

REVISION LIST

CHAPTER 6: AILERON CONTROLS

The following list of revisions will allow you to update the Legacy construction manual chapter listed above.

Under the “Action” column, “R&R” directs you to remove and replace the pages affected by the revision. “Add” directs you to insert the pages shows and “R” to remove the pages.

PAGE(S) AFFECTED	REVISION # & DATE	ACTION	DESCRIPTION
6-1	0/02-15-02	None	Current Revision is Correct
6-2	1/09-18-02	R&R	Part # Correction
6-3 through 6-5	0/02-15-02	None	Current Revision is Correct
6-6	1/09-18-02	R&R	Part # Correction
6-7 through 6-9	0/02-15-02	None	Current Revision is Correct
6-1	2/06-30-04	R&R	Part number change.
6-3	2/06-30-04	R&R	Part number change and added instruction.
6-1	3/12-15-04	R&R	Updated table of contents with page numbers.
6-3	4/09-30-06	R&R	Part number change.
6-1, 6-3	6/08-10-07	R&R	Part number changed.

Chapter 6: Aileron Controls

Contents

1. INTRODUCTION	6-1
2. PARTS LIST	6-1
3. CONSTRUCTION PROCEDURES	6-3
A. Control Stick Installation	6-3
B. Aileron Controls Rigging	6-4
C. Counterbalancing Ailerons	6-8
D. Aileron Trim System	6-9
How the Trim System Works	6-9
Instructions for Adjusting the Aileron Trim Servo	6-9

1. INTRODUCTION

This chapter takes you through the installation and alignment of the aileron system. In section C you will counter balance the ailerons. In the Final section of this chapter we explained the proper installation and operation of the trim system.

2. PARTS LIST

#	PART NO. (P/N)	QTY	DESCRIPTION	OPTIONAL ITEM <i>(not included with kit)</i>
CONTROL STICK				
1)	4715	2	Control Stick	
2)	4716	1	Crossover Weldment	
3)	AN4-10A	2	Bolt, Drilled Shank	
4)	AN4-22	2	Bolt, Drilled Shank	
5)	AN3-33A	2	Bolt, Undrilled Shank	
6)	AN3-6A	8	Bolt, Undrilled Shank	
7)	100-0004 93548A546	2	Bolt, Carriage	
8)	CD315-12	4	Bushing, Control Stick	
9)	AN310-4	4	Nut, Castle	
10)	MS35649-2252	4	Nut, Check	
11)	AN365-1032A	2	Nut, Nylock	
12)	AN365-428A	2	Nut, Nylock	
13)	AN960-416	8	Washer, Flat	
14)	AN960-10	8	Washer, Flat	
15)	AN970-3	4	Washer, Flat	

Note:

Optional Parts available through :

(*) Lancair Avionics

(**) Kit Components, Inc.



Lancair International Inc., Represented by Neico Aviation Inc., Copyright © 2000, Redmond, OR 97756

6-1

Chapter 6

REV.

6/08-10-07

AILERON CONTROLS

#	PART NO. (P/N)	QTY	DESCRIPTION	OPTIONAL ITEM <i>(not included with kit)</i>
---	----------------	-----	-------------	---

AILERON CONTROL RIGGING

1)	4322-01/4320-01	1	Left Aileron (preassembled)	
2)	4322-02/4320-02	1	Right Aileron (preassembled)	
3)	4575	2	Preassembled Aileron Actuator Arm	
4)	4576	1	Preassembled Center Control Tube	
5)	4577	2	Preassembled Inboard Control Tube	
6)	4578	2	Preassembled Outboard Control Tube 3/4"	
7)	4579	2	Preassembled Control Tube (Bellcrank to Aileron) 3/4"	
8)	4581	2	Aileron Idler Arm	
9)	AL 208-01	2	Aileron Bellcrank	
10)	AN3-10A	10	Bolts, Undrilled	
11)	AN4-14A	2	Bolts, Undrilled	
12)	AN5-13A	2	Bolts, Undrilled	
13)	CD315-12	4	Spacers	
14)	AN365-428A	4	Nuts, Nylock	
15)	AN365-524A	2	Nuts, Nylock	
16)	AN365-1032A	10	Nuts, Nylock	
17)	AN960-10	4	Washer, Flat	
18)	AN960-10L	10	Washers, Flat	
19)	AN960-416	8	Washers, Flat	
20)	AN960-516	2	Washer, Flat	

COUNTERBALANCING AILERONS

1)	4585	A/R	Pre moulded Lead Counterweights	
2)	AN365-1032A	30	Nuts, Nylock	
3)	MS24694-S56	30	Screw, Machine	
4)	AN960-10L	30	Washer, Flat	

AILERON TRIM SYSTEM

1)	T4-5-T5	1	Trim Servo	
----	---------	---	------------	--

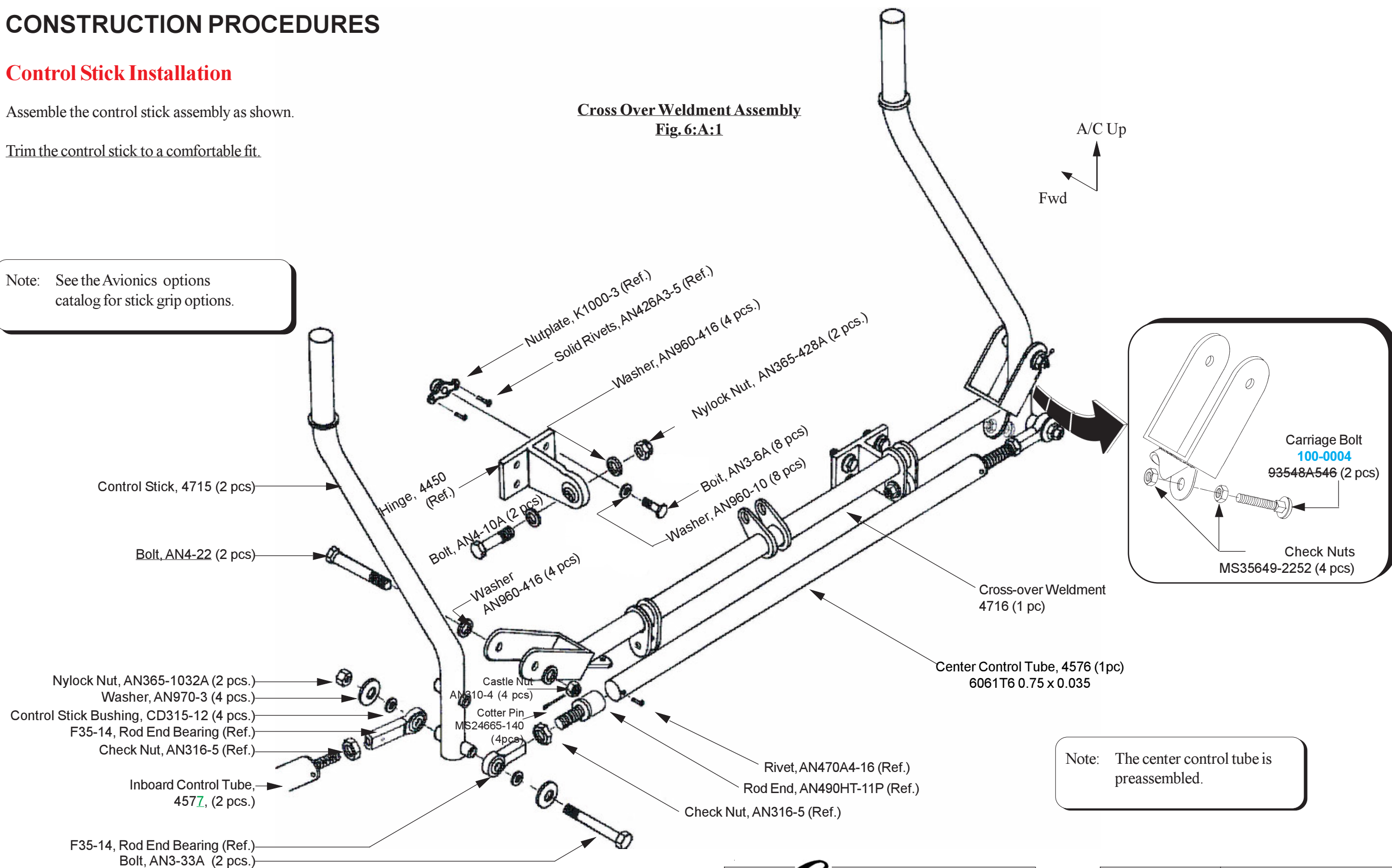
3. CONSTRUCTION PROCEDURES

A. Control Stick Installation

- A 1. Assemble the control stick assembly as shown.
- A 2. Trim the control stick to a comfortable fit.

Note: See the Avionics options catalog for stick grip options.

Cross Over Weldment Assembly
Fig. 6:A:1

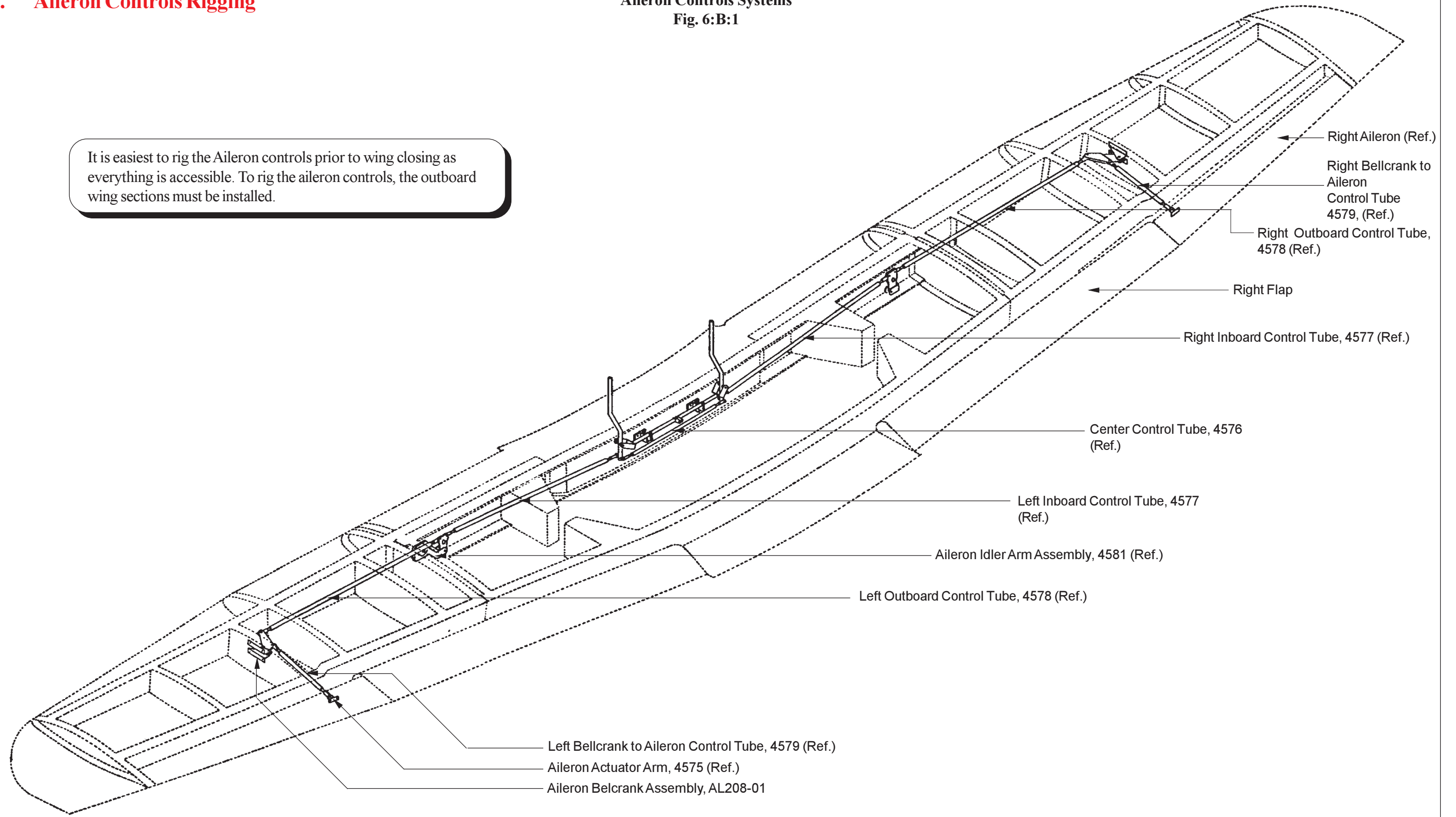


Note: The center control tube is preassembled.

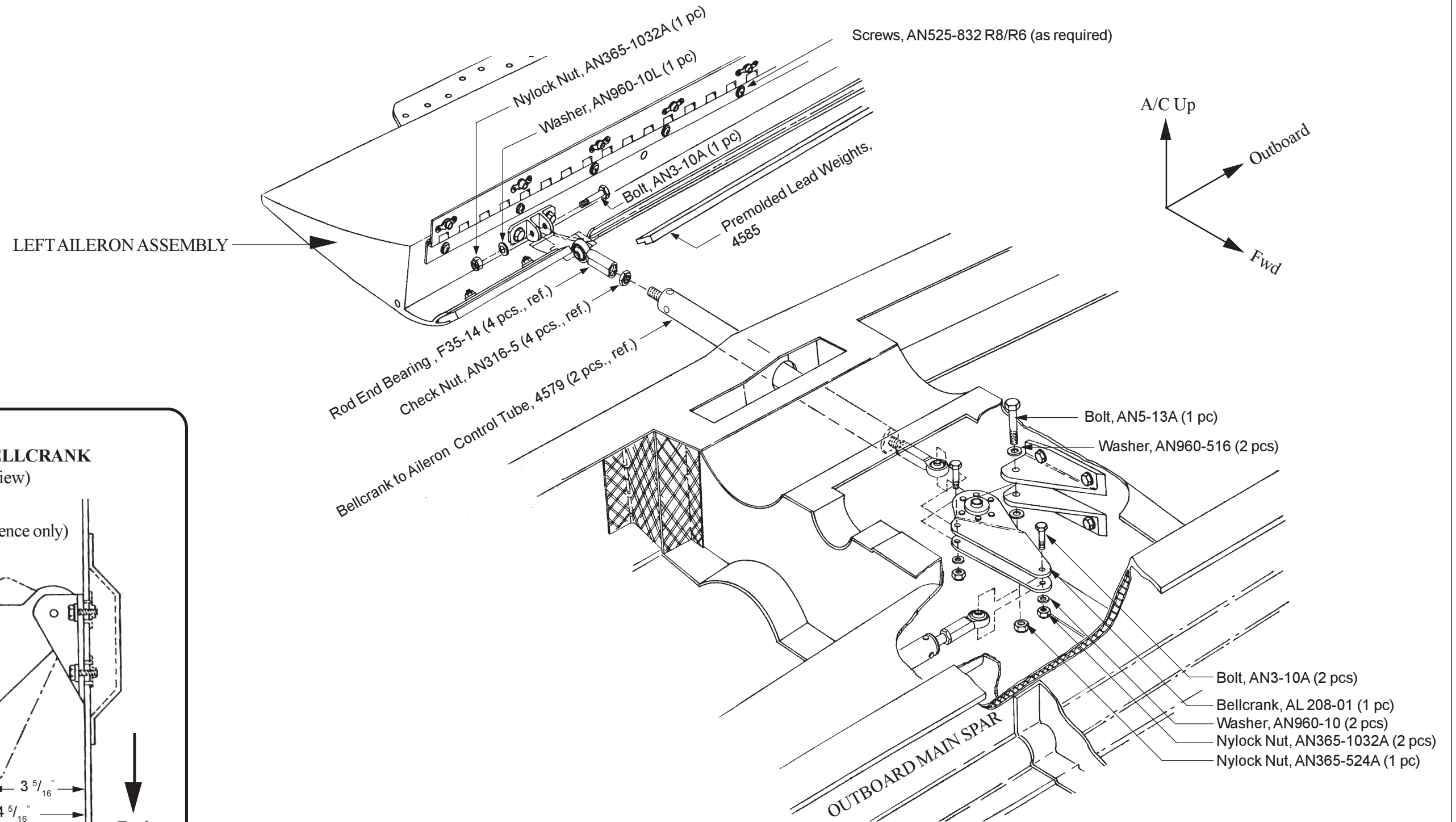
B. Aileron Controls Rigging

**Aileron Controls Systems
Fig. 6:B:1**

It is easiest to rig the Aileron controls prior to wing closing as everything is accessible. To rig the aileron controls, the outboard wing sections must be installed.

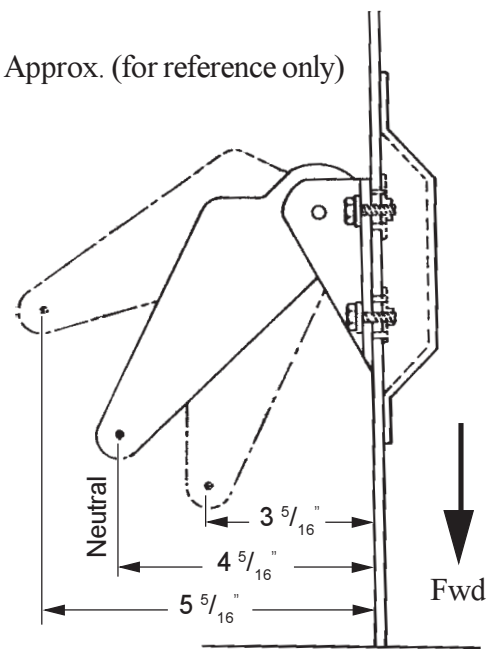


Aileron Bellcrank Assembly
Fig. 6:B:2



AILERON BELLCRANK
(Top View)

Approx. (for reference only)

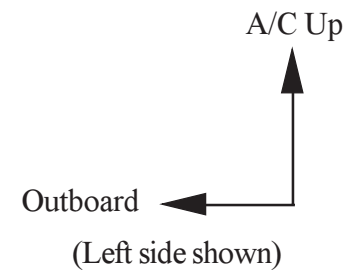


OUTBOARD MAIN SPAR

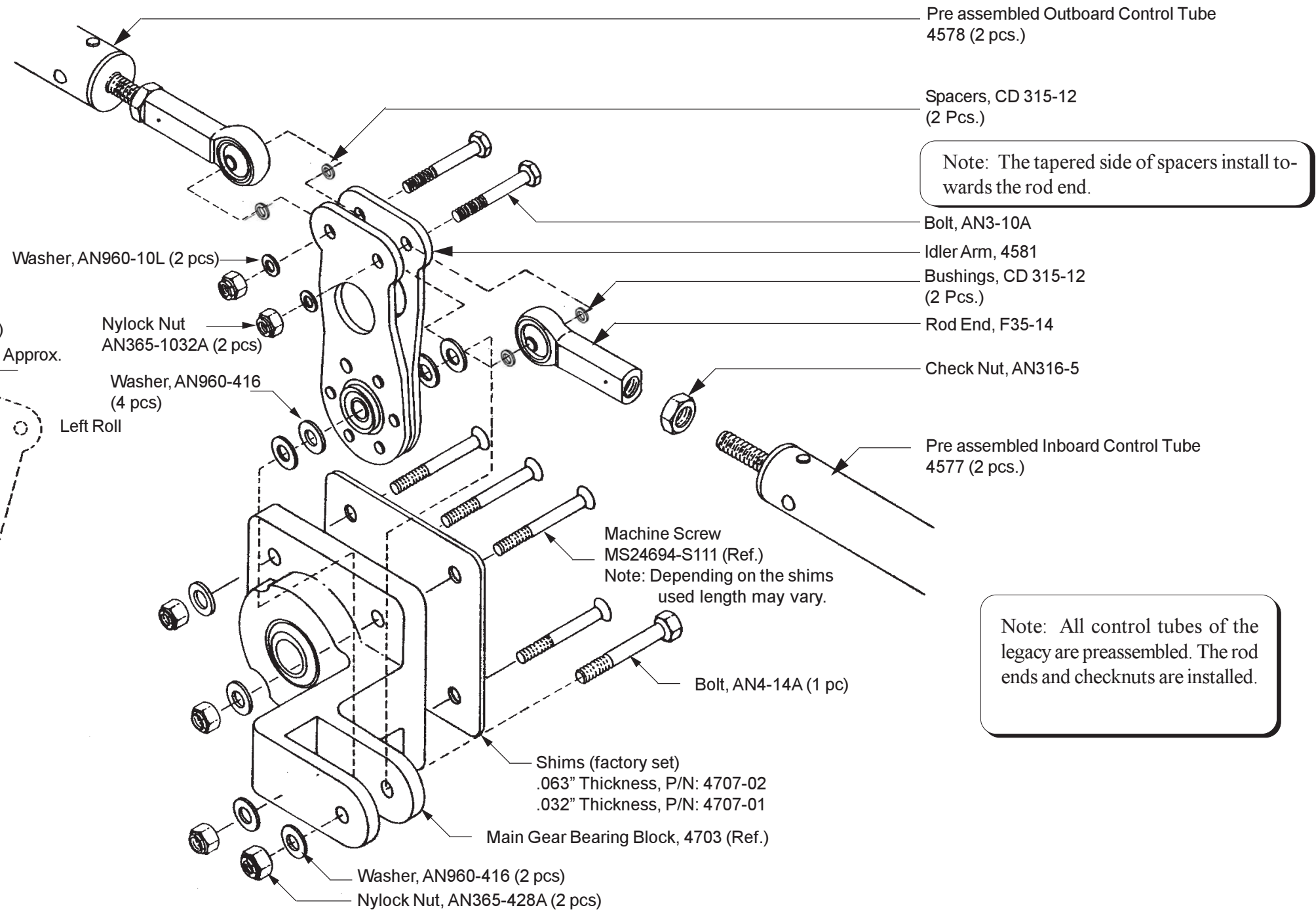
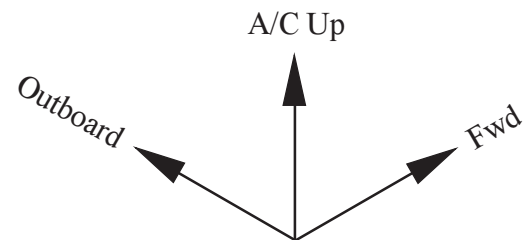
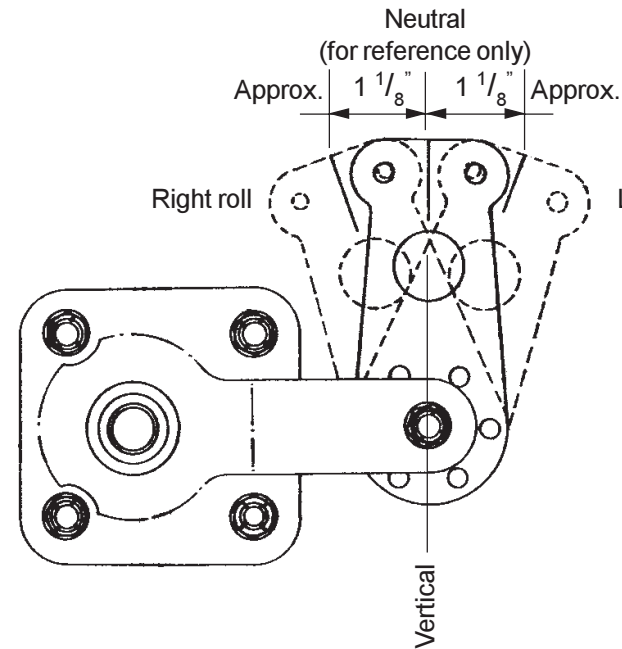
Note: Parts shown & labeled are for left side only.

**Aileron Idler Arm
Fig. 6:B:3**

The basis for rigging the aileron control system is to set the stick, idler arm, bellcrank and the aileron to neutral. Then the control tubes are adjusted accordingly.



Setting Idler Arm Neutral



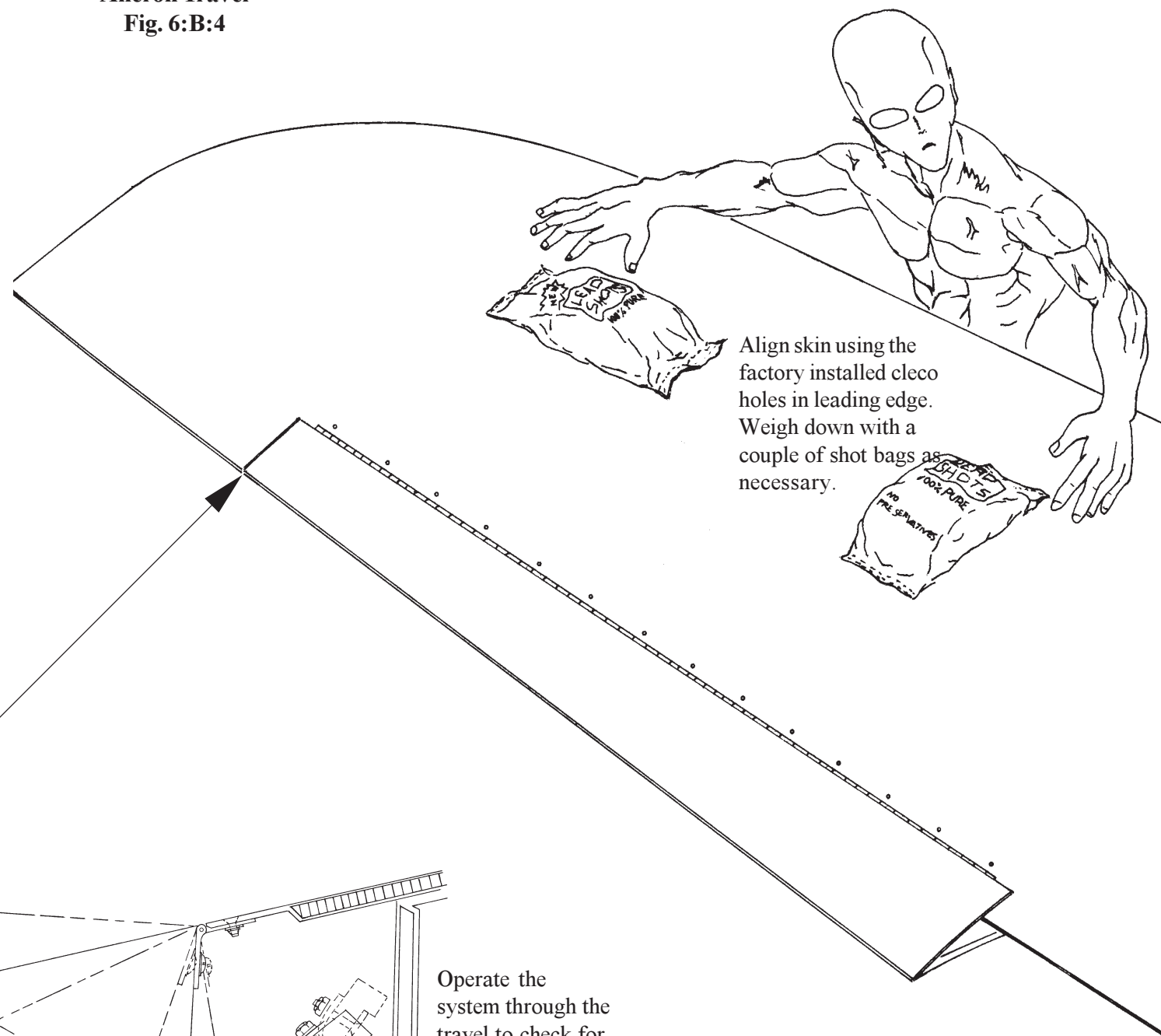
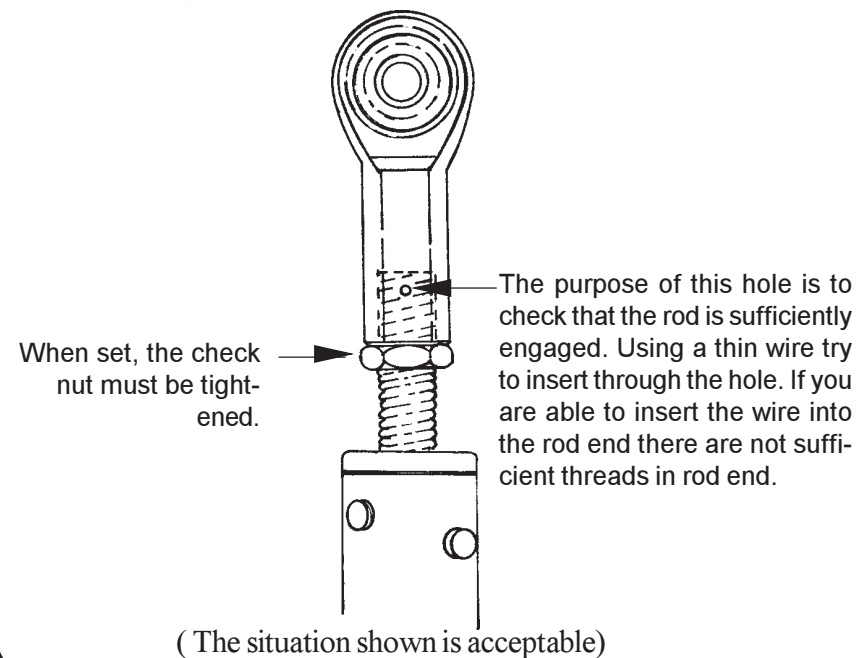
Note: The tapered side of spacers install towards the rod end.

Note: All control tubes of the legacy are preassembled. The rod ends and checknuts are installed.

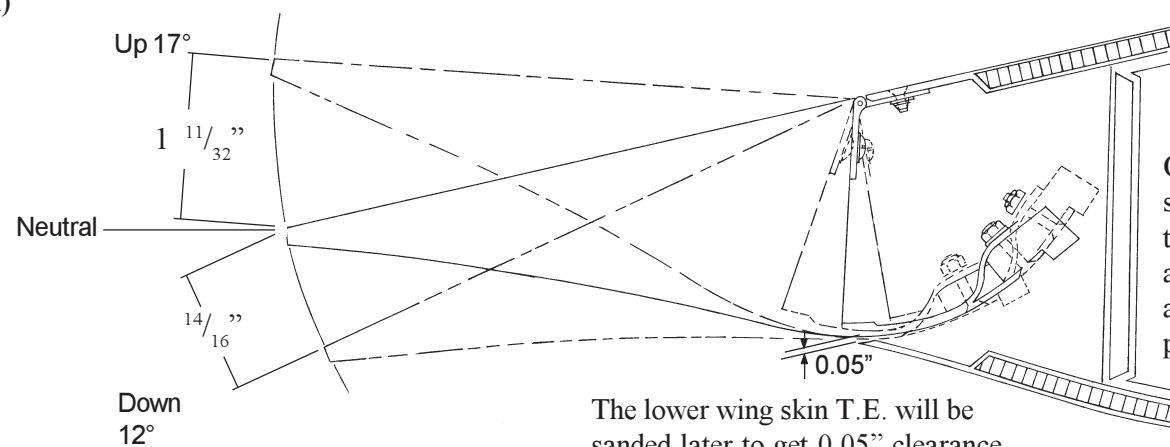
Note: Parts shown & labeled are for left side only.

Aileron Travel
Fig. 6:B:4

WARNING
(read and understand this)



The aileron is flush with wing tip in neutral position. (This establishes neutral)



Operate the system through the travel to check for adequate clearance around all moving parts.

The lower wing skin T.E. will be sanded later to get 0.05" clearance between wing skin and aileron.

Note: The dimensions are at the *outboard end* of the aileron.

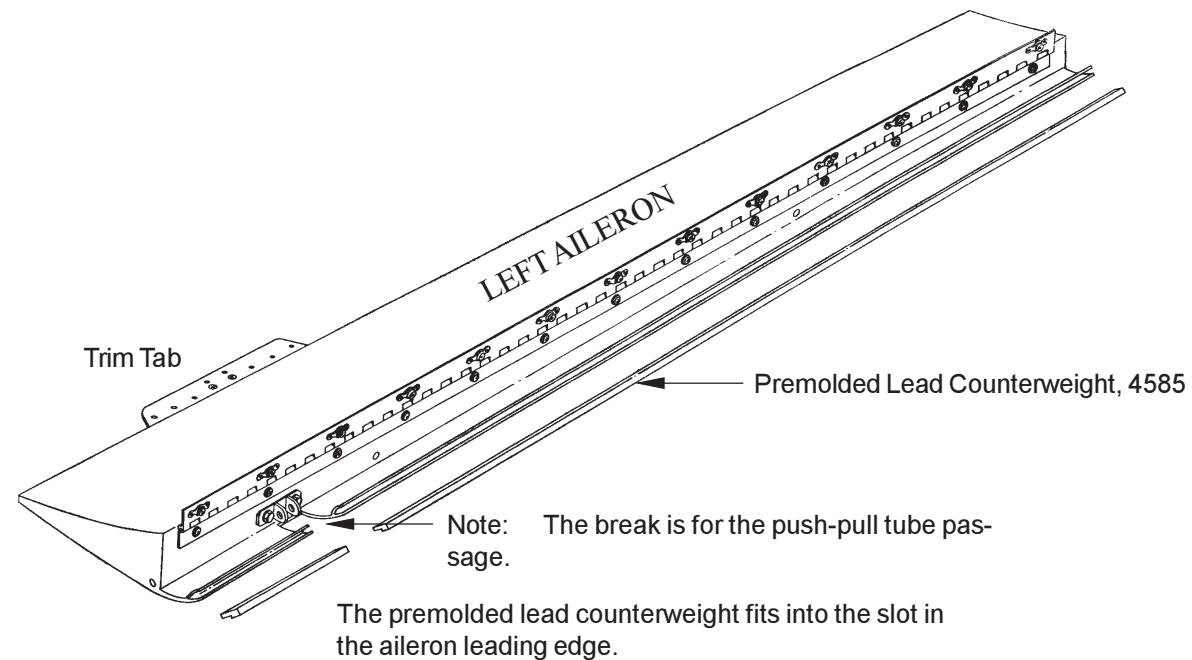
C. Counterbalancing Ailerons

Counter Balancing Ailerons

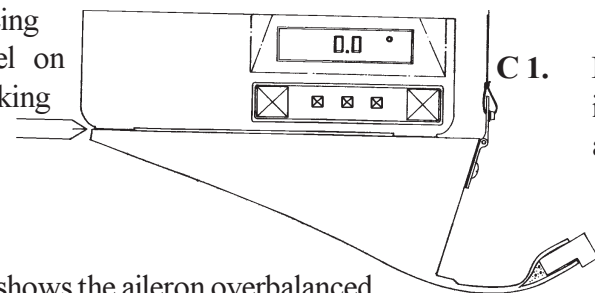
Fig. 6:C:1

The Legacy ailerons are 100% mass balanced. Initially install more lead than needed. After paint the excess will be removed for 100% mass balance.

Note: Left side will require slightly more weight than the right side due to the trim system.

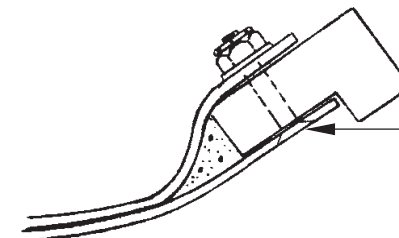


Suggestion: Use a pointer as a reference for balancing (You can't leave the level on the aileron when checking the balance.)



C 1. Prior to bonding the lead counterweights, insert the weights into the slots and add/remove lead as necessary.

C 2. Temporary superglue the lead weights into place. Install aileron on wing and check for proper clearance through the travel range.

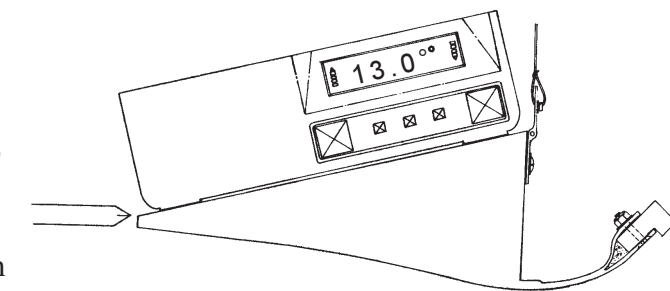


C 3. Bond the counterweight in place with epoxy/flox.

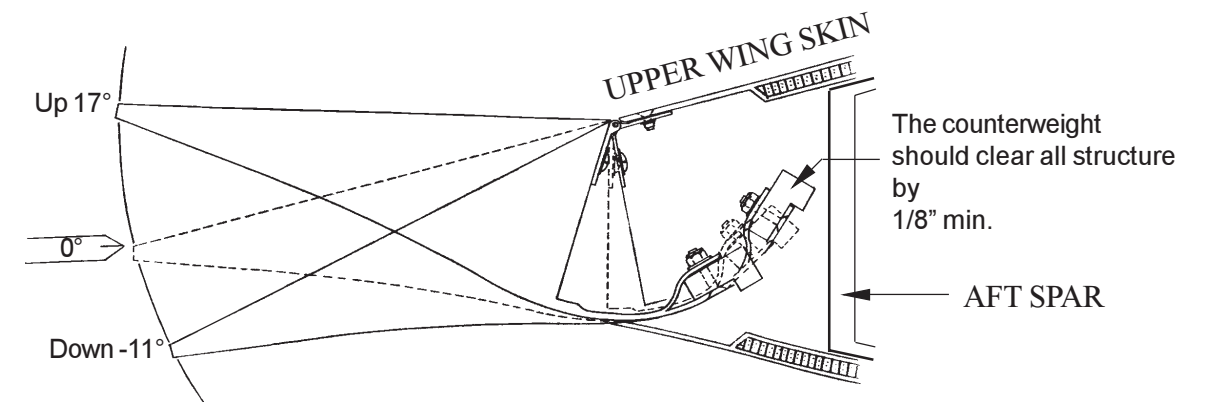
C 4. Secure the counter weight every 3" with a countersunk screw (MS24694-S56), washer (AN960-10L) and nylock nut (AN365-1032A).

C 5. After paint remove lead as required to achieve 100% balance.

Note: All hardware including the trim system must be installed!



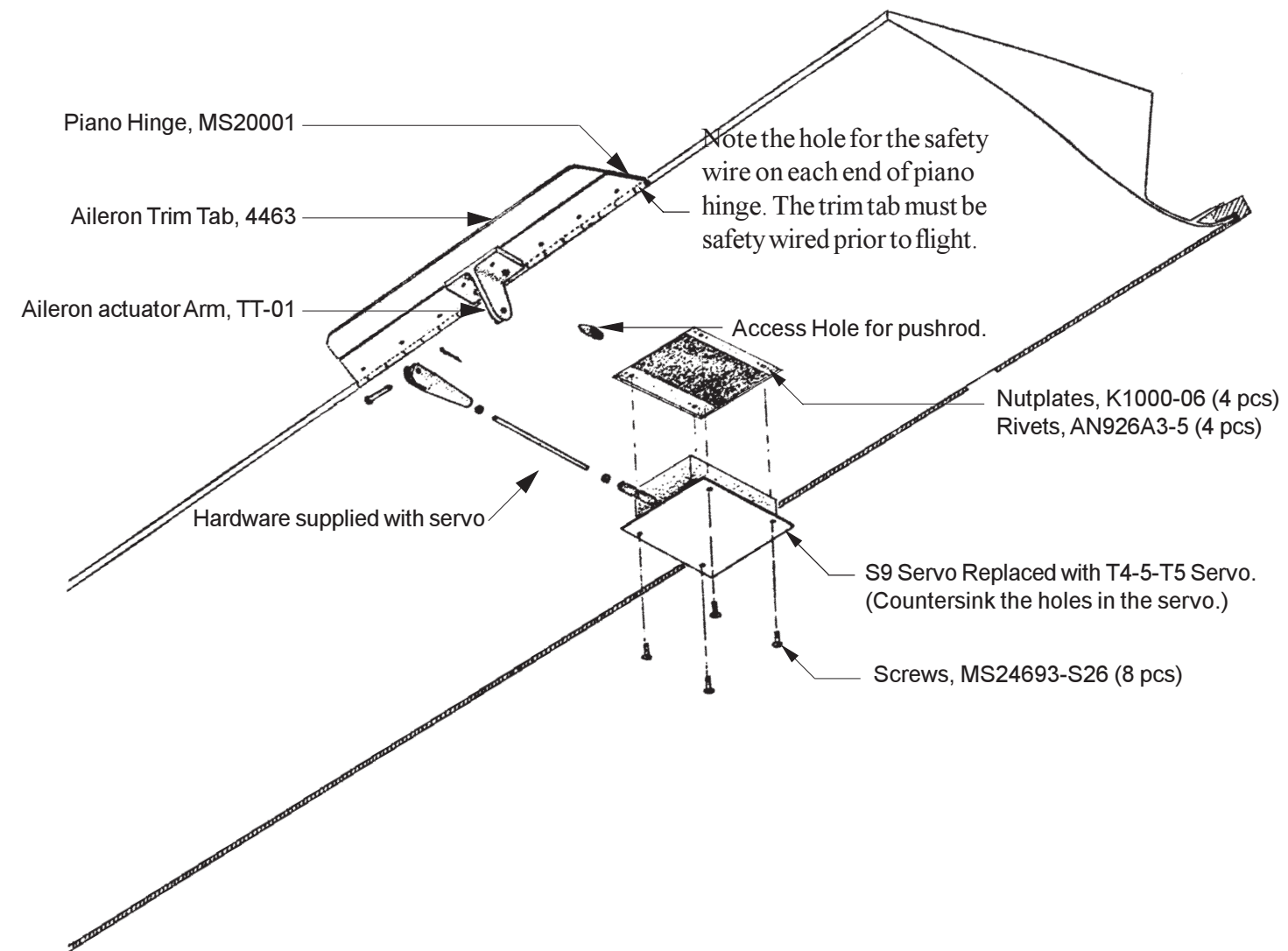
Note: The above figure shows the aileron 100% mass balanced at the wing tip.



C 6. Install the aileron and check for proper clearance through the travel range.

D. Aileron Trim System

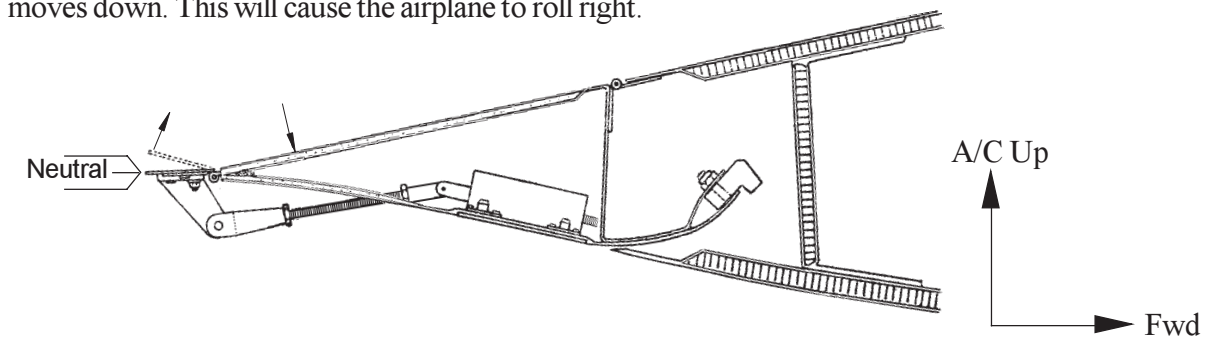
Aileron Trim System
Fig 6:D:1



How the Trim System Works

A trim tab deflection results in opposite deflection of control surface.

Example: As the trim tab moves up, the (left) aileron moves down. This will cause the airplane to roll right.



Instructions for Adjusting the Aileron Trim Servo

1. Use a 12V battery to set the servo to center of travel (this is the neutral point).
2. Set the trim tab to neutral position (level).
3. Adjust the clevis accordingly.