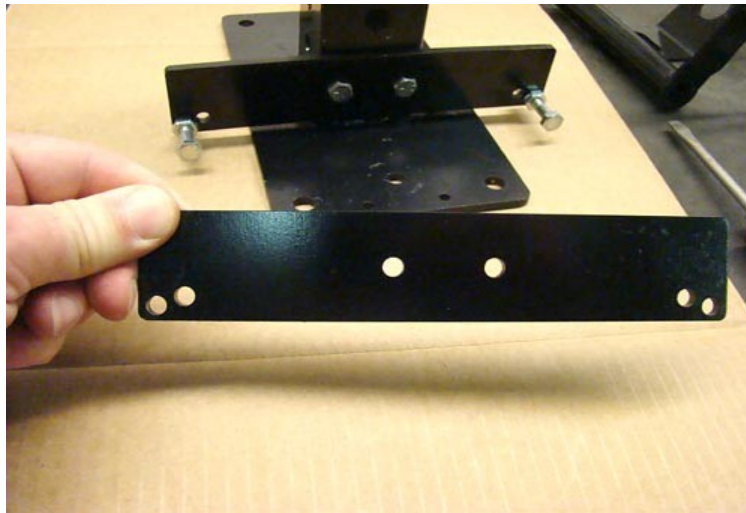
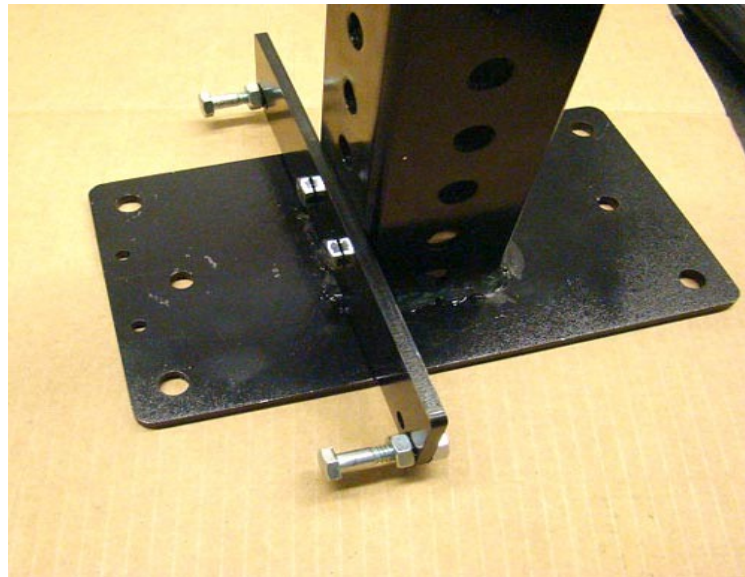


**Rudder pedal assy manual for the Learjet45.
Designed and built by Tom Goldberg. 02-19-2010**

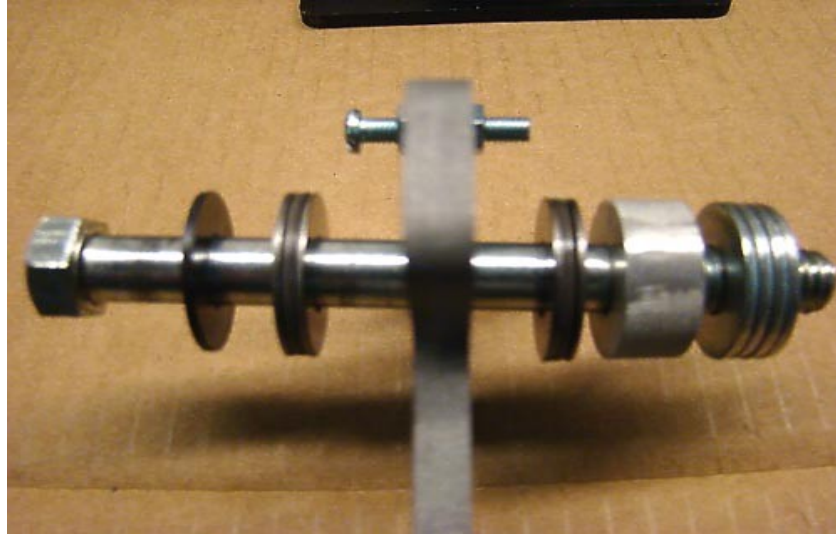
We will try to make this as easy as possible, showing each step needed to complete the rudder pedal assy's, with a brief description and a picture for reference, so here we go!!!!!!



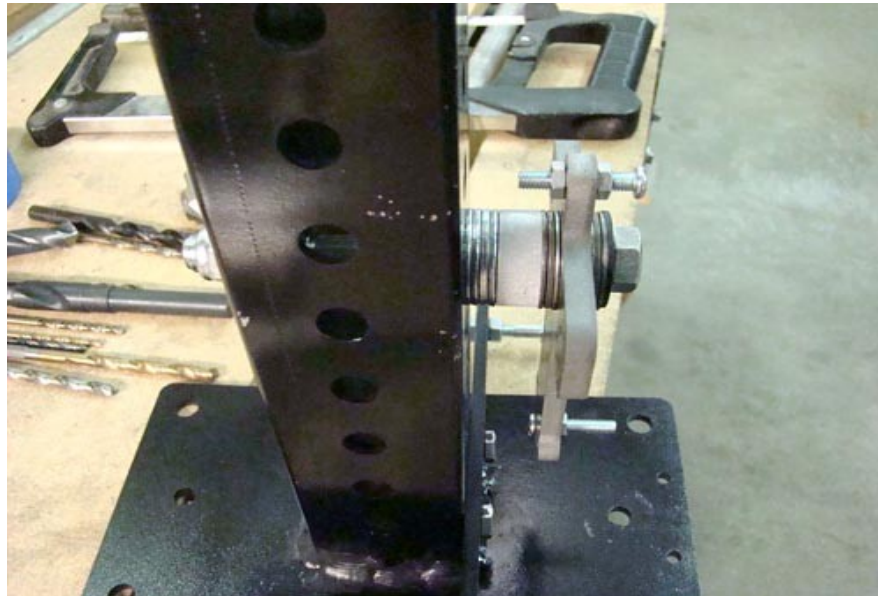
Attach this plate to the bottom of the main post, there are 2 holes at the bottom, using 7/16" X3/4" bolts and nuts washers.



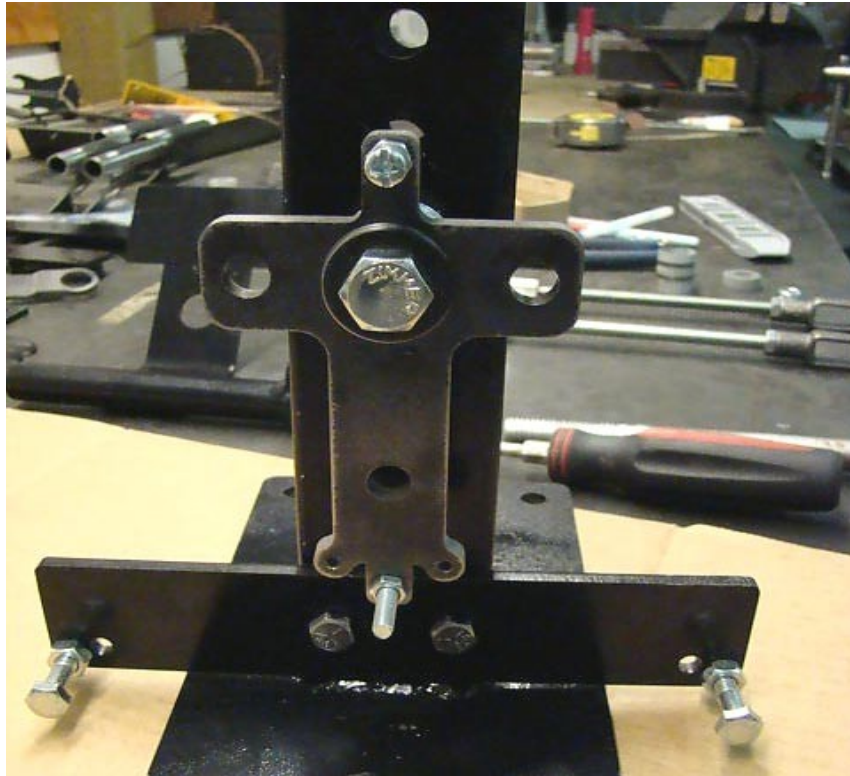
Find 2 7/16" x 1 1/4" bolts bolt them into the bottom lower hole on the outside edge of the plate, run the back nut up flush to the end of the threads, and use the other nut to lock it in place.



**Find 1 7/16" bolt 4" long, 1 nylock nut, 4 silver looking washers
1 thin black washer, 1 3/8" thick aluminum spacer, and 2
bearing sets, 1 bearing set will consist of 2 thin thrust washers
and 1 flat roller bearing. Arrange them in the order you see here.
Starting at the bolt head, 1 black washer, 1 bearing set, next slide the
bellcrank on, next bearing set, 3/8" alum spacer, 4 silver washers.
Oh and the bearing will be in the middle of the 2 thrust washers.**



**Slide the bolt and bellcrank assy through the 6th hole up from the
bottom, grab another black washer, slip it over the end of the bolt
tighten the nylock nut enough to remove any slop on the bell crank
when done you should have it adjusted so the bellcrank roatates
easily and smooth. Page2**



Notice the 2 8/32 machine screws one on top one on bottom of bellcrank, find 1, 8/32 x 1" machine screw, insert it from the back into the bottom hole tighten with nut, the top is also 1" machine screw look at pic above this one you need to center this screw in the middle of the bellcrank and use a nut on each side just as it looks in the pic.

The top screw is the rudder steering stop bolt, and will only allow the rudder pedals to be pushed just so far. The bottom screw is used to move the rotary potentiometer swing arm attached on the pot.

NOTE:

The top machine screw is centered for a reason, when the clevises are hooked up to the bellcrank, and when you push the rudder pedal to its extent, the bellcrank will rotate and the machine screw will touch the clevis stopping it from rotating any further, the 2 nuts should fit in between the clevis arms, and the threaded shaft of the screw should touch the outside of the clevis arms, you don't want the pan head of the screw to touch the clevis arms, if so readjust it properly. You will understand what I mean when you get it all together but just keep that note in the back of your mind.



There is a left and a right rudder pedal,im sure you will figure out which one is which, grab a left and right pedal, find 2 7/16" X 1" bolts and 4 nuts, insert the bolts as seen here into the toe pedal adjuster bracket, these bolts are used to adjust the toe pedals in or out to your liking.



At this point you could insert the small return spring into the toe pedal bracket as shown here before you attach the pedal to the rudder arm,look at the pic below of the spring one end will be cut open and goes to the toe pedal bracket, cut it like in the picture the closed end will go to the rudder arm machine screw.



Notice the 1" X 8/32 machine screw at the bottom edge of the rudder arm, insert it as shown here, this is the toe pedal stop bolt.



Now flipped around the other way, find the 5/8" X 7" bolt and 2 5/8" jam nuts. The idea here, is to get the pedal tube as tight as you can between the bolt head and the first jam nut, yet still allow the pedal to swing freely with no resistance. The best way to do that is to run the jam nut up against the tube end then back it off a hair, install the other jam nut on the other side, and tighten both nuts together it might take you a couple of tries to get it just right.

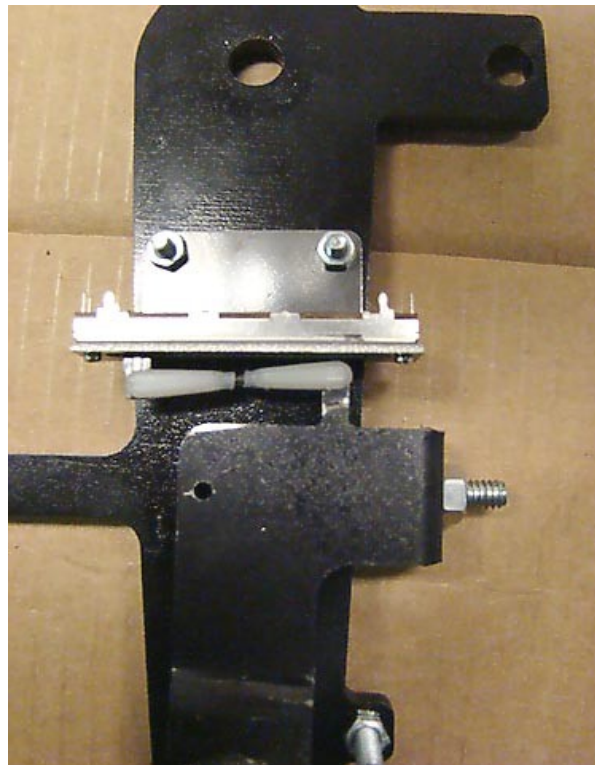
Next find a 1" X 8/32 machine screw and 1 washer and 2 nuts insert the washer onto the screw stick the screw through the spring hole, run a nut on then stick the screw through the hole in the rudder arm, and put a nut on the other side of the rudder arm and tighten. PS one thing you may also want to do is to spray some silicone or a light coat of thin oil on the bolt for the pedal tube, to keep it from possibly squeaking.

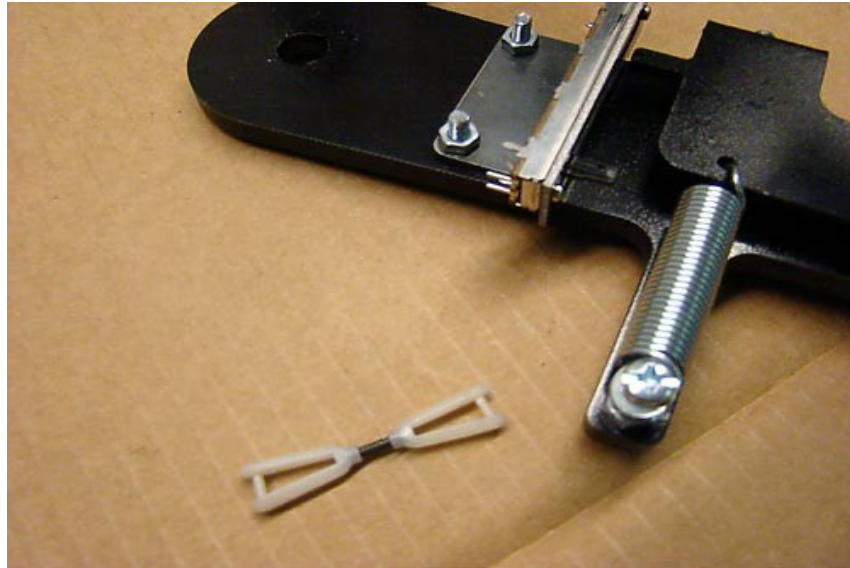


Next you can attach the slide pot to the bracket, make sure when you order your pot that you order the screws also, they don't come with the pot. Also you may want to put a small washer on the screw to bring the screw out a little bit

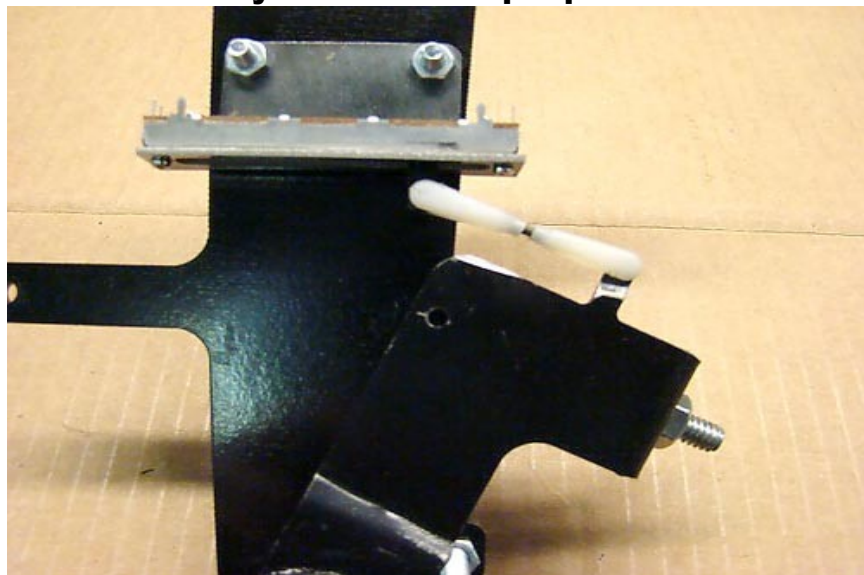
I noticed that it went into far and wouldnt allow the slide arm on the pot to fully retract all the way closed,so you might check that when you put it together.

Find 2 8/32 X 1/2" screws and nuts, and attach the pot to the rudder arm as seen here.





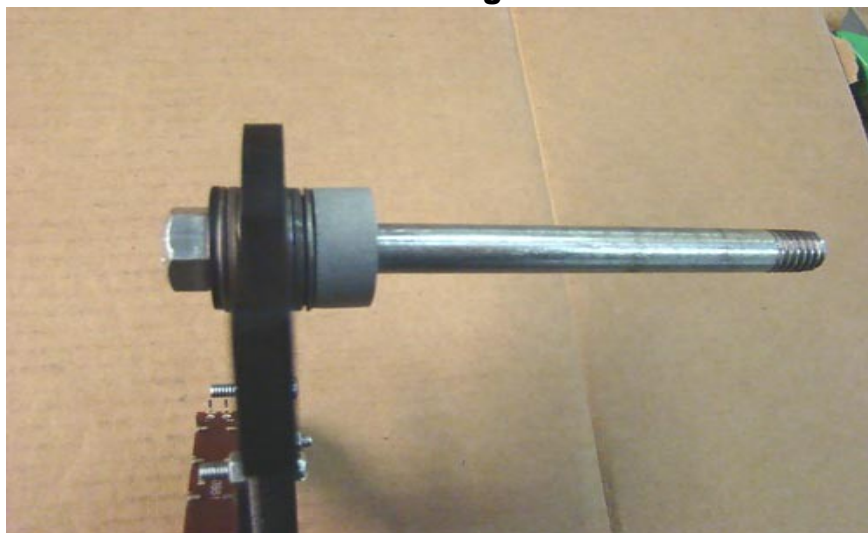
You will find some small clevises and some 2-56 threaded rod, this goes back to my rc airplane days and works quite well for the brakes. Make sure that you first adjust the toebrakes where you want them to be in the closed position or off position, then pull the slide pot arm to the fully off position, then adjust the clevises where you need them to fall into the holes on the toebrake bracket and the pot slide arm. You will have to drill a 1/16" hole into the slide pot arm, try to get it centered best you can, the slide pots that I got have the insulated plastic arm. You will need 4 of these. The mouser part# is 652-PTA4432010CIB102, these are 1K linear, by bourns. The part# for the screw is 48SM004 you will need 2 per pot.

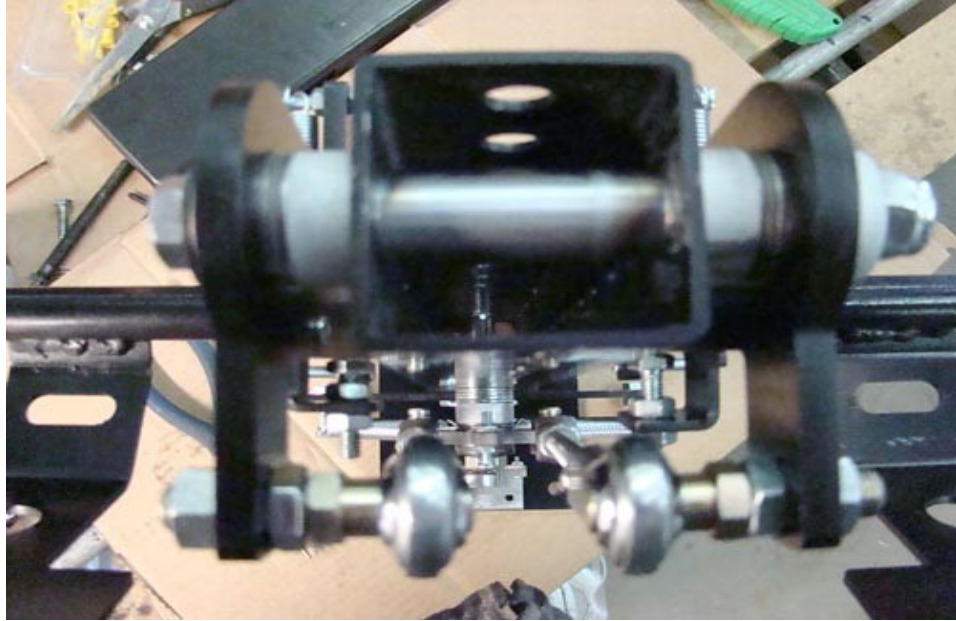




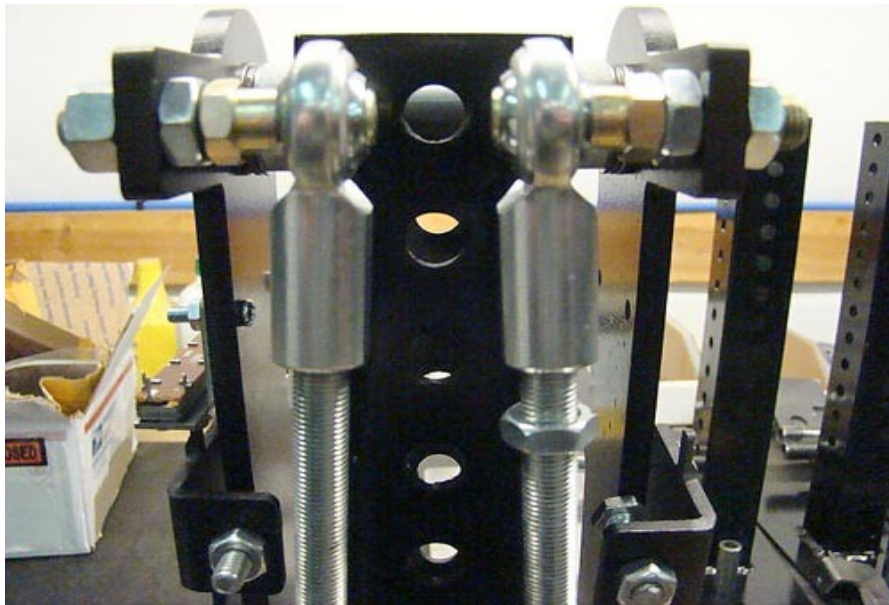
Ok find the 7/16" X 4 5/8" long bolt, arrange like this starting from the bolt head, 1 black washer, 1 bearing set, the rudder arm next, 1 bearing set, 3/8 aluminum spacer, at the top hole in the square post, insert the 1 3/4" steel spacer, then run the bolt and rudder arm through the square tube and steel spacer, next on the other side will be a 3/8" aluminum spacer, a bearing set, the other rudder arm, a bearing set, and a 1/4" aluminum spacer and the nylock nut.

Also make sure to put a small dab of thin oil onto the needle bearings, tighten the assy up, it should be tight enough to get rid of any slop on the rudder arms, but firm enough to hold everything solid, you should be able to hold the rudder arm up to the side and let go and it should swing back down under its own weight





**Next linkage pushrod connection, your linkage rod should look like this
1 jam nut for the spherical rod end and 1 for the clevis end
after adjustment you tighten down the jam nuts.**

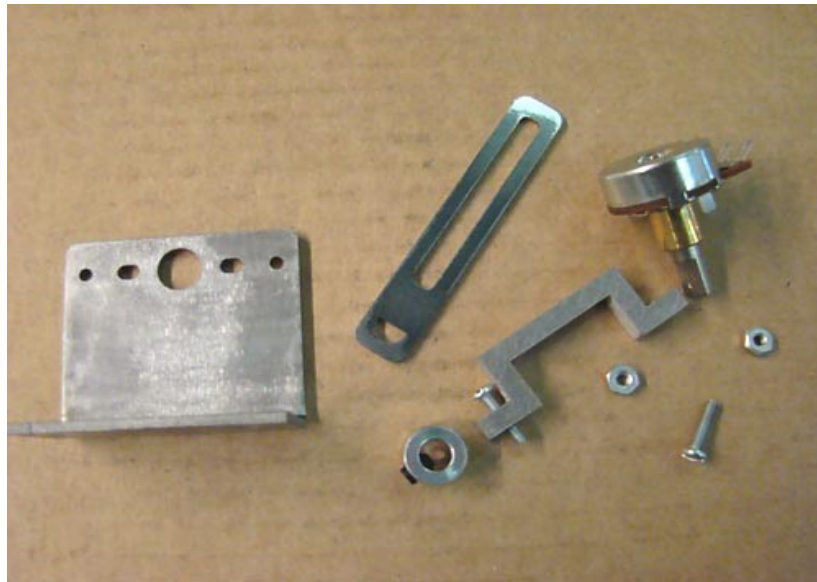


On each rod end thread on a 3/8" jam nut and tighten it together this jam nut is used as a spacer, to set the rod ends in a little, for clearance purposes, now insert one rod end into the rudder arm put another 3/8" nut on the end and tighten, now holding the rudder arm straight up and down in line with the square main post adjust your threaded rod and clevis so that the bell crank sits perfectly straight up and down, insert the grooved pin through the clevis and bellcrank, and then put the retaining clip on the end of the pin, then go do the other side, take your time here to get your rudder arms to sit nice and straight along the post and your bellcrank should be nice and straight up and down also. Once again put a little oil on any of the moving parts, a little on the clevis pins and so on.



**Here is basically what you should have now.
You can attach the bigger springs now, again cut one end
open for the bellcrank side the other end leave closed.**

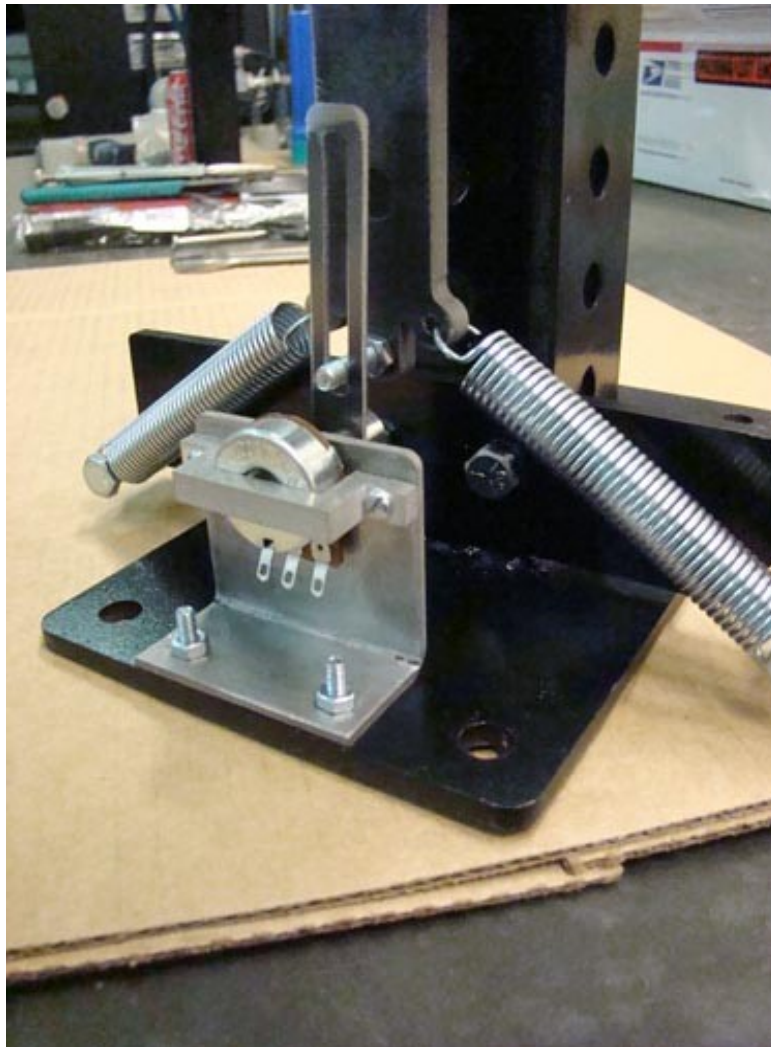
Now lets move on to the rotary pot setup.



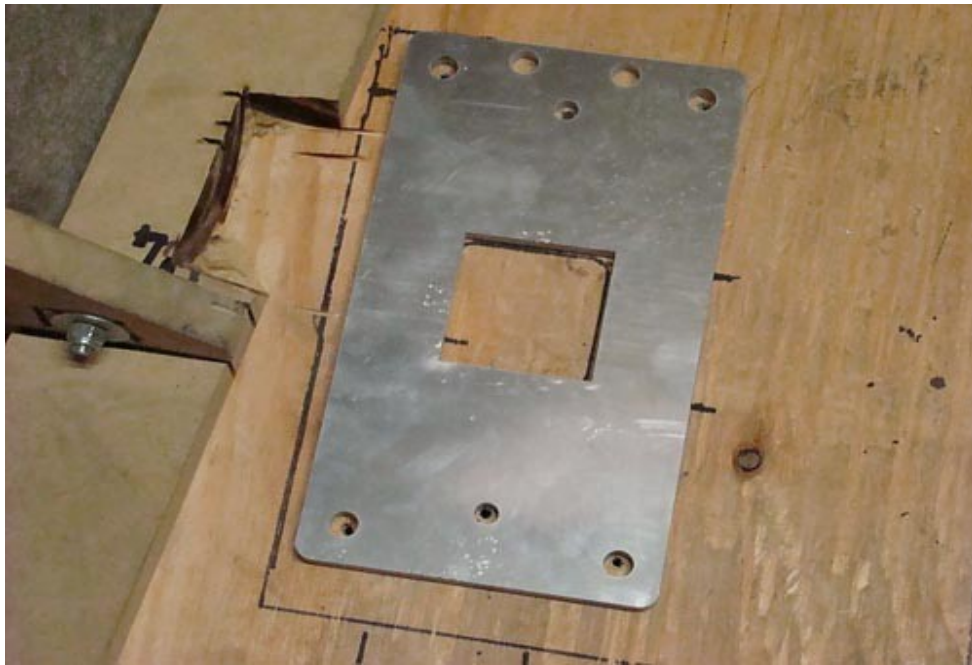
Find these pieces, the pot is the same pot used in the CH Rudder pedals you can get from the CH website the HP-100A



Assemble as per picture, the connections will be straight down on the backside, push the collar on tight against the swing arm and tighten the set screw.

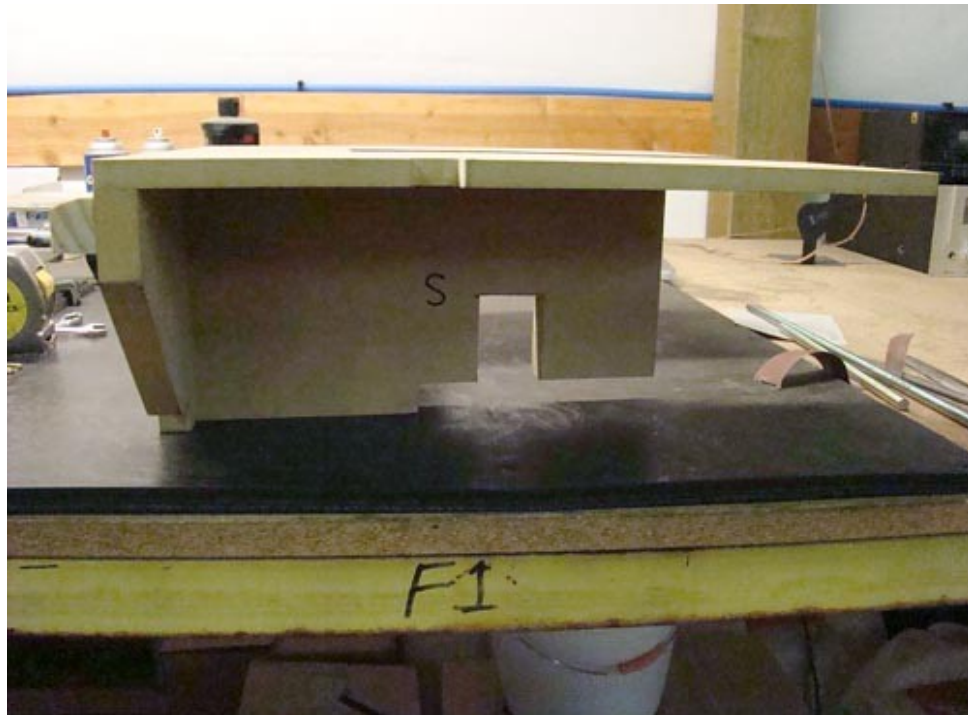


Find 2 8/32X1" screws nuts,attach the bracket as you see it here, the panhead of the screws will be on the bottom, dont worry those will sit down in the holes that are cut in the top aluminum shim plate that goes underneath,the main base,you see here.



Here is the top aluminum shim plate, notice the 2 holes inward at the very top, thats where the panheads of the screws set into.

Notice to the left you will have to notch a small area out for the spring plate to sit in. now would be a good time to set the rudder assy into place, a good starting point to set the plate would be about 5 5/8" back from the firewall,of course this is also going to depend on how long your legs are and where you want your seat position when flying. Ive noticed in pictures of pilots flying the LJ45 while manually flying the plane that they seem to sit up quite close to the yoke cloumn and controls of the plane,but your going to have to figure out what is most comfortable for you, I would suggest to have a seat in the cockpit,set the pedals where you think it feels right then temporarily use some screws with washers on them to,screw the pedal assy to the floor,then sit back in your seat and move the pedals back and forth to see if this is where you want them to be, I will tell you at first these pedals seem a little strange they arent CH pedals,and dont feel the same but you will get used to them. But for sure take your time here getting them in the right place where they will be comfortable to use.

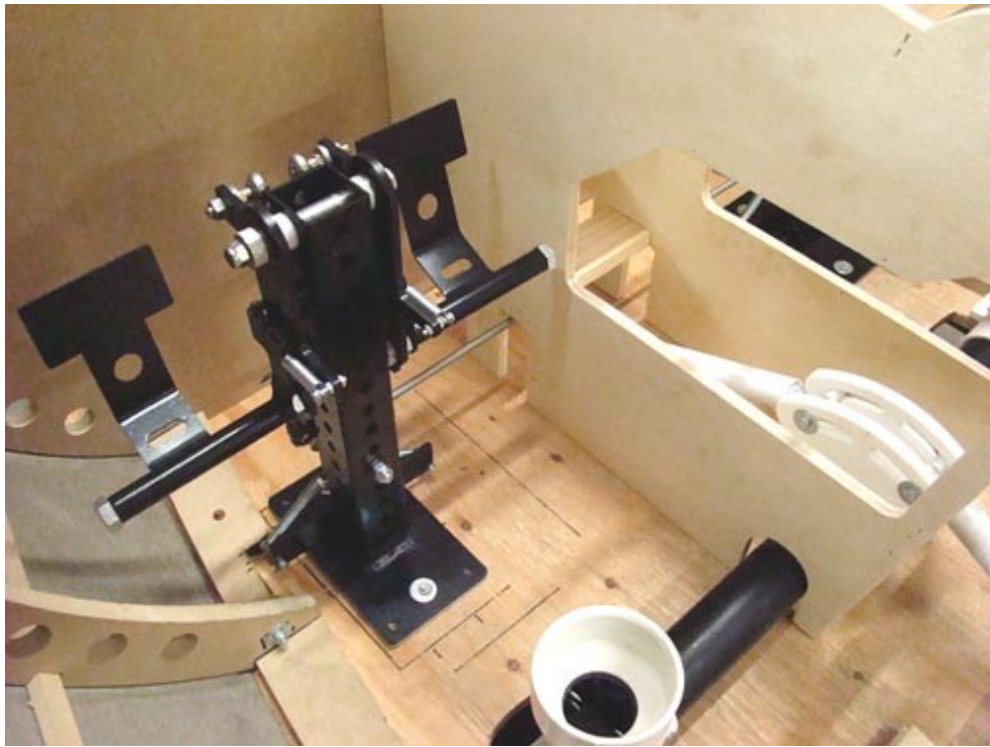


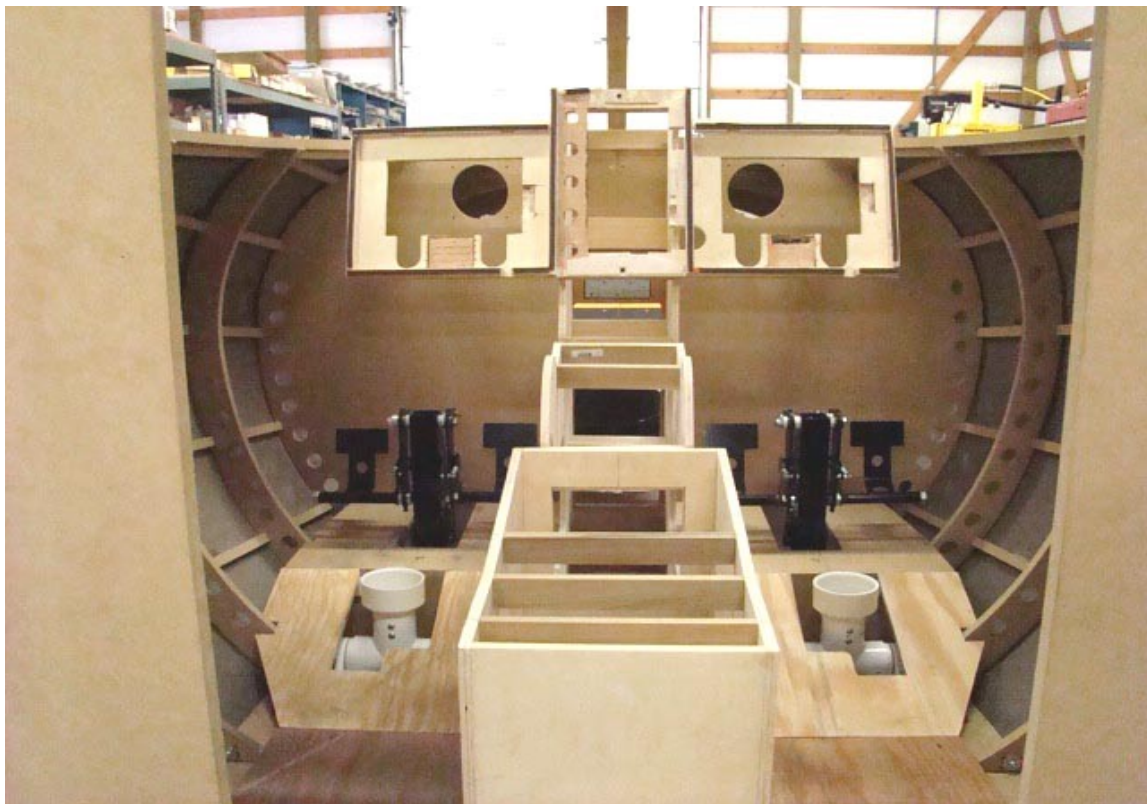
you will need to notch out the rudder pedestal like this to clear the spring plate and spring on the rudder assy,

then you will need to notch out the other side for clearance of the cross linkage that will go between the 2 pedal setup's like this below

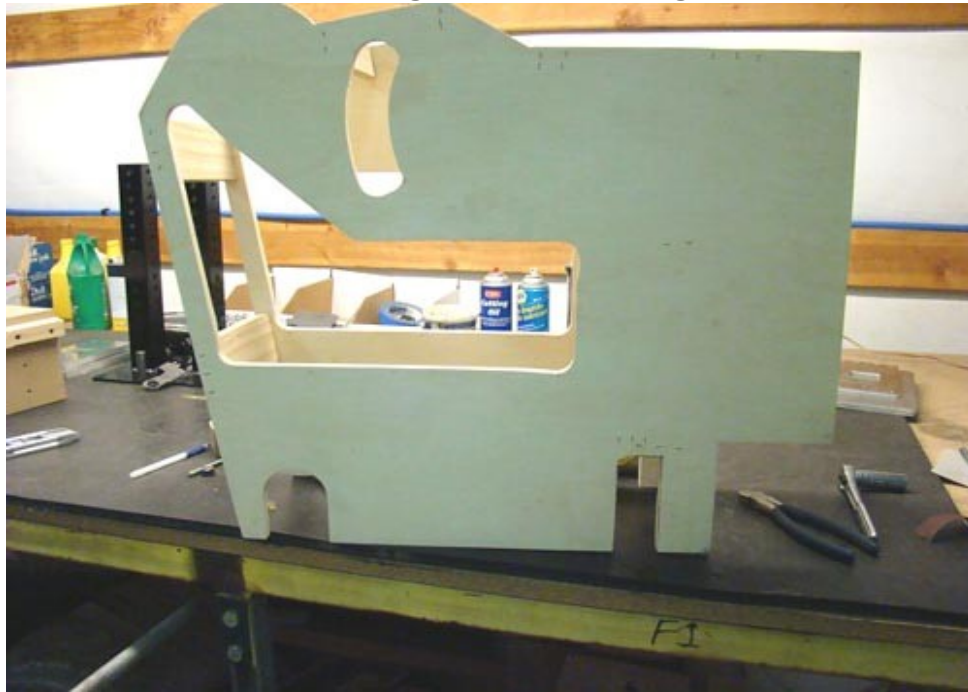


Now set your rudder pedestal box in place, and adjust the rudder assy so that it sits center in the opening of the top of the box, put some screws into hold it in place and check it out. Here's just some various pics of the pedals in place.





You will also have to notch the center pedestal like this so the cross linkage can run through it.

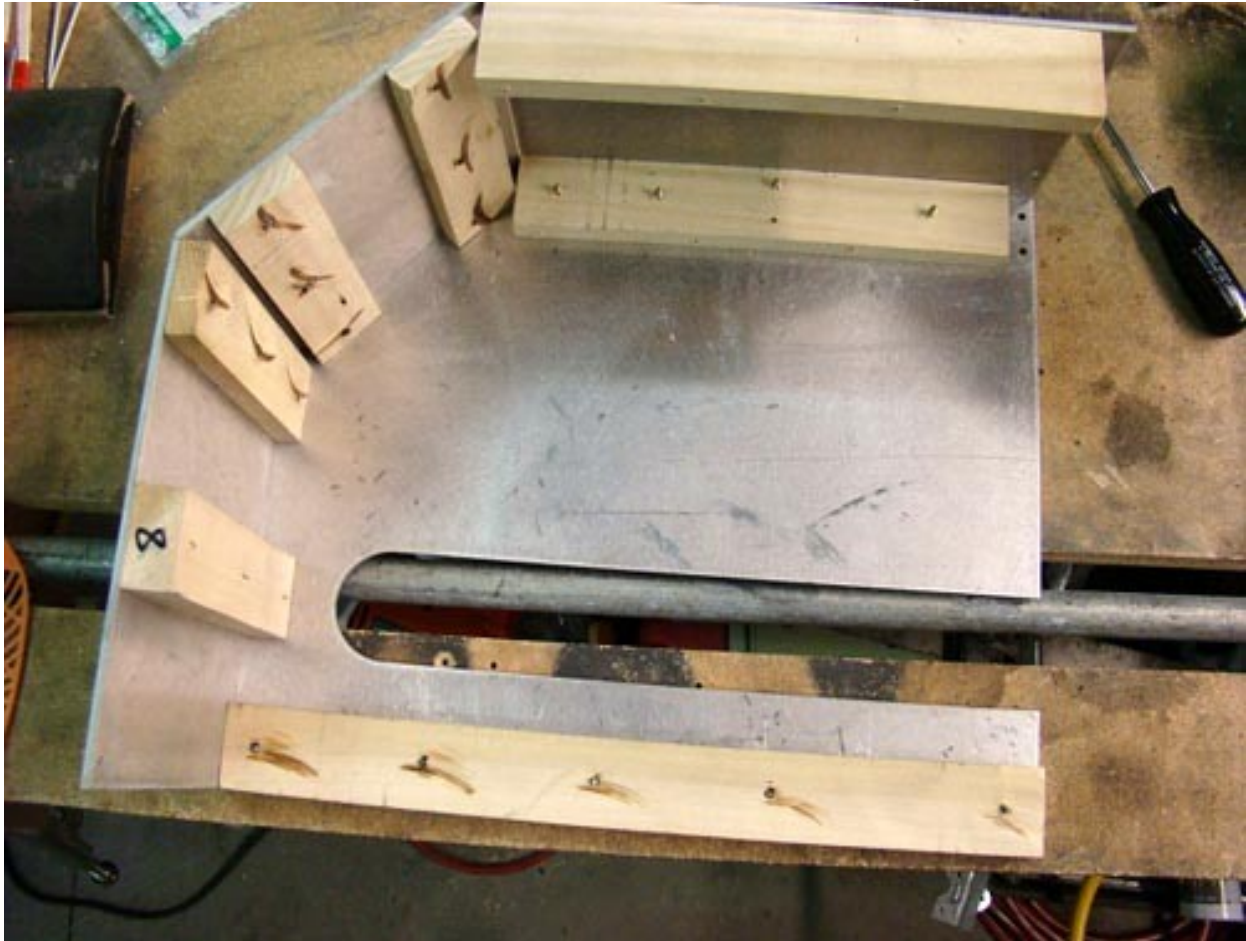


last thing to install after you get everything where you want it is to drill through the 3/8" holes in the base plate and run the 3/8" bolts down through the baseplate and the floor and attach the largest aluminum plate in the kit to the under side of the floor, then tighten everything up real nice and thats it.

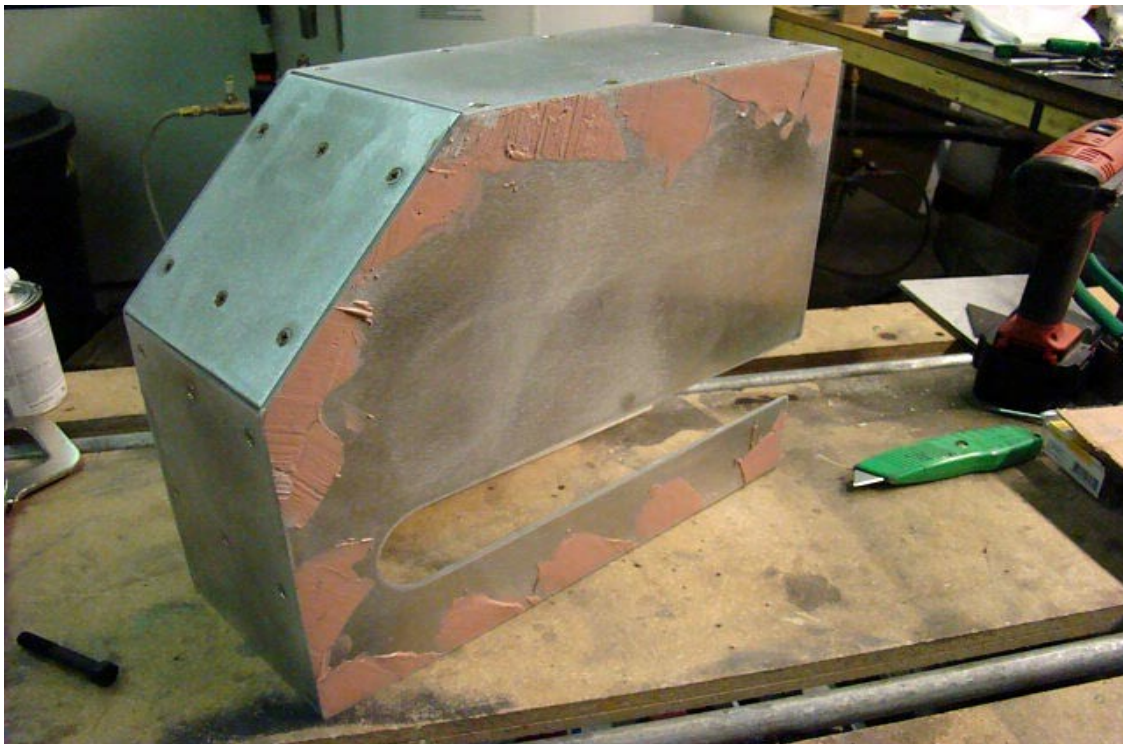
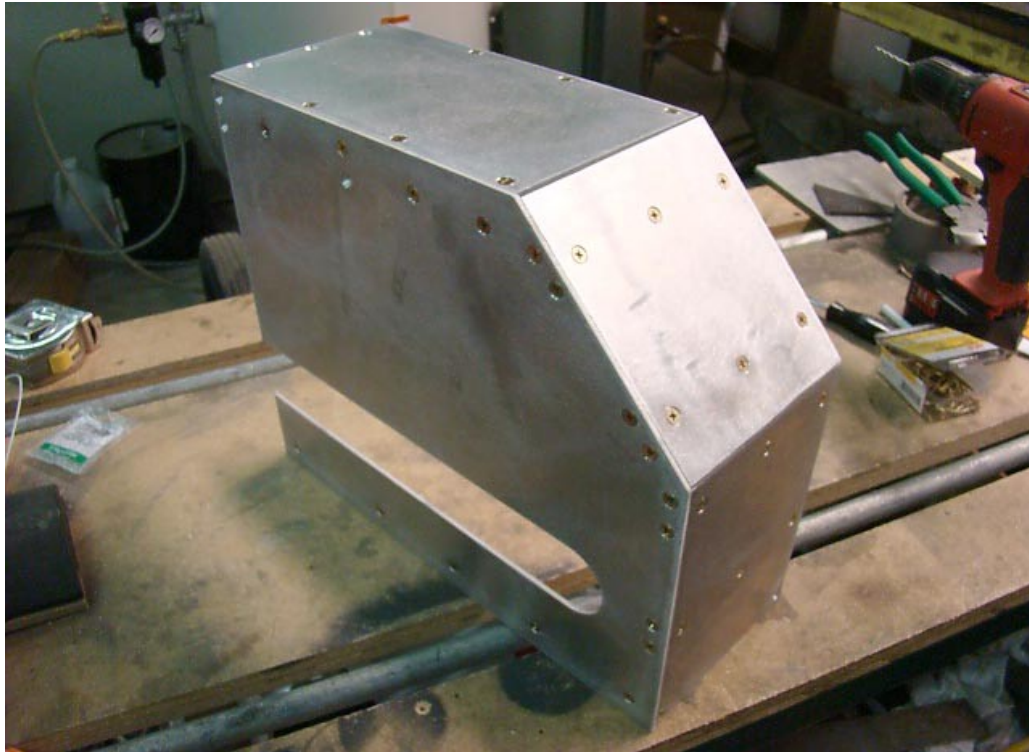


Assembly of the rudder pedal housing covers.

**Basically just take a good look at the pictures, you will need to get yourself some 1/2" X 1 1/2" hardwood strips cut them to size, you will also want to get a 3/8" countersink bit and on the outside parts of all of the aluminum pieces you want to countersink them a little bit below flush when you set the wood screw in the hole, this will leave some room for filler to go over the top and not see the woodscrew heads
I used bondo filler, a lot of time taken here to fill and sand will make the covers come out much nicer so take your time here.**







**That concludes the assy of the pedals and covers, for more
information pricing and details feel free to email me at**

tbtransmission@gmail.com

Regards,Tom