

**David Harding**

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**From:** Tandy C. Walker [tandyw@flash.net]  
**Sent:** Sunday, January 24, 2010 7:11 PM  
**To:** Undisclosed-Recipient: ;@smtp102.sbc.mail.mud.yahoo.com  
**Subject:** 48 Speed 400 Cloudster -Wing Attachment to the Fuselage

*Speed 400 Cloudster Project*

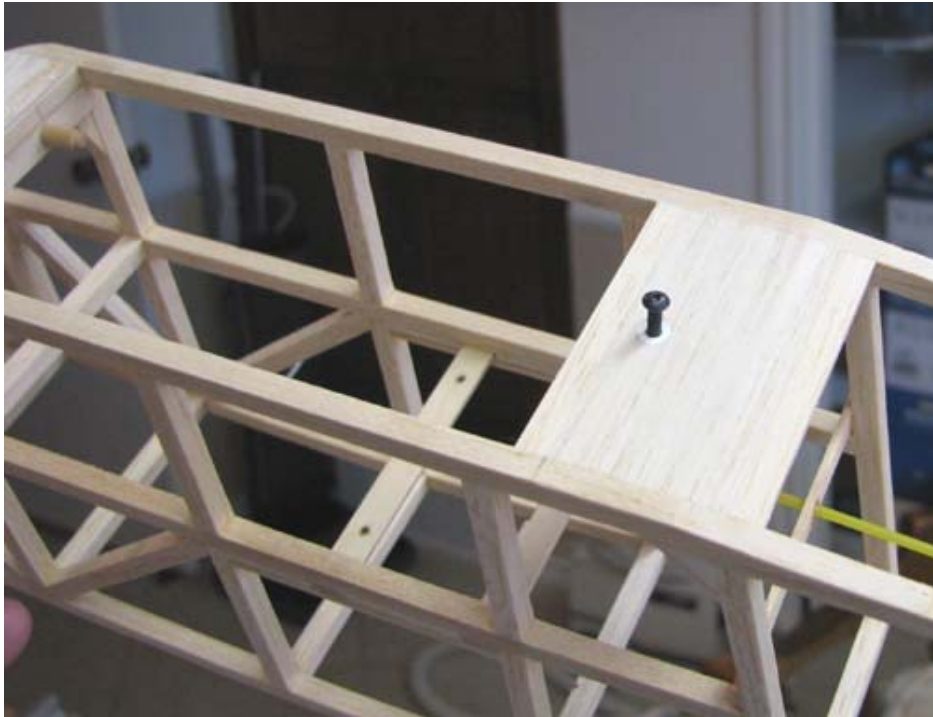
In order to interface the wing's forward hold down plate with the fuselage, second 1/16" plywood plate was made and two 3/16" holes were drilled for the two dowels that slide into the hold down plate. As shown below, this was glued into the top of the fuselage primary structure. The two 3/16" dowels have been cut to length, shaped, and slipped into the holes, but not yet glued in. Notice the two dowels are rounded on the ends. As a side note, since there is no front adjustment to pull the wing down tight against the fuselage structure, a good close tolerance fit of much be achieved.



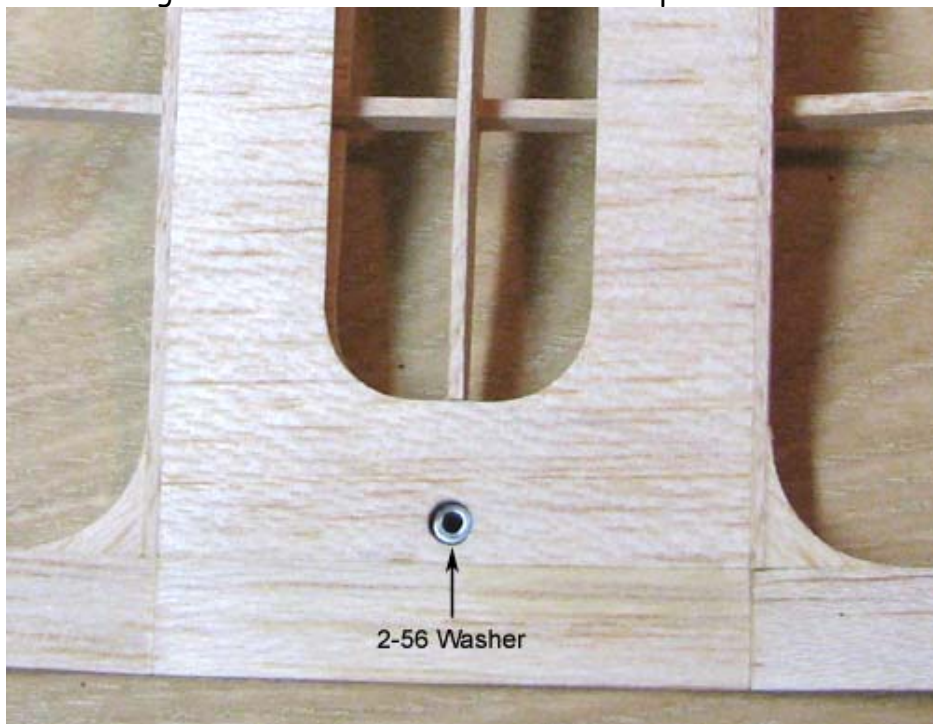
This picture shows the forward portion of the two dowels cut off at an angle as per the plans.



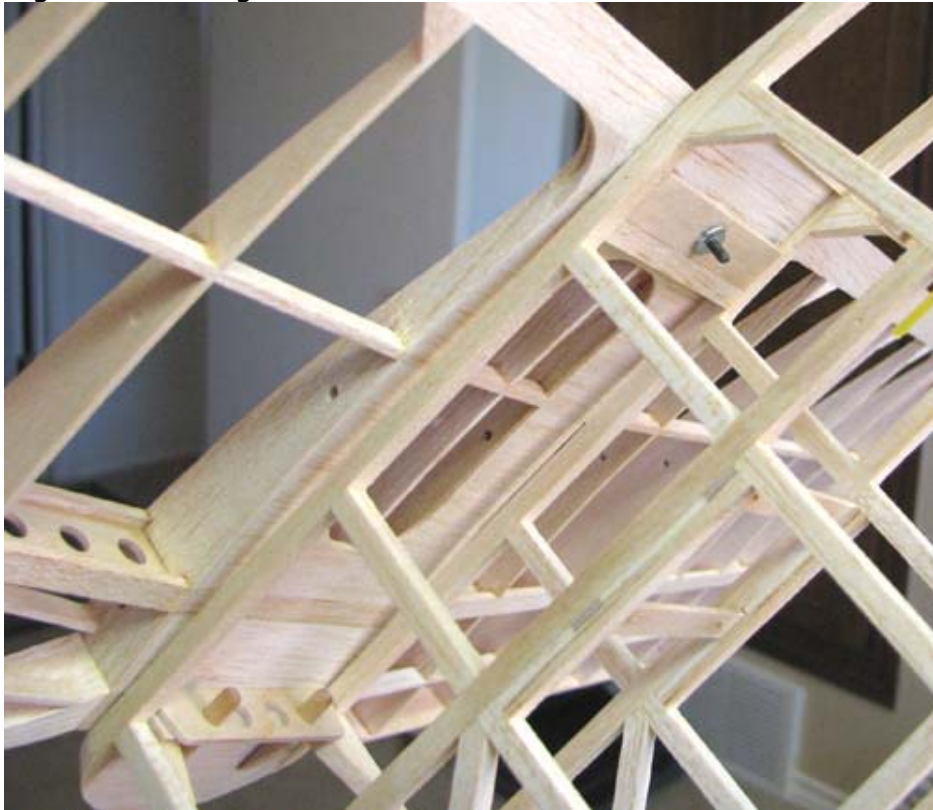
Here you can see the 2-56 cap screw threaded into a blind nut embedded in a strip of 1/16" plywood underneath the 1/8" balsa. If you look close, you can see that a piece of white ABS plastic tubing lines the hole to serve as a grommet to protect the edge of the hole around the balsa.



In order to protect the edges of the hole in the wing's plywood rear attachment, a small amount of medium CA was carefully applied around the hole in the plywood, a small 2-56 washer was slipped through the top planking and placed down onto the plywood as shown below. A 2-56 cap screw was inserted and tightened down to hold the washer in place until the CA dried.



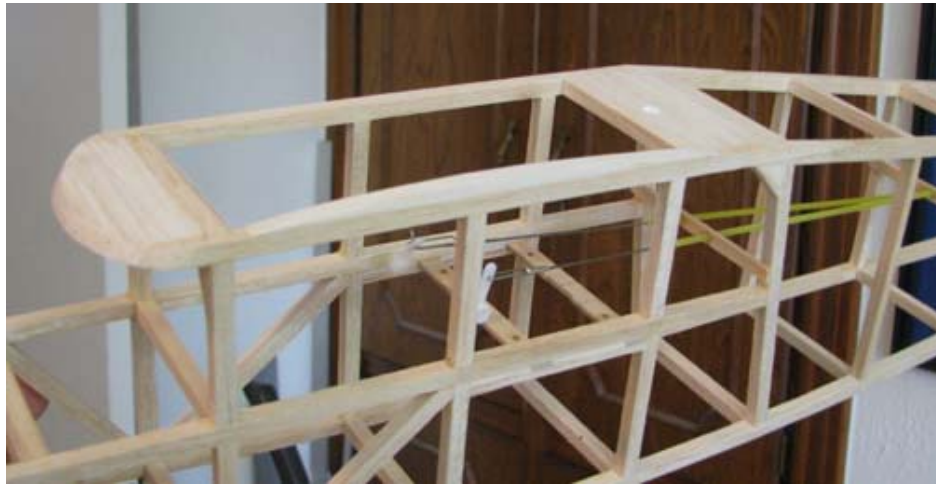
This is a view from underneath showing the two dowels engaged in the front hold down plate and the 2-56 cap screw threaded into the blind nut. Notice the curved gapped opening over the top longeron resulting from the wing's undercamber.



A piece of 3/16" balsa was cut out and carefully sanded to shape as shown below to form the wing saddle that will fit into the opening and interface with the wing's bottom planking.



This shows the wing saddle piece glued to the left top longeron under the wing.



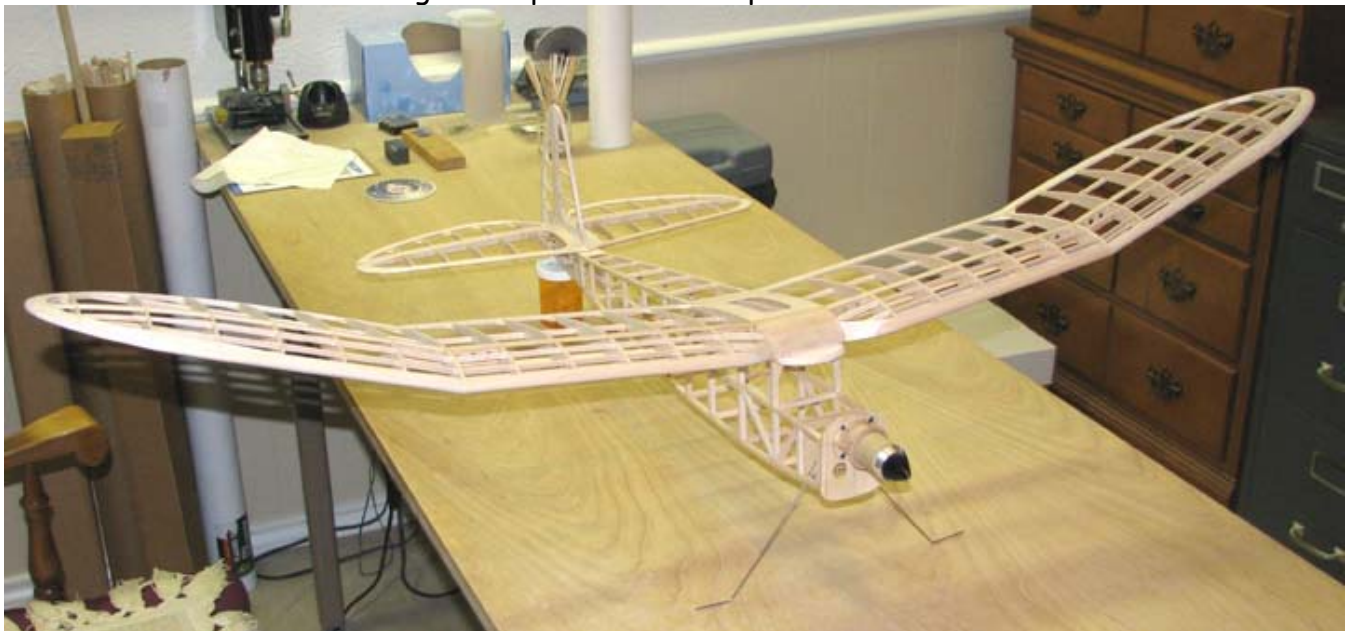
At this point, a problem was realized! You see in order to remove the wing, it must be slid back  $5/16$ " to disengage the hold down plate from the two dowel. However, the wing will ramp up as it starts to slide back along the wing saddle and the hold down plate will instantly bind on the two dowels! Fortunately, the two dowels had not been glued in place so they could still be removed. New shorter dowel were made with almost flat ends as shown below.



In this view under the wing, you can see that the new dowels only extend through the wing's hold down plate  $1/16$ ", which allows the hold down plate to cleanly disengage with only a slight aft movement in the wing while also rotating the wing trailing edge up slightly. Several trial wing attachments and removals proved this to be quite satisfactory.



This shows the current Cloudster's structure from a frontal view. Total weight at this stage of the construction is  $(6.17+1.98) = 8.15$  ounces, just slightly over half of the 16 ounce minimum weight requirement for the Speed 400 event. The 6.17 ounce weight was presented in Report No. 25 and the 1.98 ounce weight was presented in Report No. 47.



This shows another view of the Cloudster's structure from the rear.



The wing and tail assembly should be covered next so that the location of the rather heavy Li-Po battery can be determined that will balance the model. However, I still have to decide what the color scheme will be and what covering material to use, which I will probably have to be ordered. In the mean time, the tail skid can be made and installed and the fuselage's bottom bulkheads can be cut out. I also need to get a set of the lightest 2-1/8" wheels I can find. There are some of these curved spoked spider looking wheels for electric models that weigh almost nothing, but they look simply terrible in my opinion. I may have to resort to making some light balsa wheels myself like the one shown below that I made for the little rubber powered Cub I built. Do you know of some light weight 2" to 2-1/8" wheels?.....Tandy

