

Supplement–Legacy Rudder Pedals

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S.1 Introduction

This supplement replaces the instructions provided in 435-0000, *L2K Standard Rudder Pedal Assembly*.

This supplement explains the installation of the Legacy rudder pedals. This installation can be used on any Legacy model aircraft.

This supplement provides the instructions for, and replaces the following sections of the Legacy Assembly Manual that came with your Legacy kit:

Supplement	Replaces Chapter in Legacy Assembly Manual	Replaces these Sections of Chapter	Replaces Pages
Installing the Legacy Rudder Pedals	Chapter 17	E. Rudder Pedal Installation	17-14 17-15 17-16 17-17 17-18
		I. Rudder Cable	17-32

S.2 Parts Used in this Supplement

Rudder pedals and pedal mounting

Item	Part Number	QTY	Description
1)	10-19J	2	Master cylinders
2)	18-3-M	2	Nicopress sleeve
3)	205-0002	2	Left and right rails for fixed rudder pedals
4)	214-0007	1	Rudder pedal crossover tubes, left
5)	214-0008	1	Rudder pedal crossover tubes, right
6)	229-0006	2	Link adjuster, fixed rudder pedals
7)	283-0004	2	Standoff for standard rudder pedals
8)	AN100-4	2	Thimble cable wire, 3/32 - 1/8
9)	AN3-25A	3	Bolt, undrilled
10)	AN3-26A	4	Bolt, undrilled
11)	AN3-6	8	Bolt, drilled shank
12)	AN3-10A	2	Bolt
13)	AN3-30A	3	Bolt (center bearing block)
14)	AN3-7	2	Bolt
15)	AN310-3	12	Castle nut
16)	AN365-1032A	12	Lock nut, nylon
17)	AN426AD3-4	10	Rivet, hard
18)	AN525-832-R7	4	Screw, washer hd
19)	AN930-10L	2	Washers
20)	AN960-10	25	Washer, flat
21)	AN960-10L	4	Washer
22)	AN970-3	2	Washer
23)	BSPQ-44	20	Pop rivet
24)	K1000-03	6	Nutplate
25)	K1000-08	4	Nutplate
26)	MS21251-B3S	2	Turnbuckle barrel
27)	MS21255-3LS	2	Turnbuckle, eye end w/ left-hand threads
28)	MS21255-3RS	2	Turnbuckle, eye end w/ right-hand threads
29)	MS21256-1	4	Turnbuckle clip
30)	MS24665-132	8	Cotter pin
31)	MS24665-151	2	Cotter pin

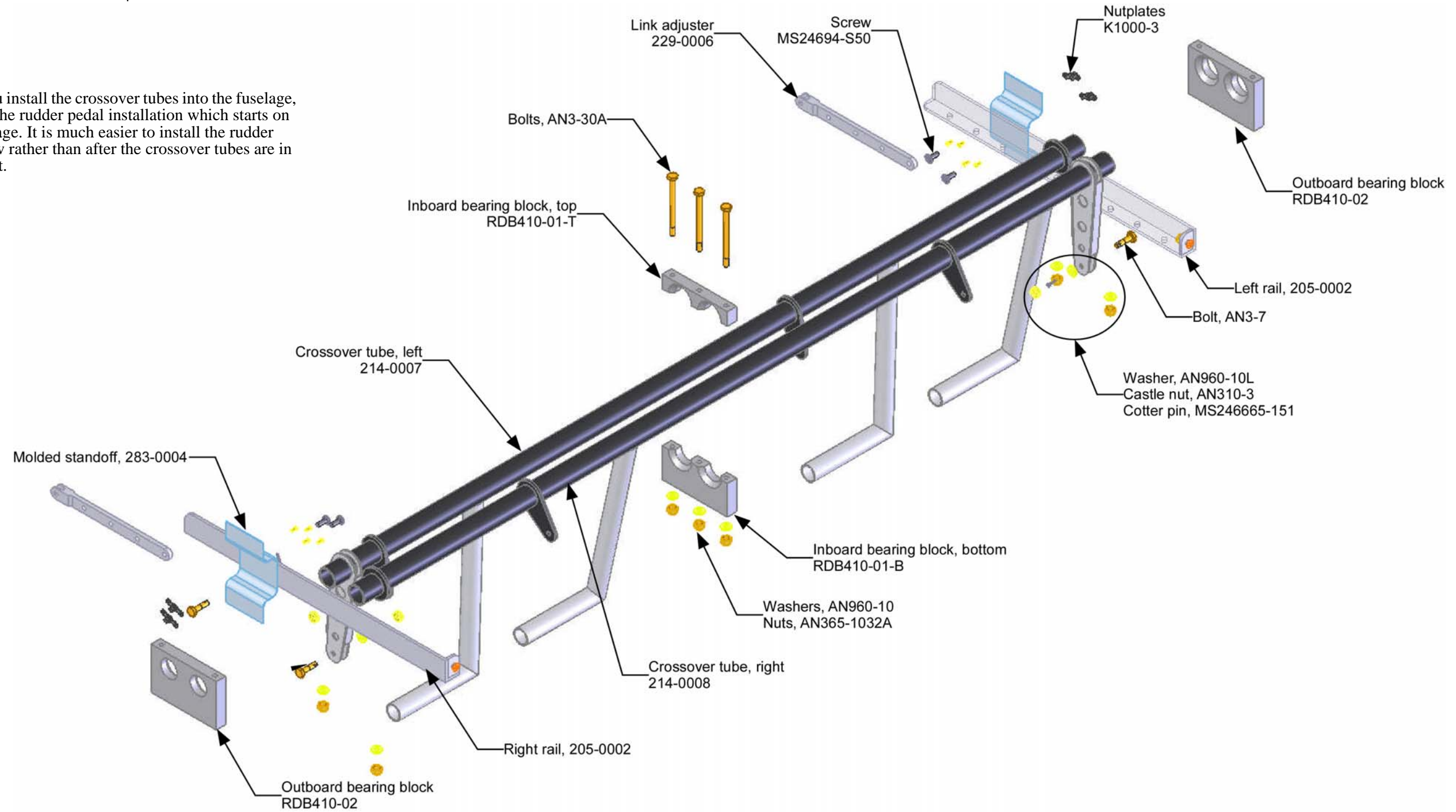
Rudder pedals and pedal mounting (Continued)

Item	Part Number	QTY	Description
32)	MS24694-S50	2	Screw, flat
33)	MS24694-S51	2	Screw, flat
34)	RDB410-01-B	1	Rudder bar attach middle, bottom
35)	RDB410-01-T	1	Rudder bar attach middle, top
36)	RDB410-02	2	Rudder bar attach, outboard
37)	RDP-02	8	Rudder pedal nylon bushings
38)	RDP-04	4	Rudder pedals
39)	6061-T6 .875x.058		Aluminum tubing (.875 x .058 wall)

S.3 Assembly of the Rudder Pedal Crossover Tubes

Figure S.3.0.1 Overview of the parts for the crossover tube installation

Before you install the crossover tubes into the fuselage, complete the rudder pedal installation which starts on the next page. It is much easier to install the rudder pedals now rather than after the crossover tubes are in the cockpit.



S.3.A Installing the Rudder Pedals

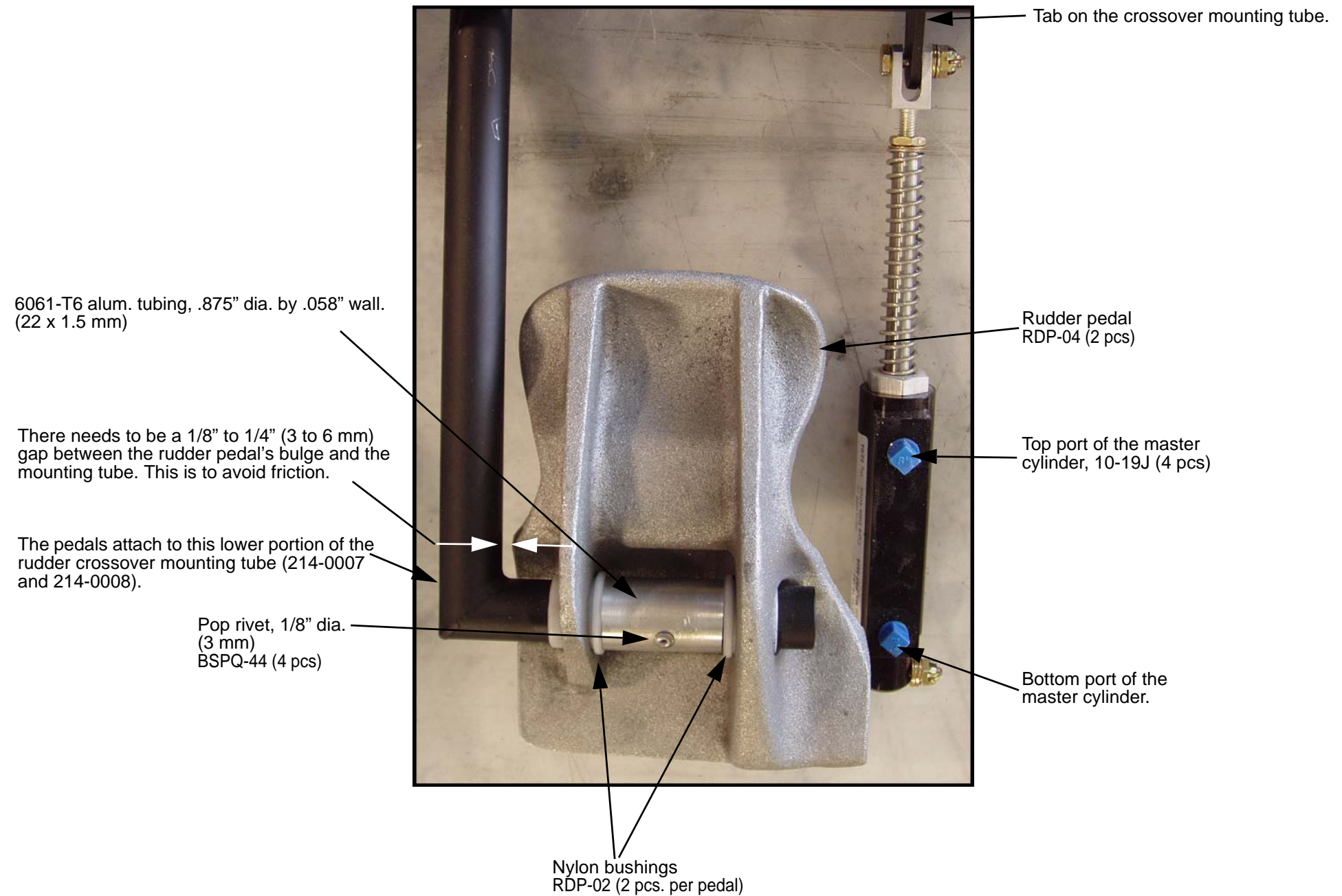
The two rudder pedals provided in your kit are identical. There are not specific left or right pedals. You will install one pedal to the right crossover tube (214-0008) and the other pedal to the left crossover tube (214-0007).

Steps...

1. Push two nylon bushings (RDP-02) into the rear opening of each rudder pedal (RDP-04) as shown in Figure S.3.A.1.
Notice that the shoulders of these bushings are not flush against the castings because of the angled surface of the rudder pedal.
2. Cut two pieces of aluminum tubing 1-5/16" (33 mm) long. (6061T6 .875" diameter x .058" wall (22 mm x 1.5 mm)) These pieces need to fit between the RDP-02 bushings with a little side-to-side slop. You should have plenty of leftover aluminum tubing scraps for making these pieces.
3. Slide the following onto each rudder pedal crossover tube:
 - one pilot rudder pedal and one co-pilot rudder pedal
 - one piece of the aluminum tubing for each rudder pedal

The aluminum tubing piece needs to install between the nylon bushings (RDP-02).
4. Properly position the rudder pedal on the crossover tube. Align the pedal so the top bulge is 1/8-1/4" (3-6 mm) away from the vertical section of the crossover tube as shown in Figure S.3.A.1.
5. Secure the piece of aluminum tube to the rudder pedal mounts using a single 1/8" (3 mm) dia. pop rivet (BSPQ-44). This secures the rudder pedals to the horizontal portion of the crossover tube. Unless you drill out this rivet, which is easy to do, the rudder pedals are permanently secured to the crossover tubes.

Figure S.3.A.1 Rear view of the rudder pedal installed to the crossover tubes



S.3.B Installing the Brake Master Cylinders

The brake master cylinders are mounted to the rudder pedals and the crossover tubes. When the tops of the rudder pedals are pushed forward for braking, the master cylinders compress hydraulic fluid through the brake lines and into the wheel-mounted brake assemblies. The pistons in the brake assemblies squeeze the brake pads against the disks which creates your braking action.

Steps...

1. Secure the bottom of each master cylinder to the rudder pedal tab with a bolt (AN3-13) and castle nut (AN310-3). Do not tighten the castle nut so much that the master cylinder cannot rotate.
2. Adjust the upper end of the master cylinder until you can bolt the clevis to the tab on the crossover tube. Make sure the rudder pedal is positioned as shown in Figure S.3.B.2.
3. Secure the master cylinder clevis to the tab with a bolt (AN3-7) and a castle nut (AN310-3). There are not any washers between the clevis and the tab. This leaves some slop in the connection to avoid stressing the master cylinder. Too much stress on the master cylinder can cause a misalignment.

Figure S.3.B.1 Adjusting the rudder pedal angle

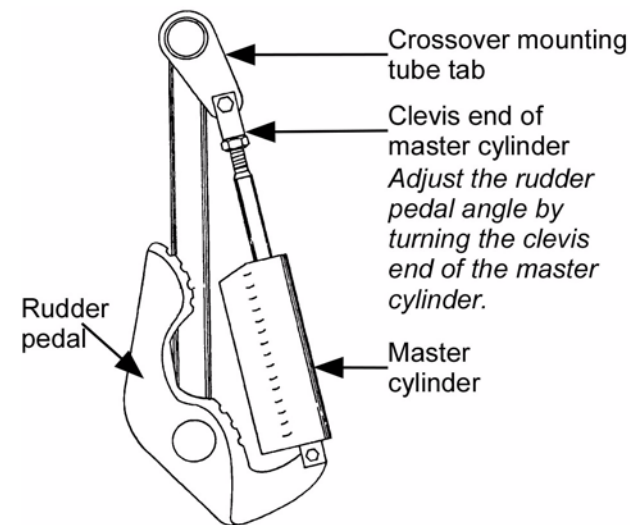
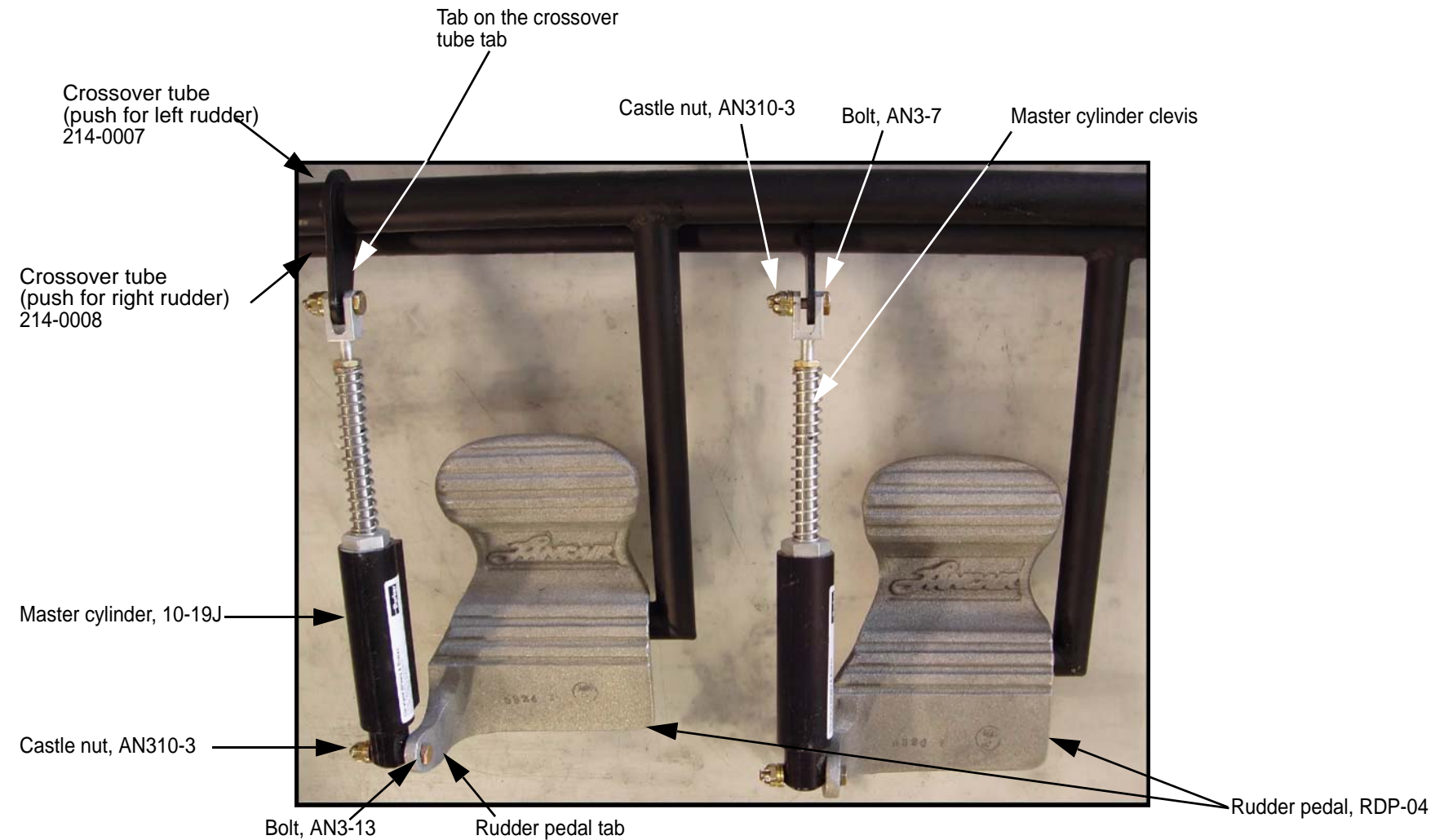


Figure S.3.B.2 Brake master cylinder installation



S.3.C Installing the Crossover Tubes

Now you have two crossover tubes, each with one pedal installed. In this section you will install the crossover tubes into the fuselage. The crossover tubes are installed in the following configuration:

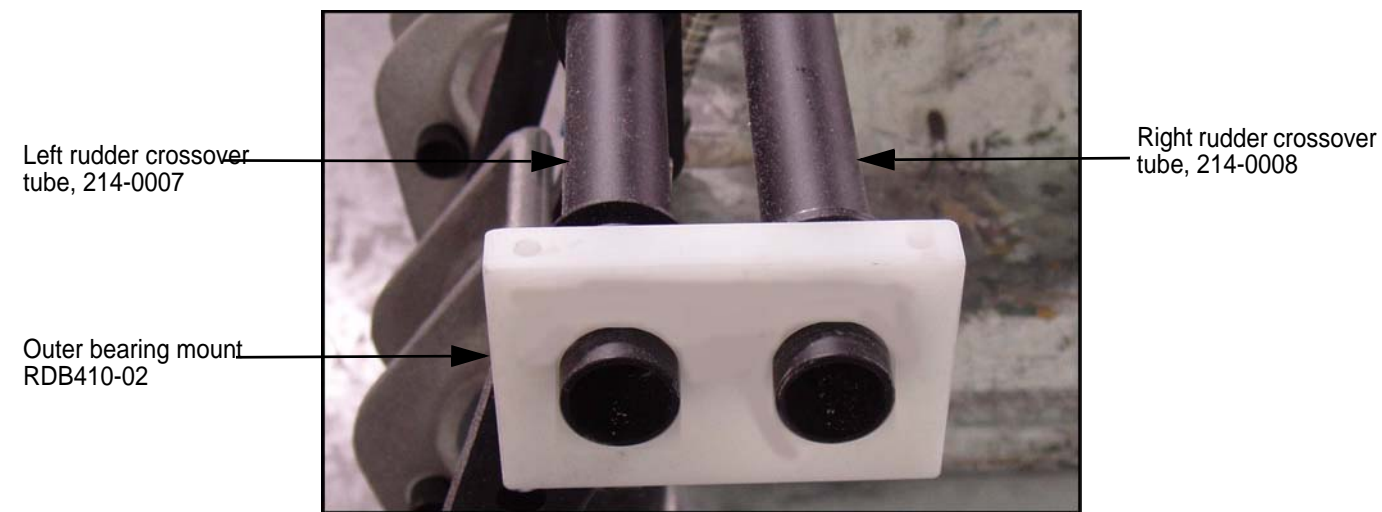
- Crossover tube with the left pedal mounted is installed in the forward position.
- Crossover tube with the right pedal mounted is installed in the aft position.

The crossovers are supported by three Delrin plastic mounts. The center bearing mount is in two pieces (parts RDB410-01-B and RDB410-01-T) while the right and left mounts are single pieces (RDB410-02).

Steps...

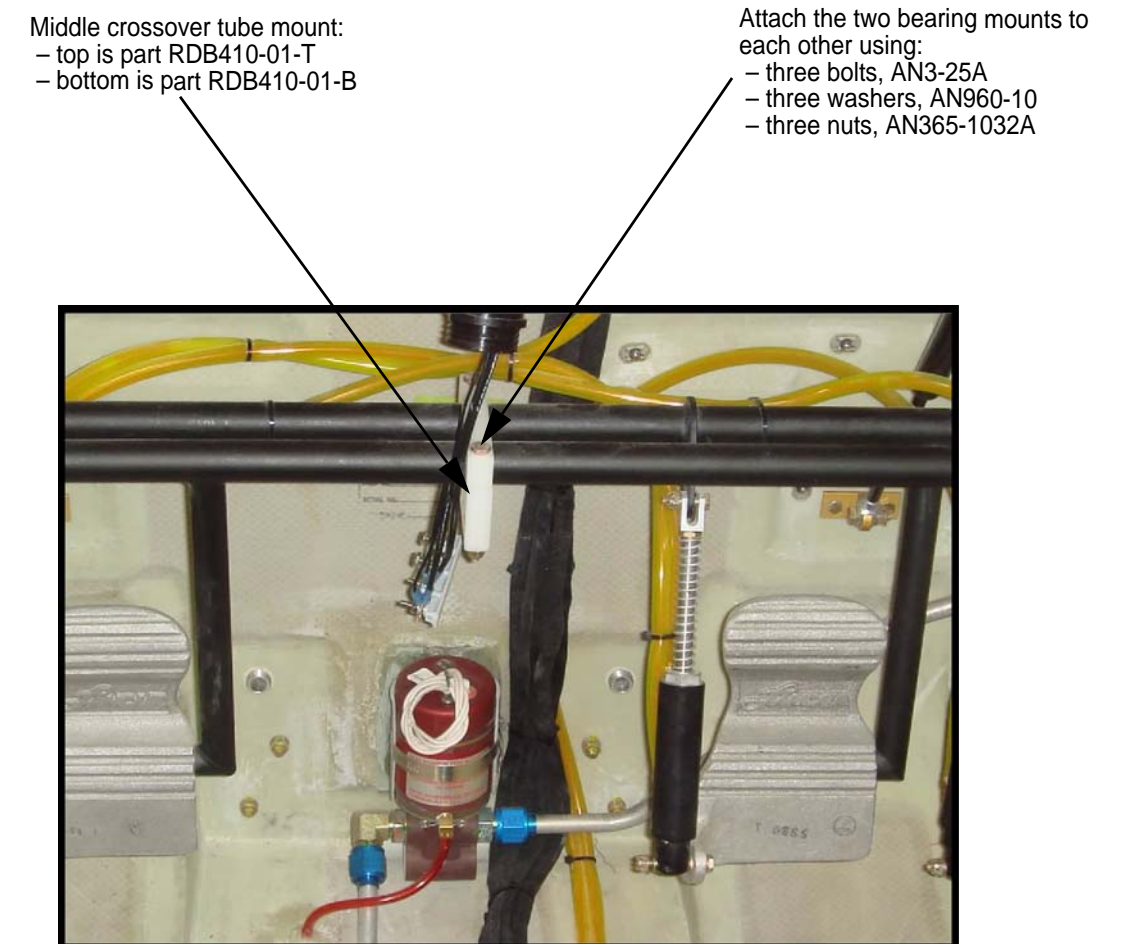
1. Insert the crossover tubes into the outer bearing mounts (RDB410-02). Make sure your tubes are positioned as displayed in Figure S.3.C.1. The holes in the bearing mounts are not centered. The wider part of the mounts should be down.

Figure S.3.C.1 Side mounts for the rudder's crossover tubes



2. Move each crossover tube around in its hole in the mount. If it binds in the hole, remove the tube and sand the hole in the mount so it is slightly larger.
3. Insert the top portion of the middle mount (RDB410-01-T) over the center of the two crossover tubes and attach the bottom portion of the mount (RDB410-01-B) using the parts specified in the following Figure S.3.C.2.

Figure S.3.C.2 Assembly of the middle mount

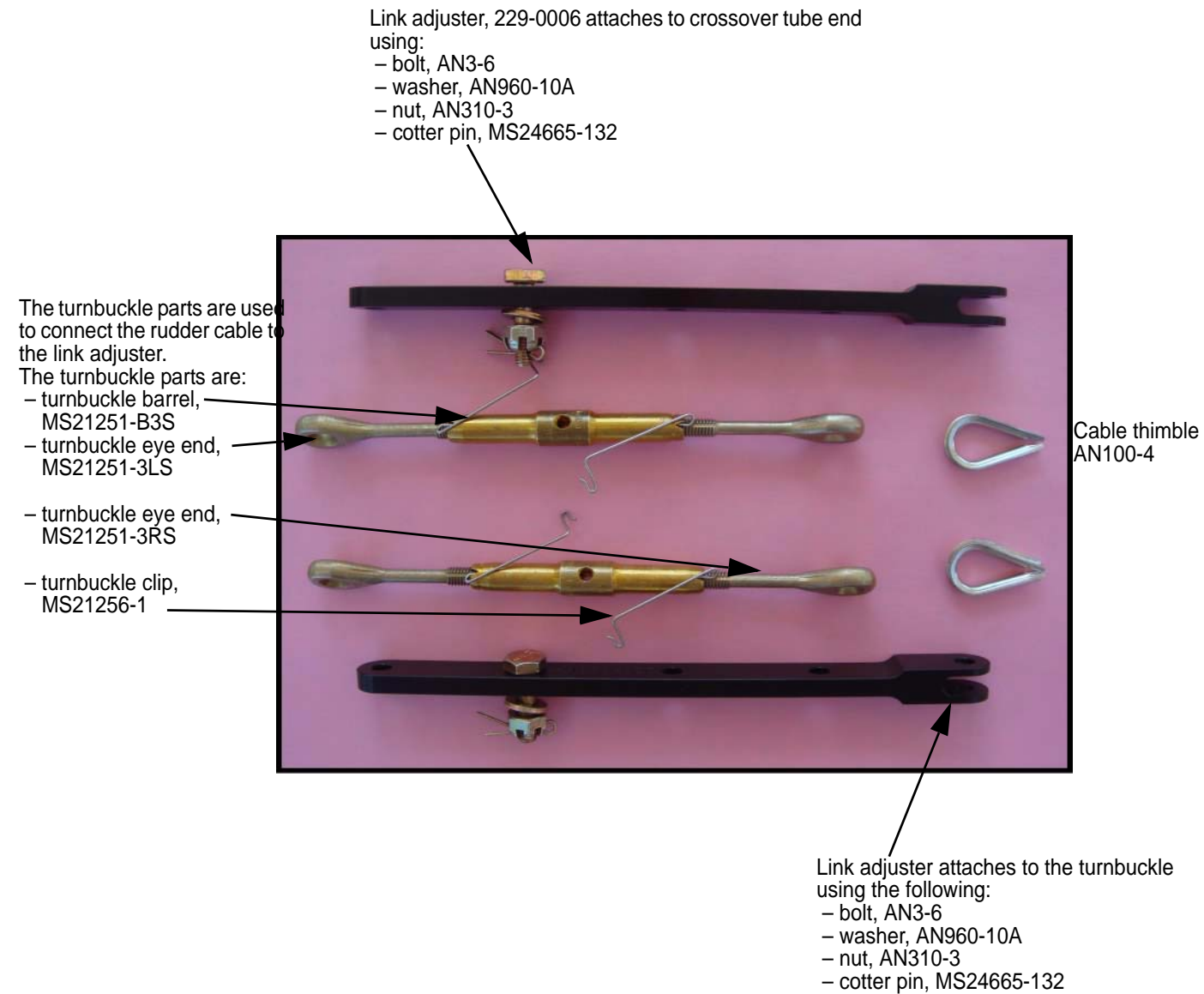


S.4 Attaching the Links and Adjustor Railings

Steps...

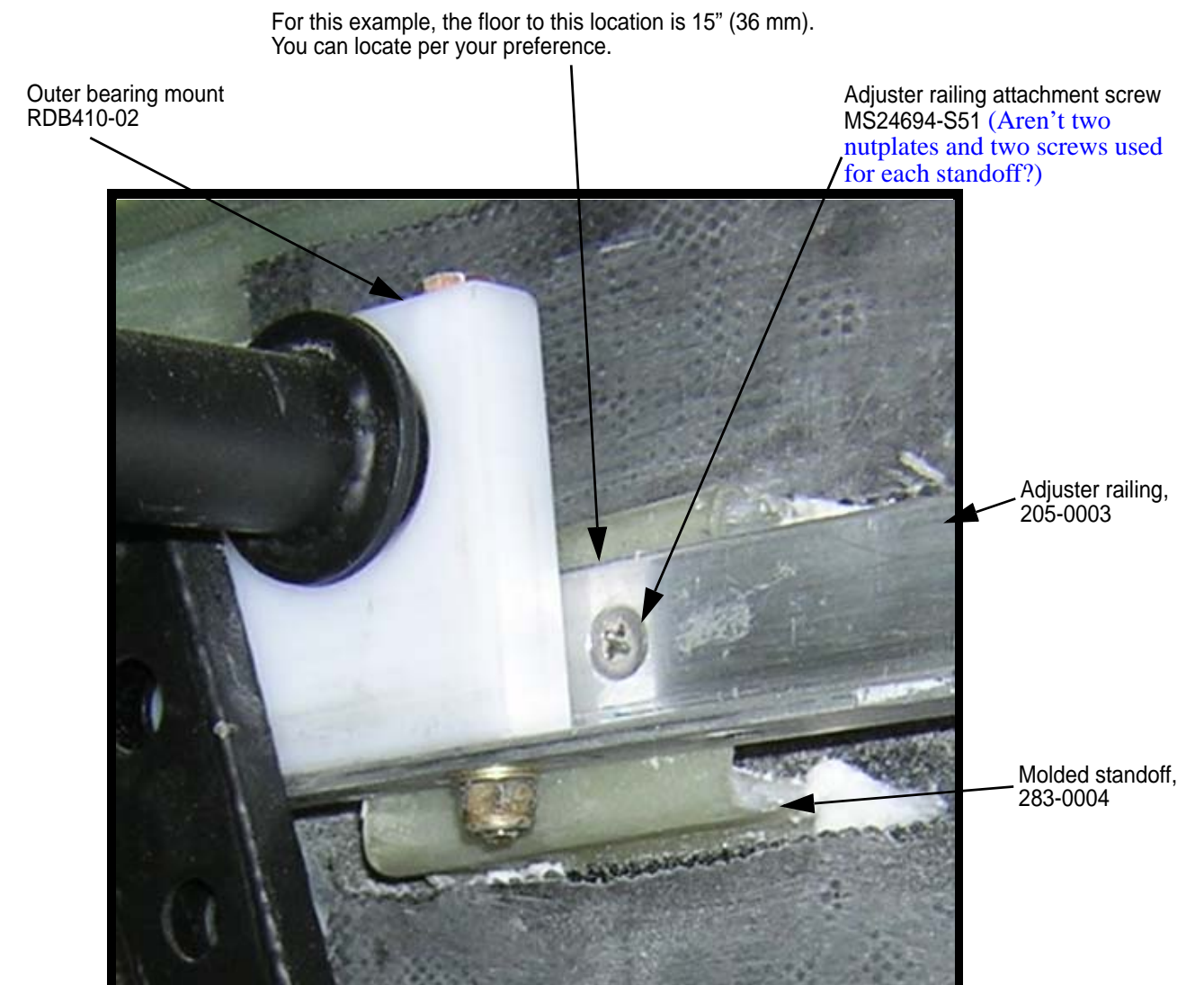
1. Attach the link adjusters (229-0006) to the crossover tube ends.

Figure S.4.0.3 Link parts



2. Position the assembled crossover tubes in the fuselage and find the desired height for the rudder pedals. A good starting place is to mount the top of the railing at 15" (36 mm), or wherever you prefer, above the floor when measured along the side of the fuselage. Mark the location for attaching the railings to the fuselage.
3. Make sure the crossover tubes are level and have free motion at the desired height.
4. Attach the adjuster railings (205-0002 and 205-0003) to the molded standoffs (283-0004) using a screw (MS24694-S51) and nutplate (K1000-08). Use rivets to attach the nutplate on the outboard side of the standoff.
5. Attach the assembled railings and standoffs to the outer bearing mounts. Drill a hole in the adjuster railing for the screws and the bolts.

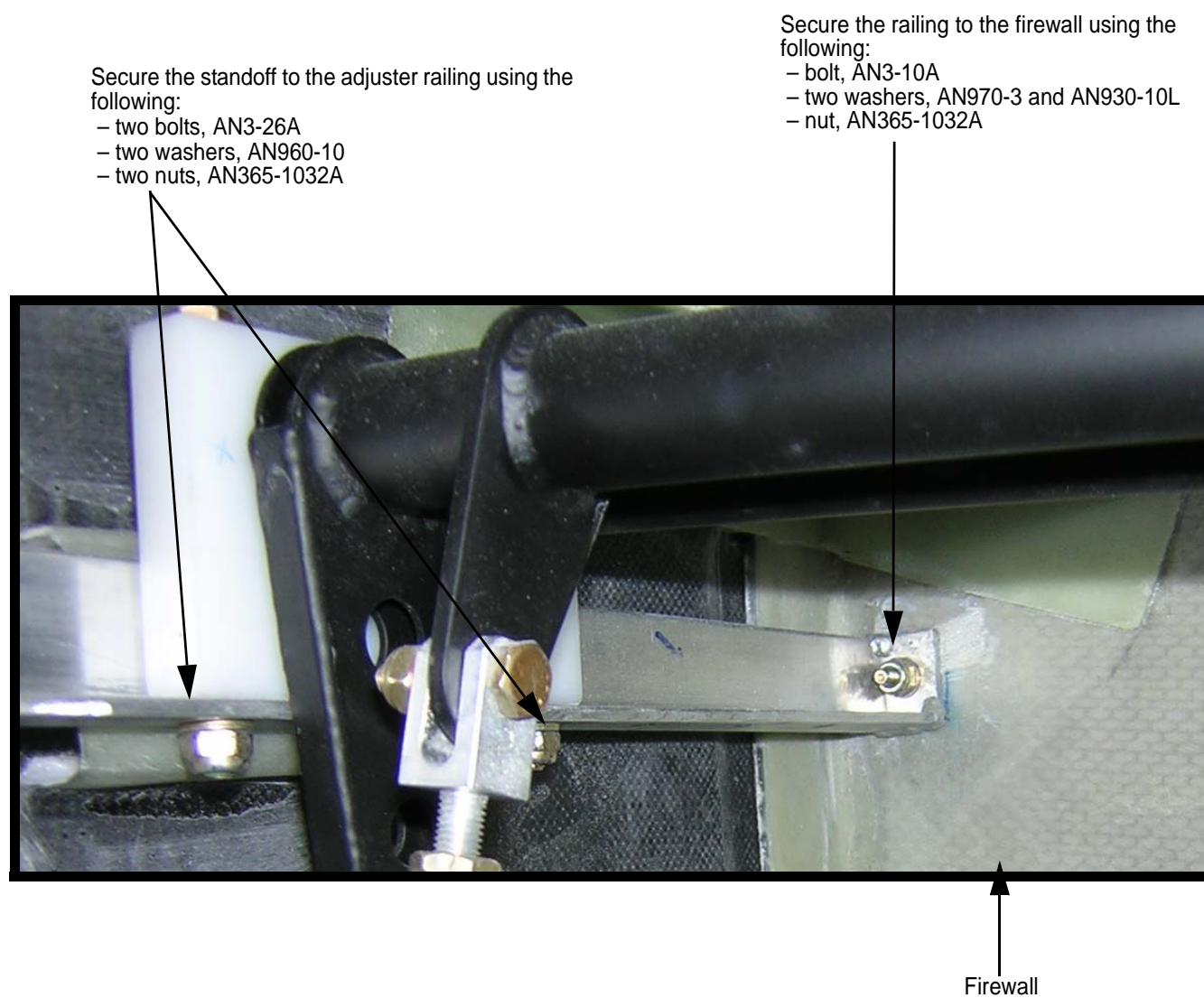
Figure S.4.0.4 Railing attached to standoff with the outer bearing mount



6. Mark the location for holes to be drilled in the firewall for the forward mounting bolt of the adjuster railings.

7. Remove the molded standoffs from the adjuster railings and bond the standoffs to the fuselage side in the marked location using E-glass or carbon layups.
8. Drill holes in the firewall in the marked locations for adjuster railing mounting bolts.
9. After the standoff has cured, reattach the adjuster railings and crossover tube assembly to the standoffs as well as attaching the adjuster railing to the firewall using a bolt (AN3-10A) two washers (AN970-3 and AN930-10L) and a locknut (AN365-1032A).
10. Check for excessive binding in the system. There can be a small amount of friction in the system.

Figure S.4.0.5 Attaching the railing to the firewall



S.4.A Connecting the Rudder Cable to The Adjustor Links

Overview of the Connections

Each rudder cable will have the following connections:

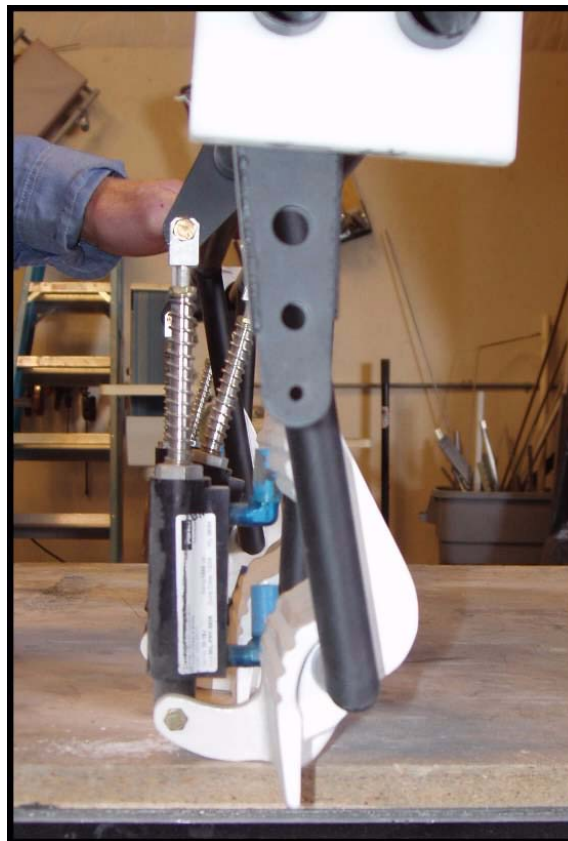
- Turnbuckle – connects the forward end of the rudder cable to the adjustor link of the crossover tube assembly.
- Rudder control horn – connects the aft end of the rudder cable to the rudder control horn.

Setting the Rudder Pedals to Neutral

Steps...

1. Clamp the rudder in the neutral position.
Use a "C" clamp and a couple pieces of wood on both sides of the counterweight to avoid crushing the rudder skin.
2. Position the left and right rudder pedals in neutral.
3. Make two wood spacers to brace the rudder pedals and use a few drops of instant glue to hold the spacers in place.

Figure S.4.A.1 Neutral position for crossover tubes and rudder pedals



Assembling the Turnbuckles

The rudder cables are connected to the crossover tubes using turnbuckles. The rudder pedal position can be adjusted by adjusting the turnbuckle. If it becomes necessary to make an adjustment to the rudder pedal position, you will be able to make it at any time.

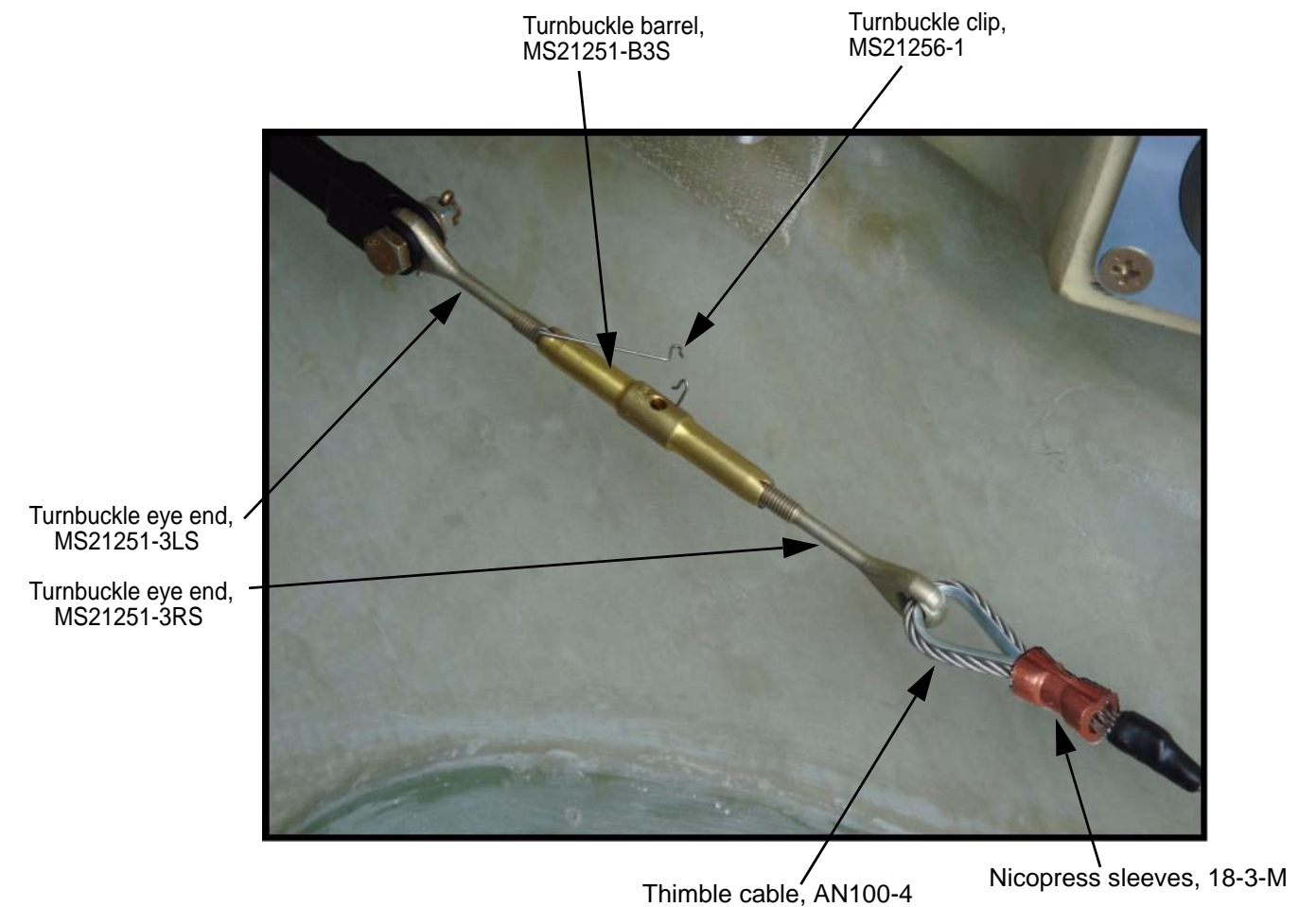
Steps...

1. Assemble the turnbuckles using the following parts:

- barrel – MS21251-B3S
- left turnbuckle eye end – MS21251-3LS
- right turnbuckle eye end – MS21251-3RS
- locking clips – MS21256-1

Don't insert the locking clips (MS21256-1) yet as they are hard to remove without damaging.

Figure S.4.A.2 Installing the turnbuckle



2. Connect the forward end of the turnbuckle assembly to the link adjuster.
Do not tighten the castle nut so much that you bind up the turnbuckle eye end.
3. Insert the cable thimble into the aft turnbuckle eye end and thread the ends through the Nicopress sleeve (18-3-M)
Tip: Do not crimp the Nicopress sleeve yet!
4. Pull the slack out of the rudder cables without pulling the rudder pedal bars away from the wood spacer.
5. Crimp the Nicopress sleeve in three places: ¹
 - 1 - First crimp in the middle
 - 2 - Second crimp at the thimble end
 - 3 - Third crimp at the cut end

Figure S.4.A.3 Turnbuckle connections to link adjuster and rudder cable

Tip: Any rudder cable adjustments must be done using the turnbuckles.

Link adjuster attaches to the turnbuckle using the following:

- bolt, AN3-6
- washer, AN960-10A
- nut, AN310-3
- cotter pin, MS24665-132



Cable thimble
AN100-4

Nicopress sleeve
18-3-M

Insert the cable thimbles through the aft turnbuckle eye end and then slide the Nicopress sleeve over the ends of the cable thimble.

1. As per FAA publication AC 43.13-1A/2A, Dated: September 1998.

Figure S.4.A.4 Completed Rudder pedal and crossover tube installation

Tip: Once the Micropress sleeves are crimped in place, any further cable adjustments must be done using the turnbuckles.

Tip: Do not insert the clips into the turnbuckle barrels. The clips are hard to remove without bending. Wait until you are making the final rudder cable/pedal adjustments.

