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Sent: Wednesday, February 10, 2010 2:48 PM
To: Undisclosed-Recipient: ;@smtp101.sbc.mail.mud.yahoo.com
Subject: 59 Speed 400 Cloudster - Removable Battery Box Design and Window Fillets

Speed 400 Cloudster Project

It was intended that the battery box made in Report No. 56 was to be glued into the fuselage structure. However, this will require a hatch in the bottom of the fuselage to get the Li-Po battery out for charging. As you well know, constructing and installing a hatch is a significant undertaking and should be avoided if at all possible. To address this issue, a design to make the battery box removable was developed so that the battery in its box can be installed and removed through the top opening in the fuselage under the wing.

The first task was to provide an attachment hard point on the battery box itself. A small rectangle was cut out of 1/8" plywood. A hole was drilled in the center and a 2-56 blind nut was embedded in the plywood. Another hole was cut out in the center of the bottom of the battery box for the head of the 2-56 blind nut to fit down into so that the plywood rectangle would fit down flush on the bottom of the battery box when it was glued in place as shown below. Notice the slightly rounded forward edges on the forward face of the box to assist in aligning the box up against the firewall.

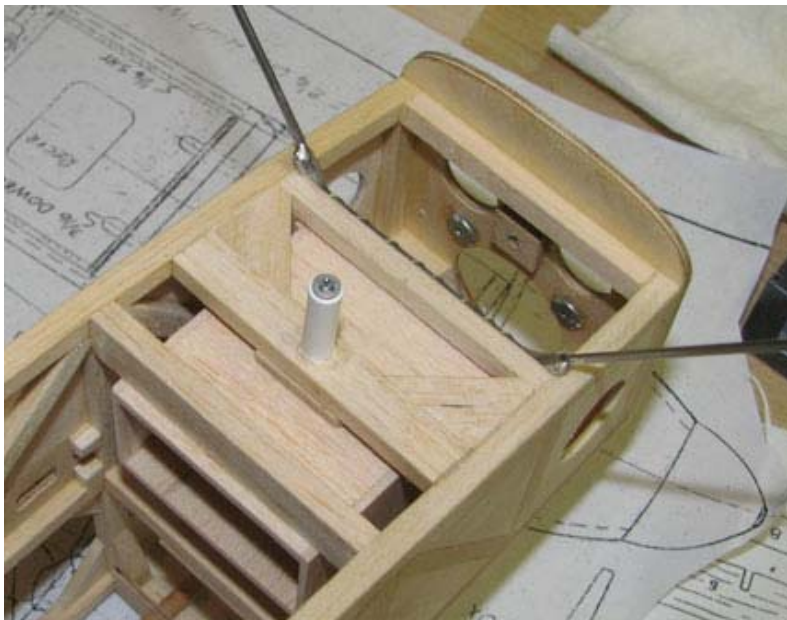


The second task was to provide adequately strong attachment structure in the bottom of the

fuselage to secure the battery box to. A hole was drilled in the center of a wide cross member and a length of ABS tubing was CA'd in the hole. This cross member was indexed in the fuselage structure with the battery box in its desired location and then the cross member was glued in place as shown below. Notice the two triangular gussets securely tying the cross member to the bottom longerons for additional strength.

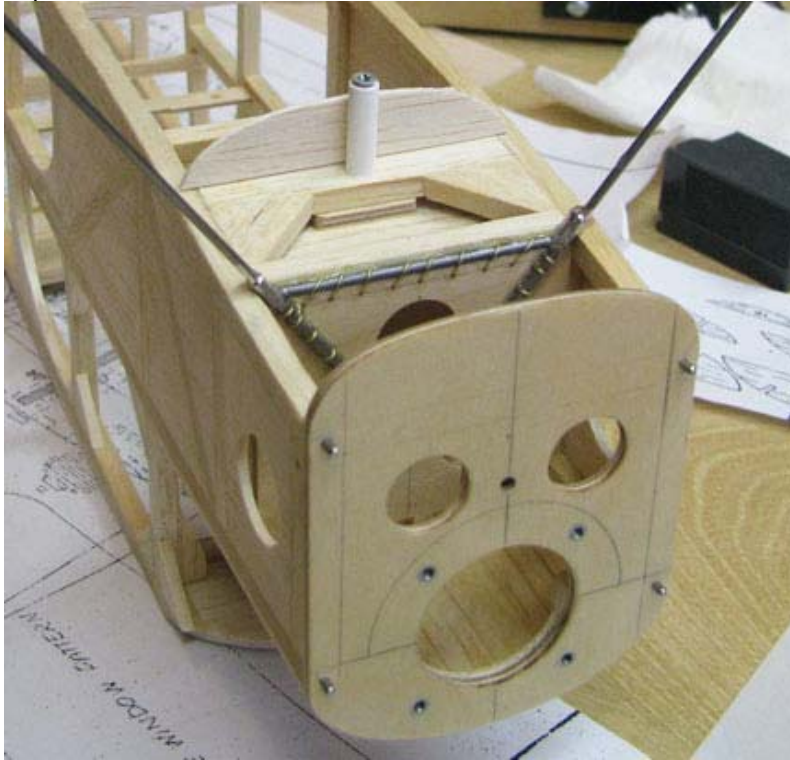


This picture shows the battery box attached to the fuselage with a long 2-56 screw inside the ABS tube.



The ABS tube was intentionally left long so that after the fuselage's bottom bulkheads and stringers are in place, the screw can be inserted from outside the fuselage as shown below. The tube will be trimmed and sanded flush with the bottom of the finished fuselage structure. Some

battery/battery box trial installations and removals in the presents of all of the ESC wiring will have to conducted to make sure of the functionality of this design before the requirement for a hatch is abandoned. The functionality has to include both the installation and removal as well as connecting the battery to the ESC.



Additional work was also done to complete the window openings by adding 3/32" fillets in the corners and sanding them to shape as shown on the right side of the fuselage below.



This picture shows the window openings on the left side of the fuselage. The sides of the fuselage have yet to be sanded to produce a smooth and integrated inlay surface, which is the "proof of the pudding" as they say.....Tandy

