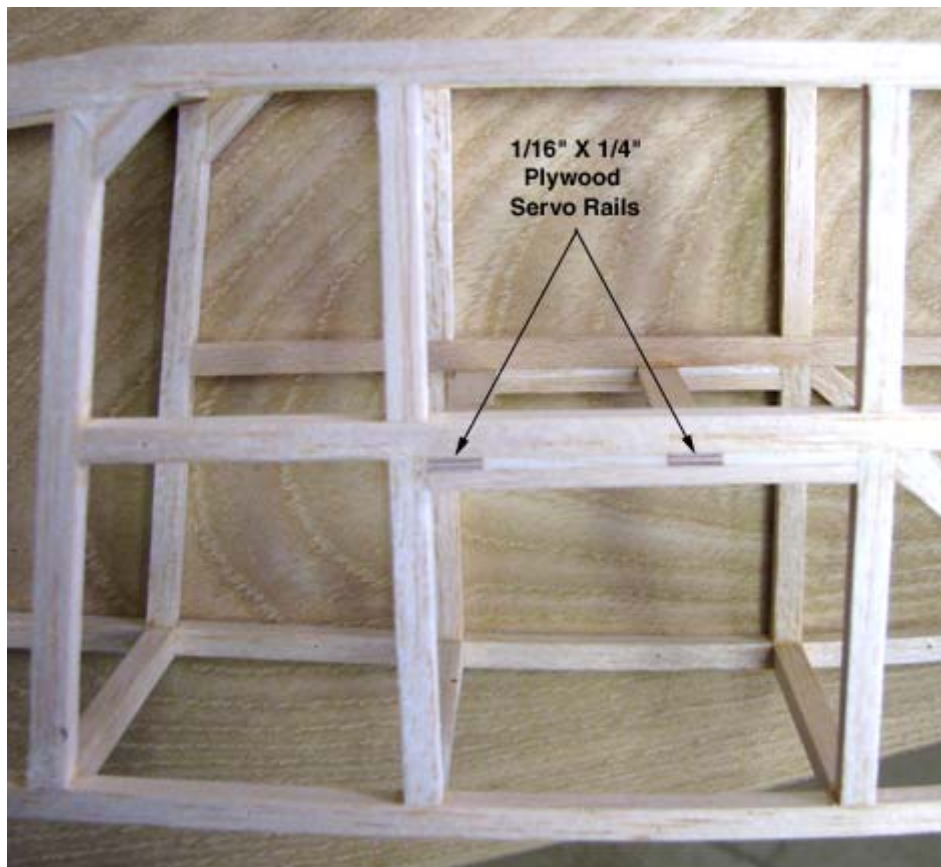


David Harding

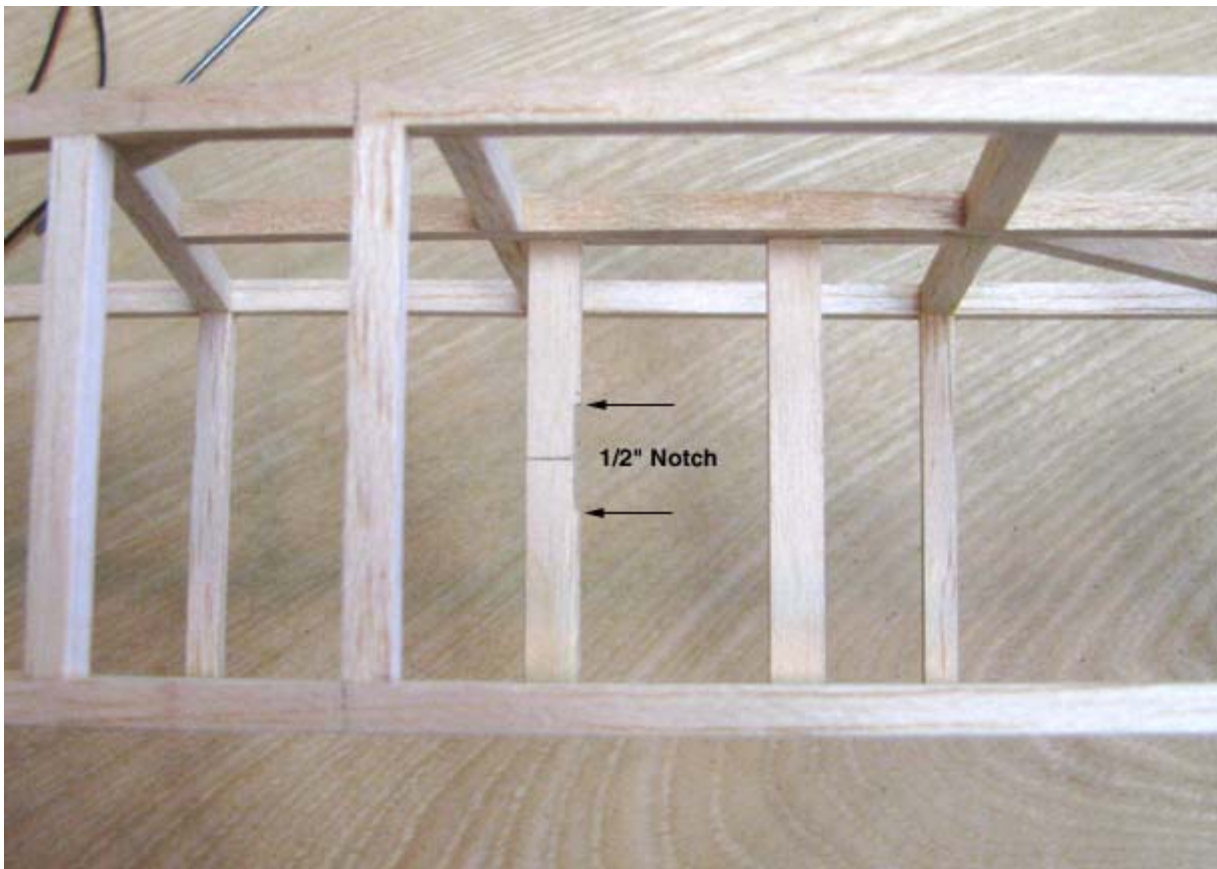
From: Tandy Walker [tandyw@flash.net]
Sent: Thursday, December 03, 2009 6:29 PM
To: Undisclosed-Recipient: ;@smtp105.sbc.mail.mud.yahoo.com
Subject: 25 Speed 400 Cloudster - Servo and Push Rod Installation

Speed 400 Cloudster Project

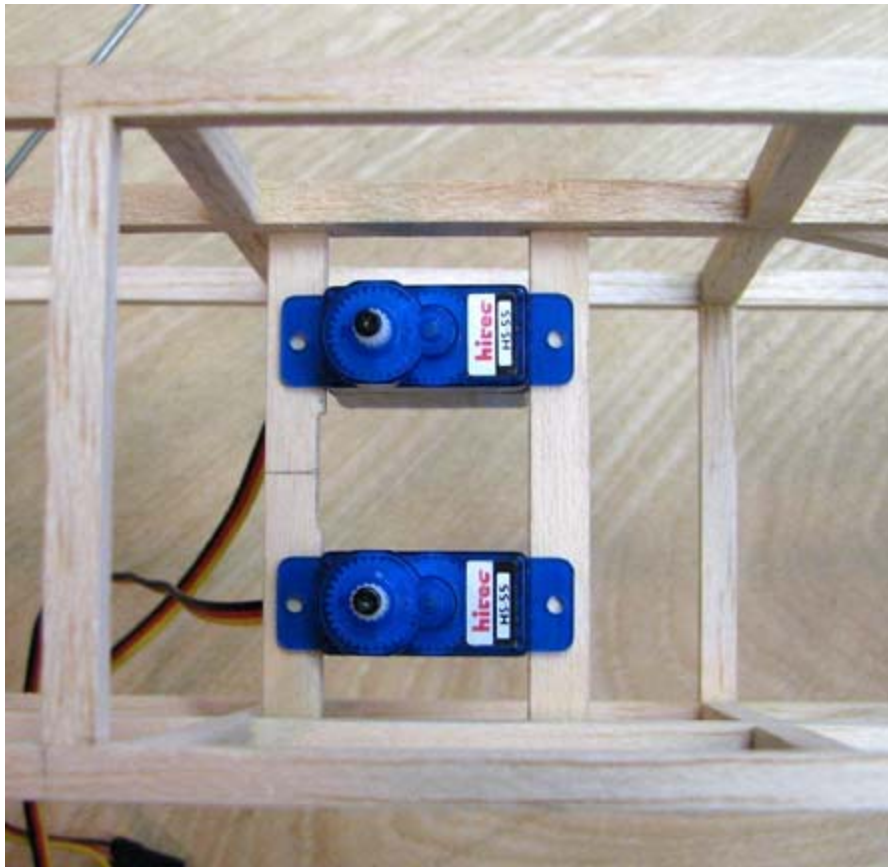
Looking in from the right side of the fuselage main frame, you can see the ends of two 1/16" X 1/4" plywood servo rail mounts secured in place with a sandwich structure.



Looking down from the top of the cabin, notice the 1/2" notch on the forward edge of the aft rail.



The small light weight Hitec HS-55 servos shown below were selected for use on the Cloudster. The servo rail mounts are placed to touch each end of the servo. Therefore, to remove the servo, they are slid over to the center where the notch is located, lifted up, and then tilted to get the servo out from between the rails. It is because the servo wire and connector prevents the servo from being lifted straight up out of the rails.

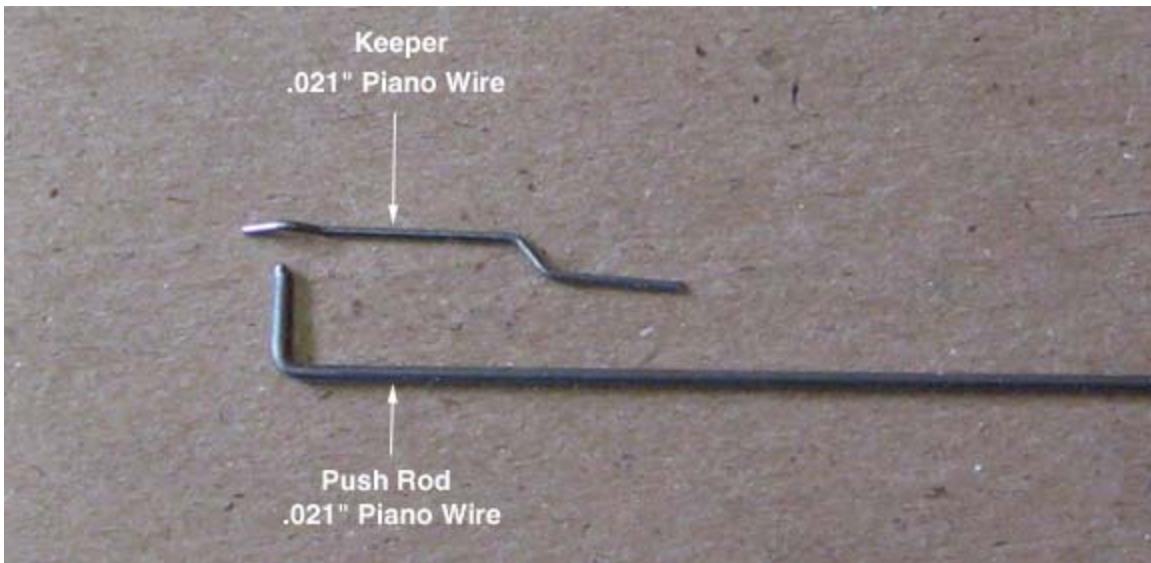


(Good Tip!)

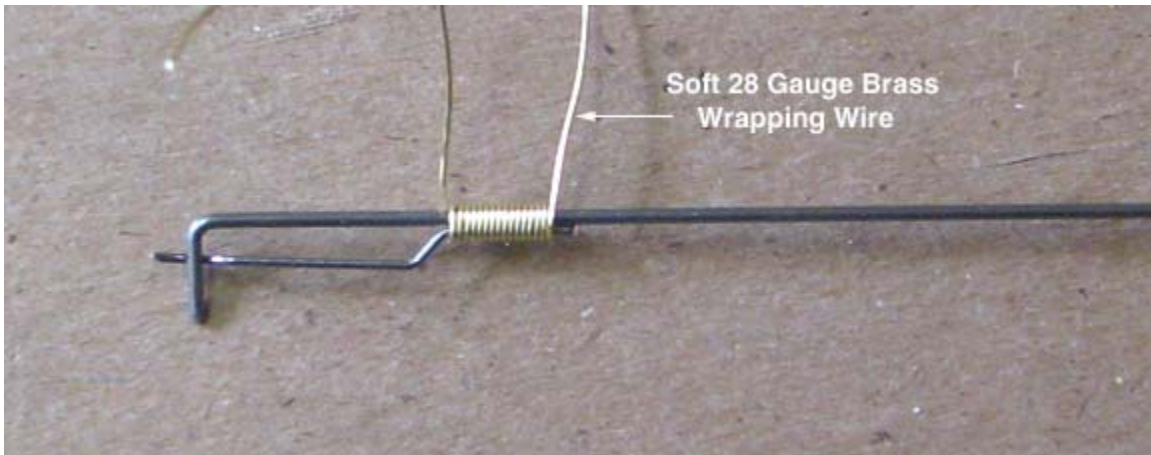
A very good friend of mine and outstanding model builder who won the SAM Championship several times, was Jim Reynolds of Universal City, Texas down by San Antonio. Jim, who is gone now, showed me how to make extremely light weight push rods, which I have used many time, using Sullivan's Gold-N-Cable #507 shown below. He told me to use the yellow sheath as the guide and substitute 1/32" piano wire as a push rod for the 1/32" stranded cable that comes with the set.



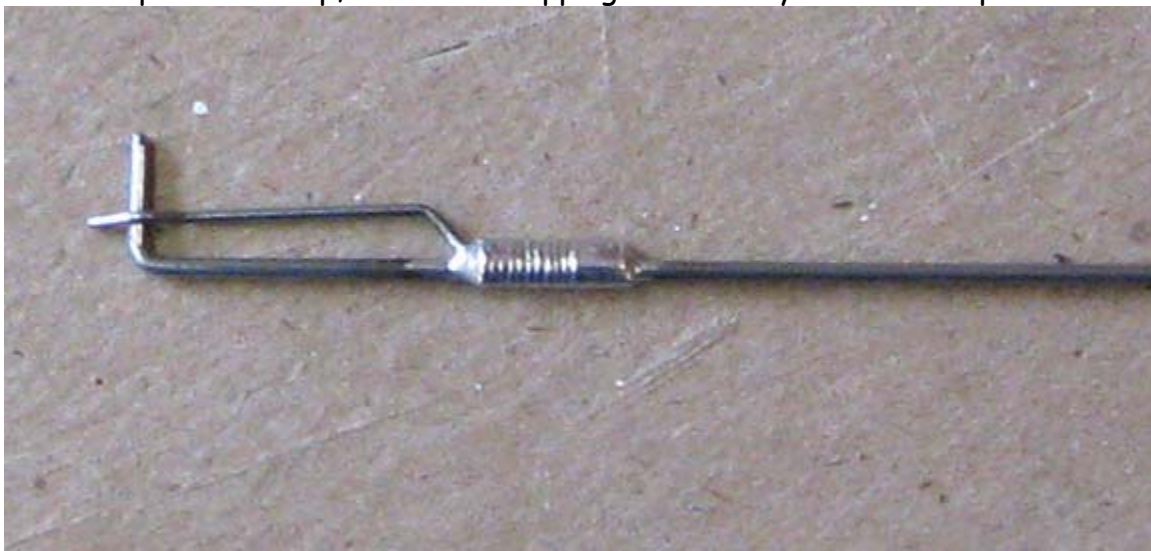
I came up with a neat little clip design to hold the 1/32" piano wire on the servo control arm that I will now describe using the picture below. A 90 degree bend is put on the end of the 1/32" (.032") wire to form a push rod post as shown on the bottom. The keeper, shown on top, is bent up out of .021" piano wire. Notice that the keeper has "V" bent on the end that fits up around the push rod post.



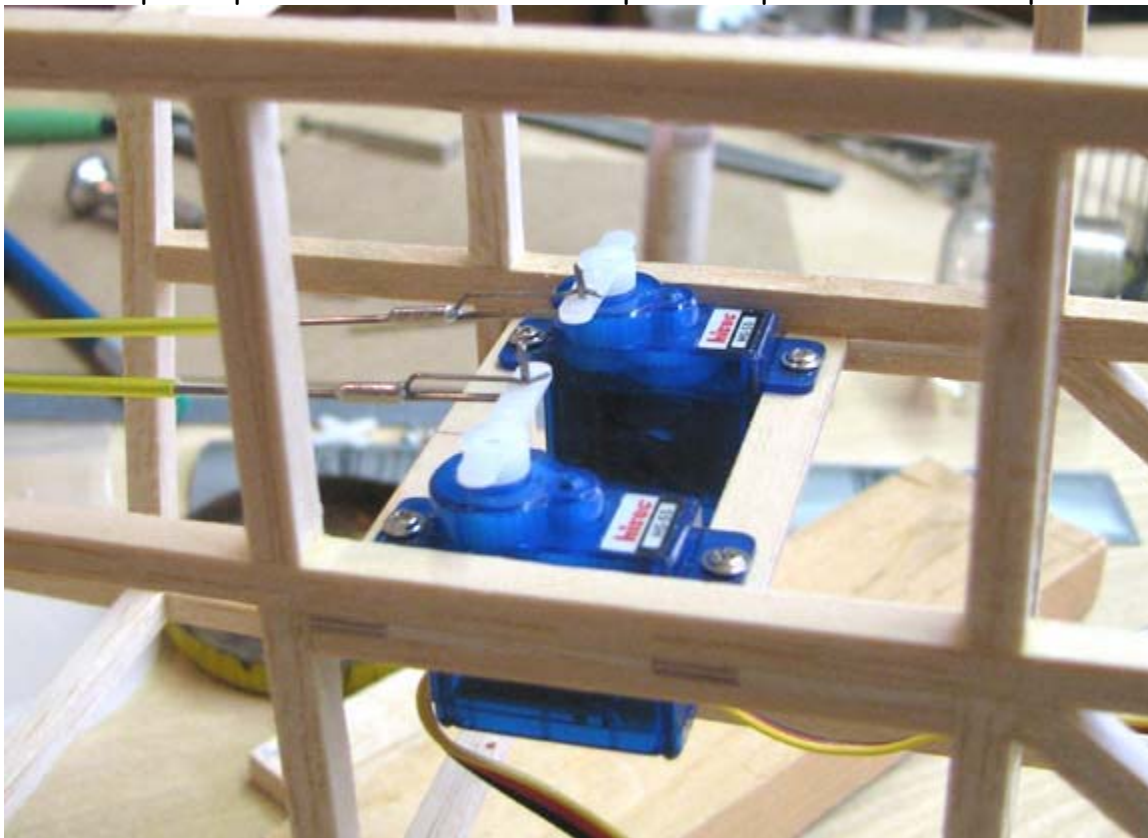
The keeper is attached to the push rod by wrapping the two together with soft 28 gauge brass wire as shown below.



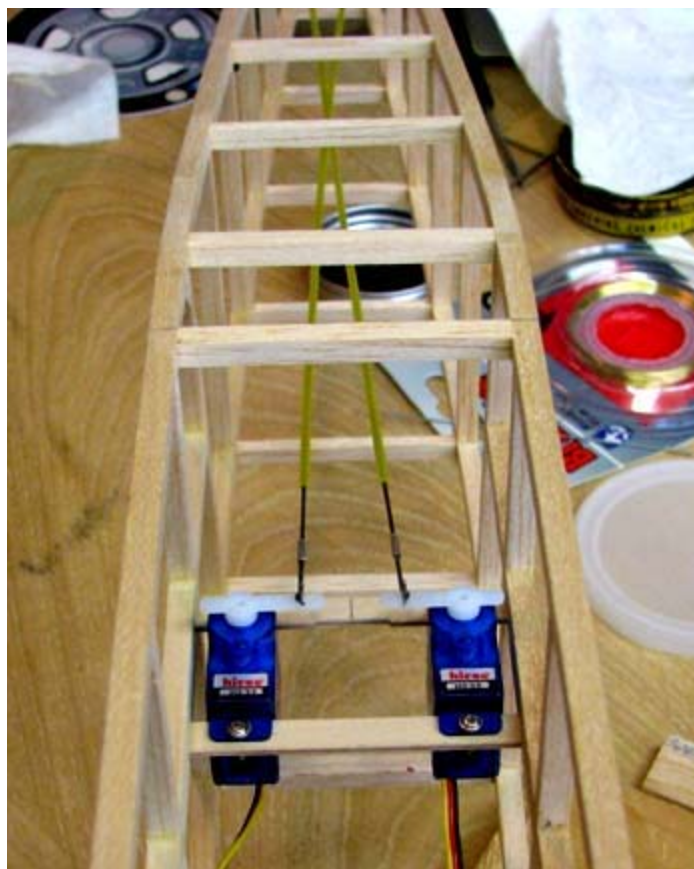
Care must be taken in getting the keeper properly aligned so that the V on the end engages the push rod post. Then to complete the clip, the wire wrapping is carefully soldered in place as shown below.



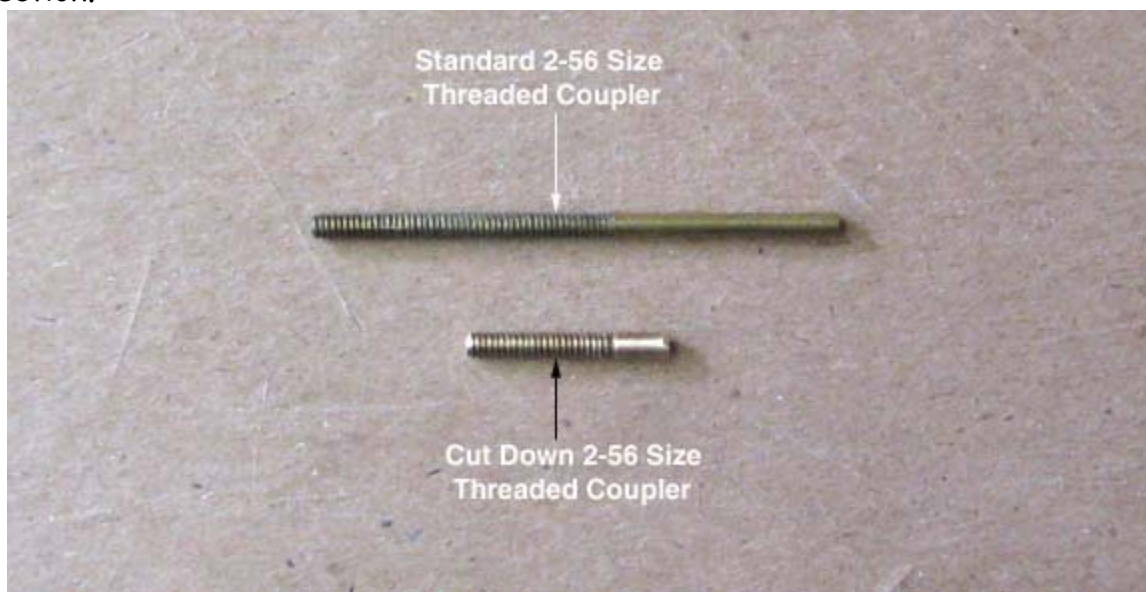
The two push rods are clipped onto the two control arms of the installed servos as shown below. Notice that the V keeper is placed on the inside of the push rod post so it can not possible come off.



This picture shows how the push rods cross as they go back down the fuselage main frame in order to keep the push rods as straight as possible. To complete the push rod installation, both yellow sheaths must be braced (stabilized) at least every three inches. On the Cloudster, a brace will be added at every other station in the fuselage main frame.

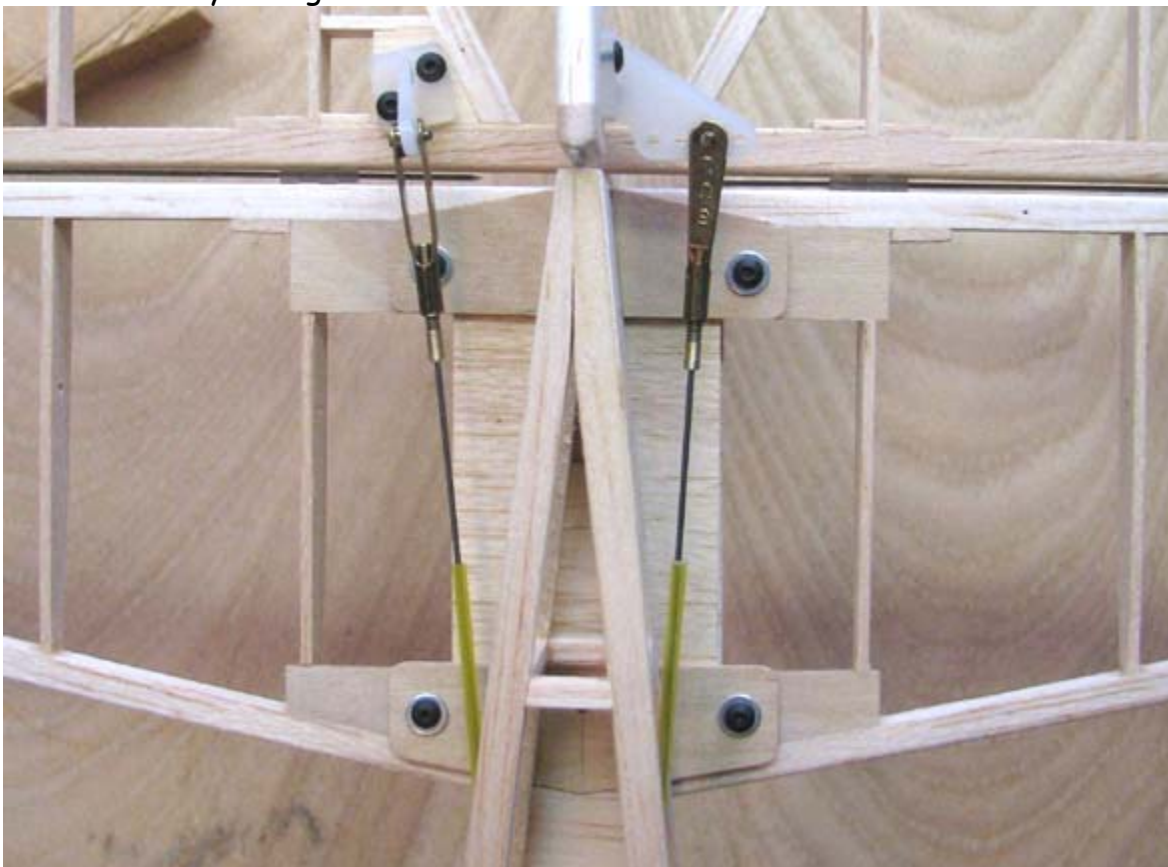


The 2-56 brass coupler for the Sullivan clevis comes much too long and heavy for this application. So as part of the Cloudster's on going weight saving effort, both ends of the coupler are removed using a Dremel cut off wheel. As you can see, the length and weight of the couple is cut in half as shown below. However, There are still enough threads on the short coupler for two complete adjustment turns in either direction.



The picture below shows how the two push rods exit the aft end of the fuselage and attach to the

rudder and elevator control horns. You can see that by cross the push rods in the fuselage the push rods can remain essentially straight.



Before quitting for the day, the Speed 400 motor was mounted to the fuselage assembly which was weighted as shown below. The weight so far is now 175 grams (6.17 oz) and the model CG is still right where it should be.....Tandy

