INTRODUCING THE VIKING DRAGONFLY

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IT'S BEEN TEN days since the first flight of the Dragonfly as of this writing and I'm still grinning. This aircraft has exceeded all of our expectations by a wide margin. Twenty-five hours of preliminary flight testing have shown level flight speeds in excess of 150 miles per hour and climb rates exceeding 800 feet per minute. Those figures may not be considered spectacular when compared to some of the latest homebuilt designs but achieving this sort of performance on 45 horsepower is truly amazing. Further propeller testing and a few small aerodynamic improvements are expected to further increase the already good performance.

The other half of Viking Aircraft is my partner, Al Nelson. For a number of years we have talked of developing a low cost high performance aircraft constructed of advanced materials, but the lack of experience in the homebuilder community and the naturally high cost of premolded fiber glass parts have up until now kept a project of this sort on the back burner. In recent years, however, the great increase in composite/homebuilding has produced sufficient background experience to allow most builders to obtain help and advice from a nearby EAA member concerning fiber glass fabrication. I think that all of us in the EAA owe a debt to Burt Rutan for leading the composite/revolution. Al and I were still

faced with the problem of designing an aircraft with exotic compound curves that the average homebuilder could reproduce. Pre-molded parts drive the cost up, while carving and shaping compound curves have proven to be a source of difficulty for most people. Rounding corners is easy and most composite/builders seem to do pretty well with corners, but front fuselage tops or aft turtle backs or other large parts requiring foam shaping usually turn out lumpy or at least unpleasing in shape. We recently discovered a new type of urethane foam that has solved the compound curve problem. For example, the fuselage of the Dragonfly utilizes ½ inch foam sheets to form a 3 sided box with some extra foam added inside the corners to allow large radius lower corners. The fuselage top, however, is made in a jig that produces a ½ inch foam core sandwich that looks like it came out of an expensive female mold. The jig is made of chipboard and fir, and only takes about seven dollars and 4 hours to build. If you like pretty curves, you'll love the Dragonfly.

Solving these problems opened the door to move forward with the design work. Al and I have always been interested in low horsepower Volkswagen engines and canard type aircraft. Our initial design studies produced several different configurations but we settled on a canard planform which allowed two one-piece wings of equal area to be built in a normal garage and still give sufficient wing area. Side-by-side seating is more fun than tandem and solved some CG shift problems, but I insisted on making it wide enough for two real people. The Dragonfly cockpit is 43 inches wide inside, the same as a Cessna 172, but the very clean fuselage shape keeps the drag to a minimum. This left us with the problem of landing gear and most readers will recognize the unusual landing gear position as being inspired by one of Rutan's latest designs. Burt's clever wheel placement has some real advantages in a plane of this type and quite frankly was too good of an idea not to borrow. The Dragonfly however, is **not** a scale-up of anything else and required a complete structural and aerodynamic design study which began in the fall of 1979. Construction was started on January 5, 1980, and was completed in only 6 months.

Other features of interest include carbon fiber spars in the canard, wing and fin, a molded canopy offering a shape not possible with a free blown canopy and unusual attention to drag reduction which allows high speed on low power.

Our efforts (as of July 1) are now centered on continued testing and preparation for Oshkosh 1980. We are making a custom spinner and preparing for paint trim as of this writing. So far, the Dragonfly has shown very pleasant control feel and response safe stall characteristics, outstanding visibility and sparkling performance. A complete information package will be available at a cost of $7.50 **after Oshkosh** and plans are expected to be completed in the fall of 1980. Contact Viking Aircraft at P. O. Box 9000, 234W Carlsbad, California 92008.

Editor's Note – The Dragonfly did, indeed, make it to Oshkosh '80 . . . where it was judged the Outstanding New Design for 1980.

VIKING DRAGONFLY SPECIFICATIONS
SOURCE: VIKING AIRCRAFT

Span (Canard)	20 feet
Span (Wing)	22 feet
Area (Total)	97 square feet
Weight (Empty)	590 lbs.
Weight (Gross)	1075 lbs.
Powerplant	1600cc VW
Power	45 horsepower
Climb	800 feet per minute (tested)
Top Speed	150 miles per hour (tested)
Range	500 miles (estimated)
Take Off	450 feet (tested)
Cost	$5000 (approximately)