

**Design Considerations: *Windscreen Placement and Cockpit Cut-Out Configuration***

The arrangement of the windscreen and cockpit cut-out on completed Skyotes can generally be divided into three Types:

**Type I:** The windscreen is mounted to the upper fuselage aluminum skin panel located between the upper wing cabane struts. This panel covers the fuselage fuel tank, and runs from the firewall to the instrument panel bulkhead. Fold-down entry doors are attached to the upper fuselage longerons along both sides of the cockpit, running from the instrument panel to the seat-back bulkhead. Most of the early airplanes used this style, and I assume that the Bartoe plans detail this approach. Here are some examples:





**Type II:** The windscreen is mounted in the same manner as Type I above. The fold-down doors are eliminated, however, and a simple cockpit opening cut into a sheet aluminum cover is substituted. A protective edge roll is usually fitted, and the opening often is carried forward all the way to the instrument panel. Here are some examples of this style:





**Type III:** My airplane (NX8XX, I believe the first factory demonstrator aircraft built in 1976) is the only completed example that I have seen which utilizes this alternate design approach. The windscreen is mounted much closer to the pilot, and is attached to the aluminum panel that covers the cockpit from the instrument panel to the seat-back bulkhead. A sculptured cut-out, widest at the pilot's shoulders, stops well short of the panel, providing for an effective glare shield as well as space to mount the sides of the windscreen. Here are some pictures of this installation:





## Discussion

I do not know what factors influenced Pete Bartoe to choose the forward windscreen/folding door design, and I don't know why my airplane emerged from the factory with a different configuration, but I am happy that it did. After living with 8XX for twenty-some years, I have noted no downside to the Type III design, and I believe that it may well have distinct advantages over the other possibilities.

My first Skyote ride was in Pete's airplane, wearing a helmet and goggles, and I was too excited to notice how windy the cockpit was. Looking at the following picture of Carl Buck's airplane (Type I) alongside 8XX suggests several points. It seems likely that the amount of interference between the windscreen and top wing center section is greater with Carl's forward windscreen, and the degree of pilot wind protection is probably significantly reduced by having the windscreen positioned so far away from the pilot. I believe that Carl increased the height of his windscreen as compared to the early factory airplanes to try to improve the degree of shielding.



The cockpit of 8XX is very 'quiet', as compared to a Great Lakes or Stearman. I routinely fly in the summer with sunglasses (with no strap) and either 'Shooter Ears' hearing protection or ear plugs. In pictures, I notice a tuft of gray hair lifted from the back of my bald spot, but that is about the extent of the turbulence. I tend to sit fairly high in the cockpit, and raindrops will impact the top ¼" of my forehead unless I scrunch a little.

Ingress and egress, even for a Bubba like me (6', 220lb) is very easy. The procedure that I have found works best is: left foot in fuselage step, right foot to the forward right side edge of the seat, grab both rear cabane struts at the wing, place left foot on the fuselage cross tube (the one that is about even with the lower wing front spar) and lower yourself in. The heavily padded edge roll at the front edge of the cockpit cutout should provide about the same level of crash safety as the alternative, an open trough to the instrument panel.

The cutout width at the shoulders must be ample enough to prevent any discomfort for broad pilots. I fly in a high seating position, but on a 'four sweatshirt and a jacket' winter day, I actually run into problems with pressure against the upper fuselage longerons rather than the cockpit coaming edge.

In summary, I believe that there are several distinct advantages inherent in the Type III (aft windscreen) configuration, and I am unaware of any disadvantages. Although I may be hopelessly biased because of my long association with 8XX, I also feel that it looks a *lot* better.



