The Fauvel AV 36

Jim Gray, our good friend and long time correspondent, is an experienced pilot of full sized sailplanes and an enthusiastic supporter of tailless planforms. This enthusiasm for “flying wings” dates back to 1958 and a soaring flight at Harris Hill, Elmira New York.

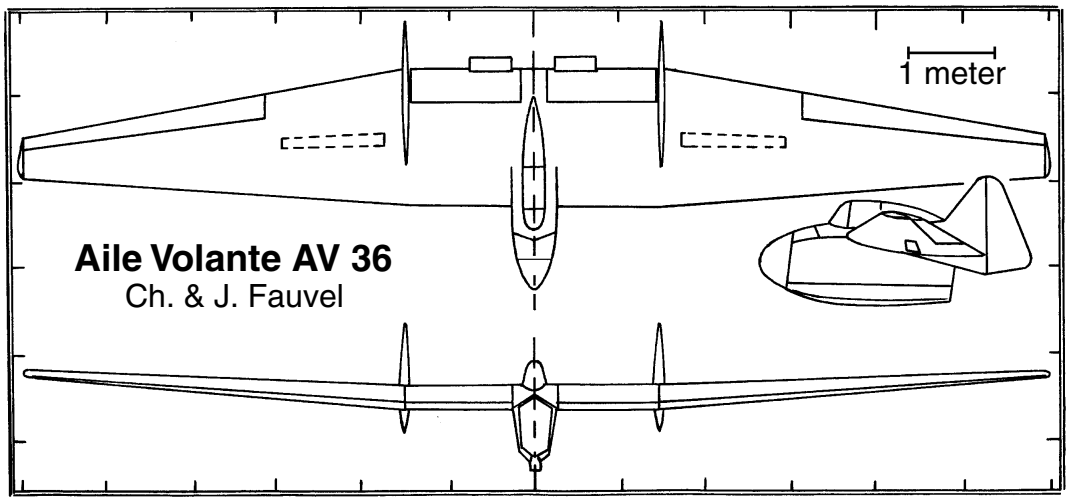
It was during the Snowbird contest of that year Jim flew his Schweizer 1-20 in the company of a Fauvel AV 36 which had been brought to the event from Montreal. While the performance of the AV 36 was a bit better than the Schweizer’s, the Canadian pilot was apparently not accustomed to ridge soaring, and so the two gliders were fairly well matched. Flying wing-and-wing with the tailless AV 36 was, for Jim, an intriguing and at the same time overwhelming experience.

When Jim related this event in a recent letter we immediately went to our files and began gathering information. As you will see, the AV 36 makes a nearly ideal subject for scale modeling.

Charles Fauvel was a firm believer in the simple “plank” planform as an alternative to the rather complicated swept wing designs of the Horten brothers. Fauvel argued the plank was easier and less expensive to build, and the completed sailplane, because of its conventional control system, would be easier to fly. His first design, the AV 3, appeared in the early 1930s. Development of the AV 36 probably started prior to 1948. Jean Fauvel, Charles’ son, completed the prototype at the end of 1951, with the first flight on December 31.

AV 36 flight performance, when compared with conventional designs of the time, is very good. It has a glide ratio between 24:1 and 26:1, a stall speed of about 30mph., and a maximum speed of around 124mph.

As can be seen from the accompanying 3-view, the center section is a simple rectangle while the outer panels are of tapered planform. The panels are separated by the fin/rudder assemblies. The wing of the AV 36 was designed so the spar is a straight line from wing tip to wing tip. The leading edge sheeting is bonded to the spar to form a D-tube, while the remainder of the wing is of open construction with fabric covering. Controls consist of ailerons, elevator, and rudder, with the twin rudders having differential



movement. The fuselage is a simple polygon. One bulkhead is attached to the main spar, effectively integrating the fuselage and wing.

The AV 36 is unique not only because of its tailless planform, but also because of its transportability. The nose cone is removed and the rudders are fully deflected and bolted to the trailing edge of the wing. Placed on its trailer, one wing extends over the towing vehicle and the entire sailplane travels down the highway sideways in what is essentially one piece.

Model builders can construct a rather large model which disassembles into three easily manageable pieces - the center section and the right and left outer wing panels. The fins can be made to slide off as well.

Readers interested in constructing and flying a replica of the AV 36 have a couple of options.

Plans for a 1/4 scale three meter span model are available from Verlag für Technik und Handwerk GmbH, Postfach 1128, Fremersbergstr. 1, 76492 Baden-Baden 1, Germany. The cost is DM 53,-, plus DM 6,- for shipping.

Plans for a larger version, in 3.45 scale, are available from Argus Plans Service. These plans cost £18.45, including shipping, and detail two versions of the AV 36. The construction article, along with five pages of documentation material, appeared in the Spring '92 issue of *Silent Flight*. Having a copy of this magazine is a must for builders of an AV 36 model. Contact *Silent Flight*, Argus Specialist Publications. The plans service and the publications section share the same address: Argus House, Boundary Way, Hemel Hempstead, Hertfordshire HP2 7ST, England.

The designer of the latter model, the late Gordon Waite, used the CJ 3309 airfoil, but performance could be improved by using the CJ $25^2$09. The

CJ 25^{2}09 has the added benefit of more closely resembling the Fauvel F2 airfoil of the full size sailplane. This change of airfoil does not affect either construction materials or methods. However, we note Gordon built three degrees of washout into the wing tips and then added permanent up trim to the elevator. This design requires no washout, and if the wing is built without washout the up trim can be removed from the elevator. This will markedly improve its already good performance.

The AV 36 in model form exhibits the same good flying characteristics as its full sized relative. The conventional control system uses simple radio gear and allows pilots to easily transition to a tailless configuration. The location of the tow hooks makes for easy winch launching and aero towing. Whether flown from a slope or over flat land, the AV 36 is sure to provide good performance and attract positive attention.

An AV 36 at a meet in England. Photo courtesy of Eric Marsden.

"The application of an additional bearing surface, as a tail, is of minor importance."

— Otto Lilienthal
Der Vogelflug als Grundlage der Fliegekunst, 1889