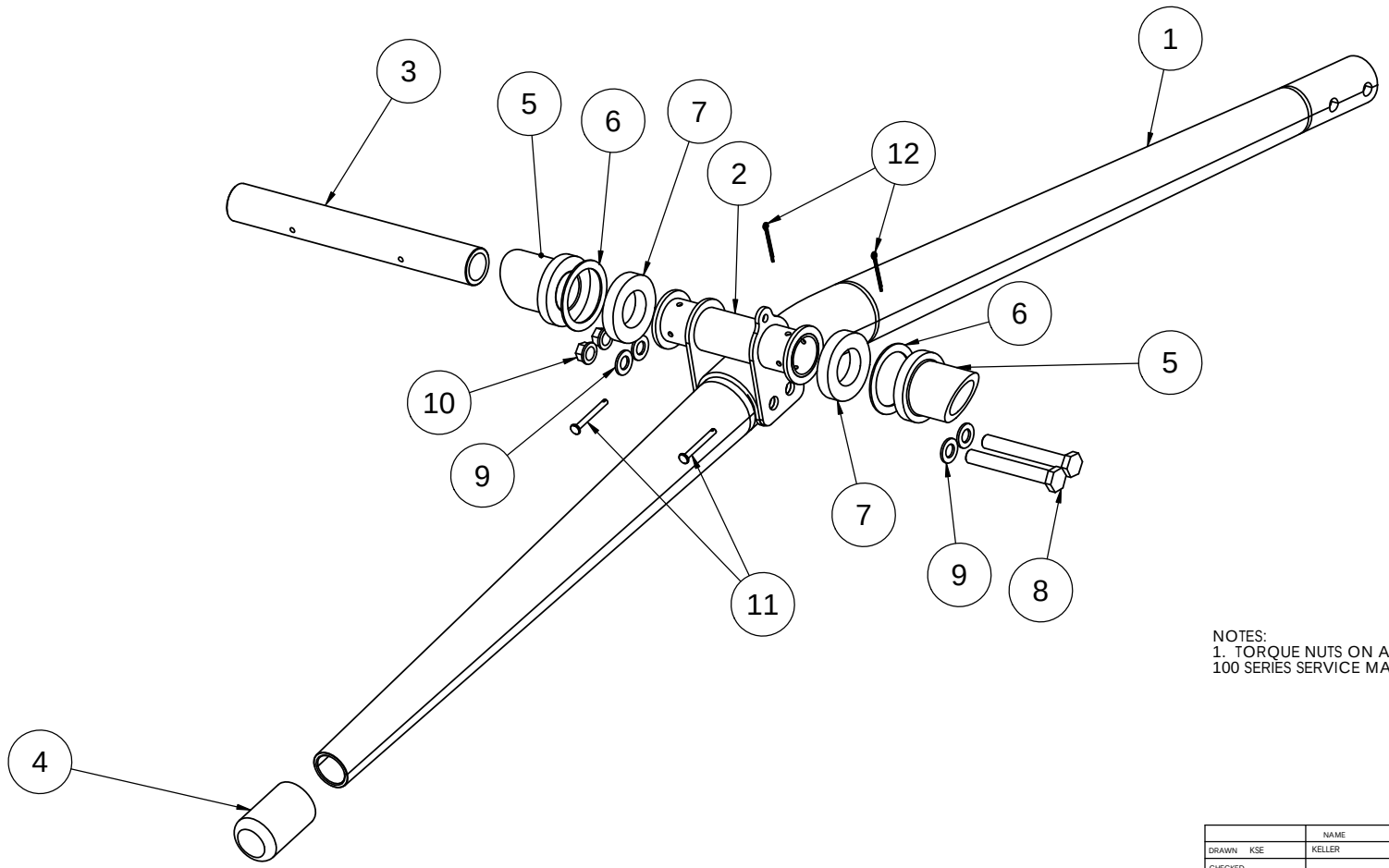
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ADDED -1 TO WASHER PART NO. CORRECTED ASSY DRAWING NO.	8/5/2013	ABI
B	ADDED NOTE FOR BOLT TORQUE.	8/21/2013	ABI
C	ADDED ITEM 9 OPTION FOR NAS1149 UPDATED ITEM 8 TO NAS6205-31	7/9/2014	JLP



NOTES:
1. TORQUE NUTS ON ATTACHMENT BOLTS (#8) PER CESSNA 100 SERIES SERVICE MANUAL.

	NAME	DATE
DRAWN KSE	KELLER	2/20/2013
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±.02
THREE PLACE DECIMAL ±.005

COMMENTS:

ABI LLC

TITLE: TAIL GEAR ASSEMBLY

SIZE	DWG NO. / PART NO.	REV
C	ABI-0742152	C

SCALE: 1:2 WEIGHT: SHEET 1 OF 1