

Introduction

I was asked to write a history of my F1A models. Looking back at all my designs, I realize that I have to choose a few of my designs for this article. Up to now I've designed and built about 65 F1A-models, and I also used some ready-made wings and parts for a few more models, so it would be far too much to mention all of them here. Therefore I'd like to present those among my designs that I feel have been important, models that have started a new series of models and models that had important new features. I have selected six of my designs that I would like to mention in this context.

Early Kit models

The first F1A model I ever built was a model from a kit. The name of the model was Stratos, and I built it in 1979. This model had simple technical solutions, no circle hook and all-wood construction. My Stratos flew only one contest, then I built another kit, Nordic. This model was a design from the company *Modellprodukter* in Sweden. My Nordic was equipped with circle hook and a webbed spar. With this model, my real, serious program for thermal searching could start. Today the Nordic design is still available from the company *Hobbyträ* in Sweden. It is still a nice design and a good model to start flying F1A with. I have my old Stratos still in my building room, now an old-timer model.

Black Adder 7

After building about ten models from kits, I designed my first own model. This design was similar to the Nordic, but also influenced by the designs of my older club friend, Bengt Wendel. The model was made of balsa and spruce and equipped with circle hook and a simple one-function timer. The model was called Black Adder 7. The wing construction was quite similar to the Nordic wing. I just put in some better webbing in the spar, and also some diagonal ribs to increase the stiffness of the wing, see Fig. 2. The wing section was the famous B6356-b, a bit thinner than the section used on the Nordic wings. Some of the later designs based on Black Adder 7 had tail booms of glass fibre. This design was really simple and easy to build, but, of course, the design had some weak points.

The biggest problem I had was to obtain adequate wing stiffness so that it wouldn't flutter on towline release. I started with two 3 mm wing joiners, and the wing didn't flutter so much, but then the joiners were bent after each launch. Then I changed to 3.2 mm joiners with which the bending of the joiners was less, but instead, the flutter increased. I made several changes to the covering to make

the wings stiffer, but I didn't succeed until I designed a variant with D-box and a 4 mm joiner.

I also had some problems with the first type of circle hooks I used. The hooks were really simple, and I had big problems with the zoom rudder coming out too early. The hook tension was not very large, only about 3 Kg, and the zoom rudder came out immediately as the hook started to



Fig. 1 My first model, a "Pilot" beginners glider

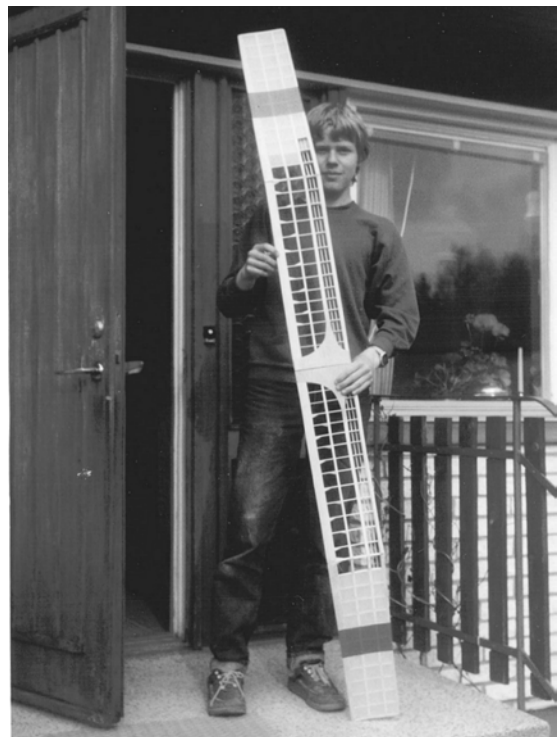


Fig. 2 One of my first successful F1A models, the Black Adder 7, received new centre panels

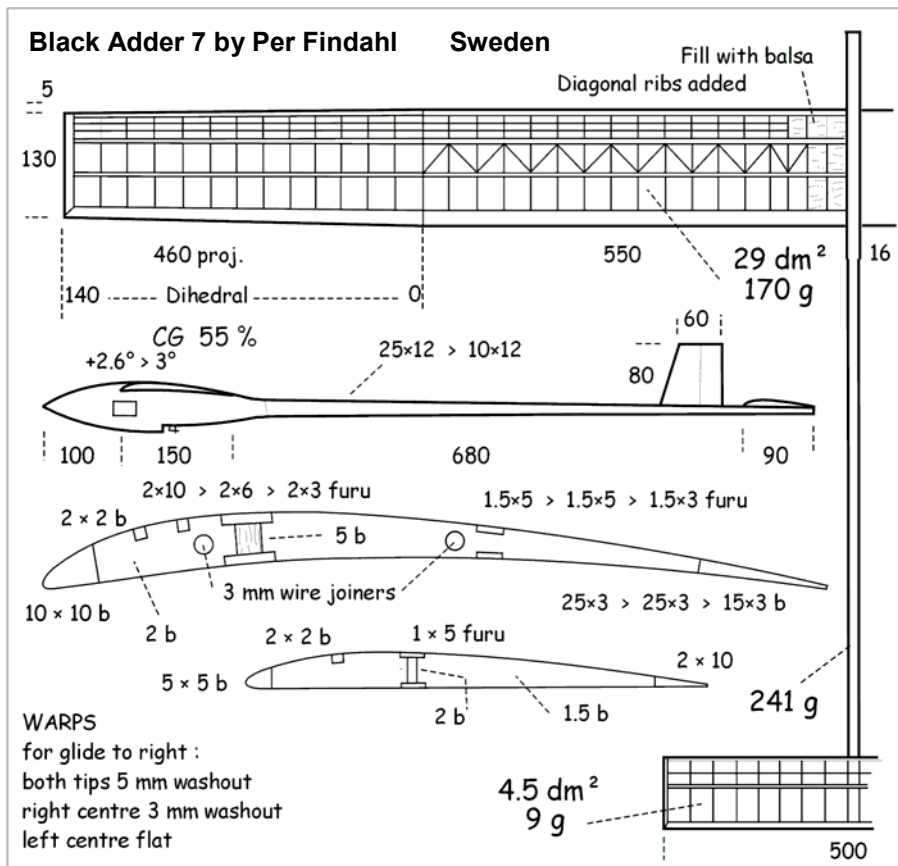
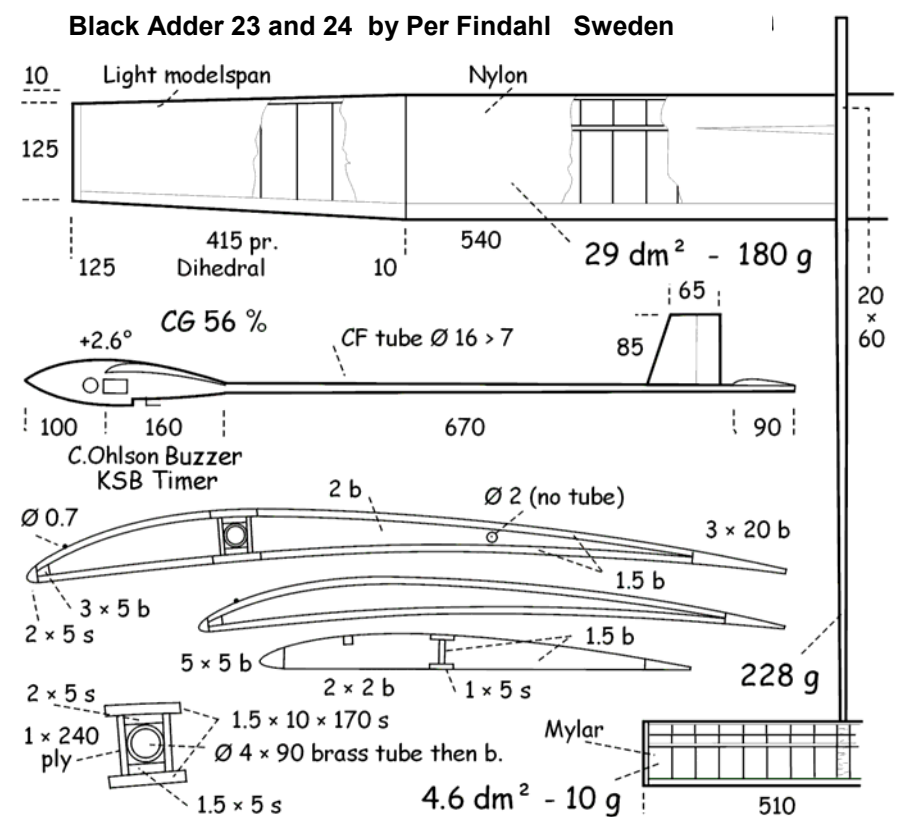


Fig. 3 (above) Black Adder 7, the first successful F1A I had.

Fig. 4 (below) Black Adder 23 & 24. These two models were early and consistent winners for me. They were part for the quest for a stiff and light wing, a quest that would not be resolved until later with the use of composites.

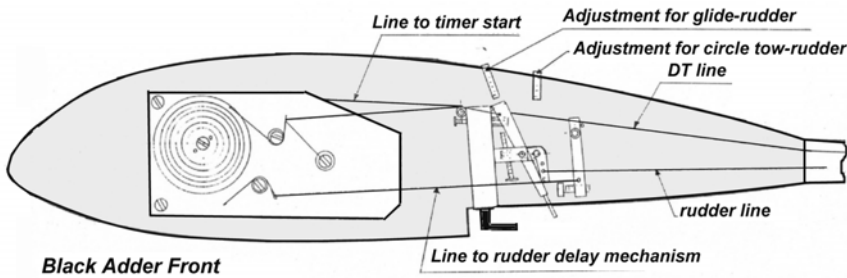


open. This made the model turn during straight tow as soon the wind picked up a bit. At the end of this era with the Black Adder 7, I also made one variant that had a totally sheeted wing. The idea was good, but I didn't have the right quality of balsa, so the wing was too heavy. But it opened a new way forward for me, and I now designed Black Adder 23 & 24 in 1985.

Maybe it sounds as if Black Adder 7 was not a successful design, but it really was. I learnt a lot about flying and designing F1A-models during these years. The design helped me to get in the national Senior team when I was still a Junior. Black Adder 7 also helped me to win some Swedish Junior championships. I used the models all the time during contest and for practice. I made so many changes and tested so many new things on these models that it was as if some of the models worked as "test rigs" for my experiments and wild ideas.

Progression to Black Adder 23 & 24

The design of Black Adder 23 & 24 was influenced by Ivan Horejsi's models. I more or less copied his short model of this time, and made an all-sheeted wing. This time I had the right wood so these models came out really well. The thoughts behind this design were, first of all, to make a good model for wind and thermal conditions. The short span made it possible to make a strong wing that didn't flutter, and that still wasn't too heavy. The spar in this wing was a solid spar and it was easier to make it stronger than the earlier design on Black Adder 7. I also had a new circle hook that had fixed positions for zoom rudder. The models were equipped with a beeper to make retrieval easier, this was still the time before radio beacons. These models had a lot of success, winning several World Cup contests, and also helped me to attain good results in the European champs in both Zrenjanin in 1988 and in Hungary in 1990. Actually, I still have one of the models, and my father uses this model when he wants to fly a contest now and then. On this model I had again the problem with bending of the 4 mm wing joiner. Later, I made another similar model to Black Adder 23 & 24, but now with a 5 mm joiner. This



Black Adder Front

Fig. 5 (above) Nose of Black Adder 24 showing hook and links to mechanical timer and rudder.



Fig. 6 (left) With Black Adder 28 on a frozen lake in Sweden.

Fig. 7 (below) Black Adder 28 and 29. Airfoils shown are full-size, drawing by Jean Wantzenriether.

didn't work so well, so I was now back with a wing that fluttered again.

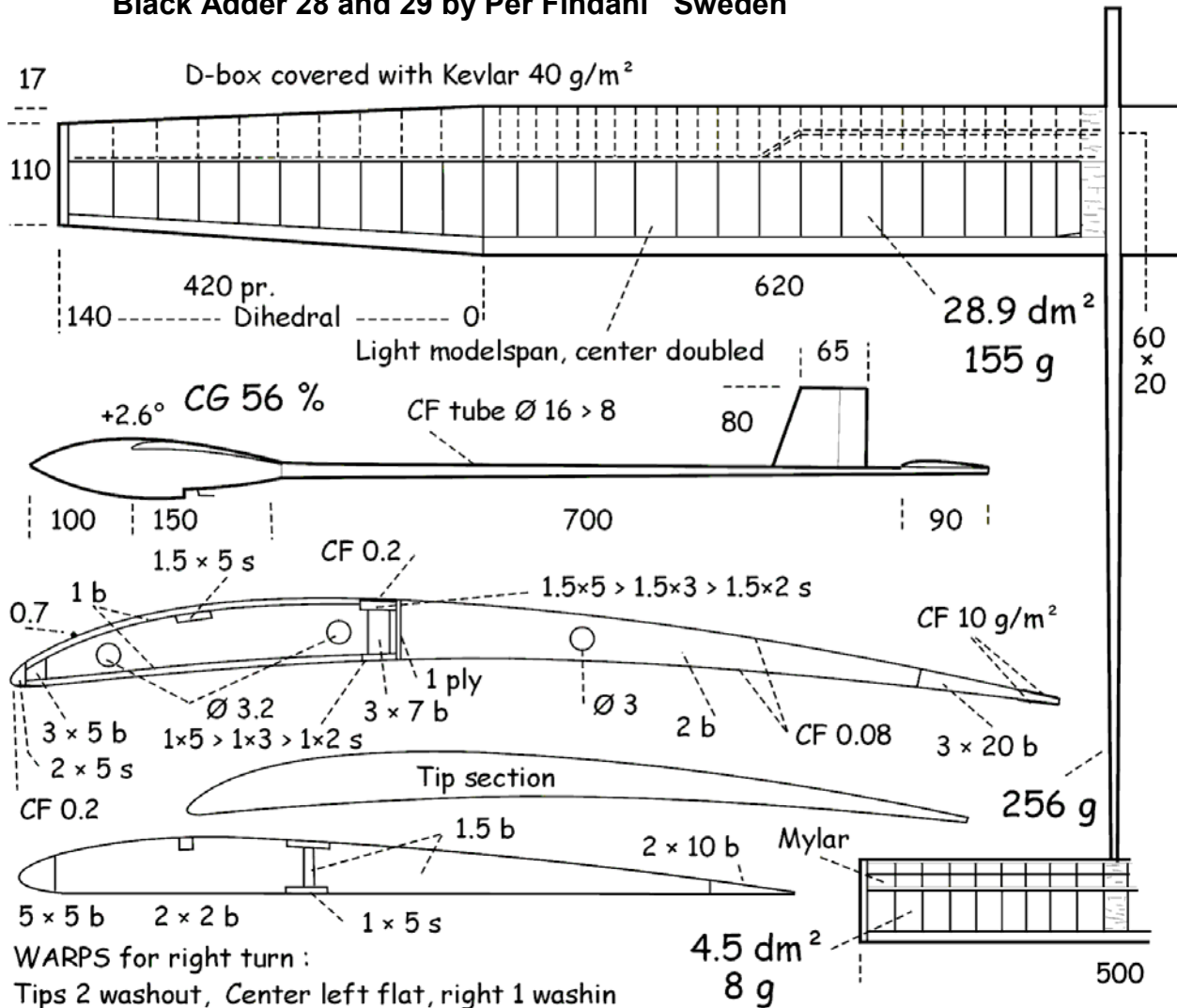
During the years 1982 and 1987 I also built some models designed by my heroes Victor Chop and Andres Lepp, and these models also gave me some good results. Of course, I also added some things from my own to these models and designs, but I can't say they're my own designs, so I don't present them here.

Enter carbon and kevlar

The next big step in the evolution of my own designs came in 1987, when I designed Black Adder 28. The new feature on this design was that I used kevlar and carbon. The spars were from spruce, but made with one layer of 0.2 mm carbon sheet on top and bottom. The design also had a D-box made of balsa with half of the centre panel laminated with thin kevlar cloth. The model had 3 joiners, the two front joiners thicker than the back joiner. This was a "super" wing, and this new wing made it possible to pull really hard during the launch. The high speed gave some problems; the model needed delayed rudder to avoid spiralling-in after the launch.

This problem made me think of an evolution in the timer area. I designed a new timer with a homemade flat disk. This helped me to get a nicer design of the fuselage front, but the main thing was that I could get more functions from the timer. The idea of the flat timer disk was of

Black Adder 28 and 29 by Per Findahl Sweden



Black Adder 36 and 37 by Per Findahl Sweden

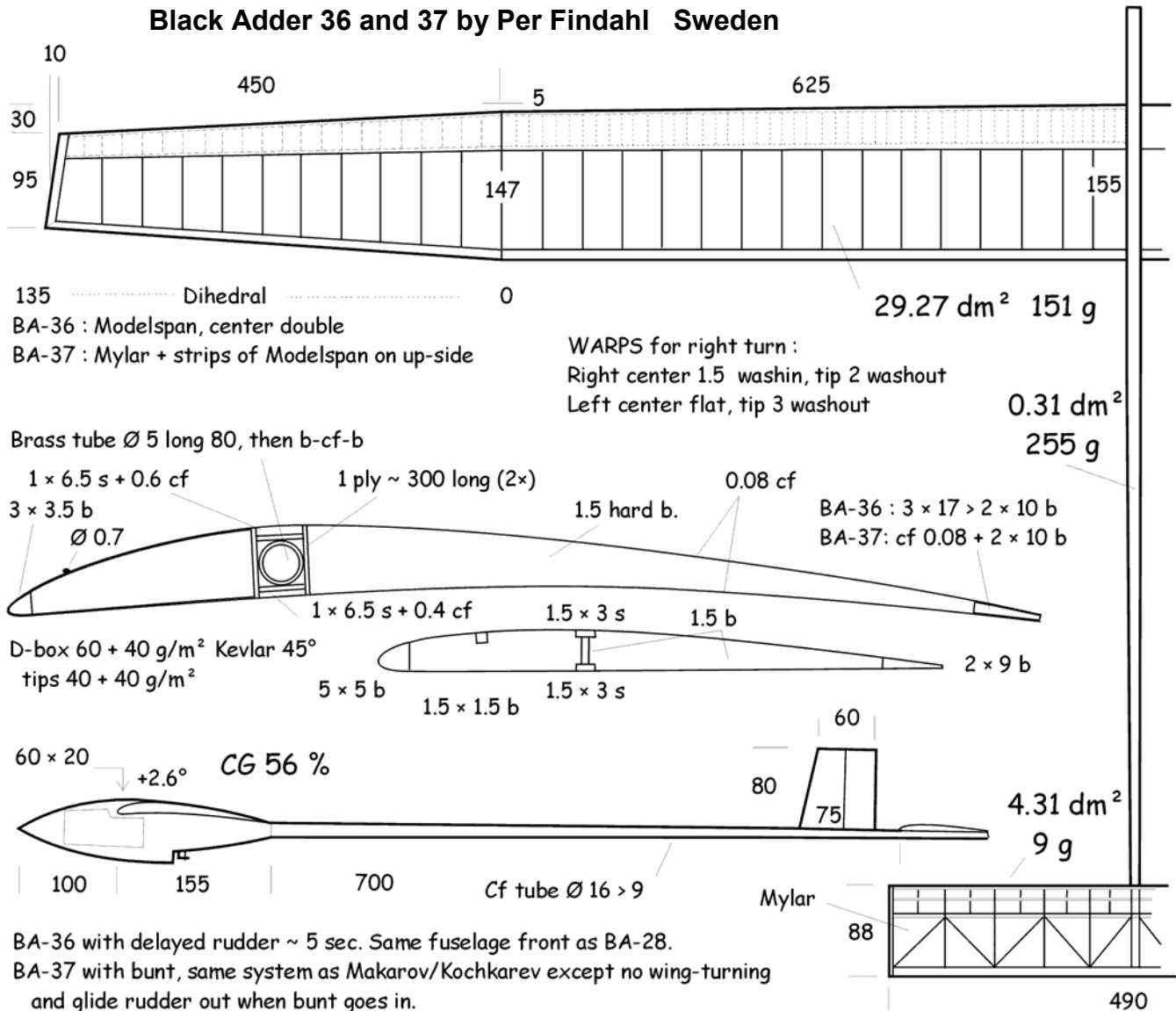


Fig. 8 Black Adder 36 and 37. Airfoils shown are full-size, drawing by Jean Wantzenriether.

course not my own, since I copied it from the Soviet flyers. Also, the tow hook was re-designed with a better system for the zoom rudder. It was not a fixed zoom rudder, but the zoom rudder only came out after exceeding a 2 kg force on the hook. Several designs based on Black Adder 28 were made in the following years: some shorter designs, similar to Black Adder 28 and some with longer wingspan for calm weather. I had some success with this design, mainly in the World Cup. This design was also successful in winning some Swedish National Championships.

The next big leap in the evolution of the Black Adders came in 1989 and in 1990. In the autumn of 1989 I got the first real D-box mould made from kevlar and dural. I got this D-box set trading with Alexander Maximov at the Puszta Cup. Alexander got 15 recorded music cassettes from me, I got the D-box set from him. I choose to not present the design I made from this D-box, because it was not so great. The wing was too heavy and not very well balanced.

Black Adder 36

I present instead my design Black Adder 36, made in 1990. After I got the first D-box set, I also started to make my own D-boxes from kevlar. One of these own D-boxes

was used in Black Adder 36. The wing was light and had a solid spar made of spruce and carbon, a new "super" wing. The wing was not very stiff in bending, but really stiff in torsion. After flying this model for some months with delayed rudder, I converted it to my first bunt model. The model flew with this setting during the summer and was ready and processed for the European champs in Hungary in the autumn. I didn't use it during the contest, but perhaps I should have. I used the short Black Adder 23 instead, and in the still weather of the evening, I dropped some seconds in the first fly-off. Black Adder 36 had some good scores, winning the Swedish championships and some World Cup contests. At the end of the model's life, it was converted in to a "half-bunt" system.

The thought here was to fly with the tailplane down for a longer period during the launch to avoid the looping tendency. The model had quite a thin tailplane, so the looping tendency was quite strong at high speed. This "half-bunt" system worked really well and gave better height than the "normal" bunt system. Also, the model made a climbing turn, as in the old days without bunt. I thought it was then easier to place the model in thermal.

The problem with this system was that it was critical to fly with. If there were any mistakes during the acceleration, the launch could be really disastrous. It was also dif-

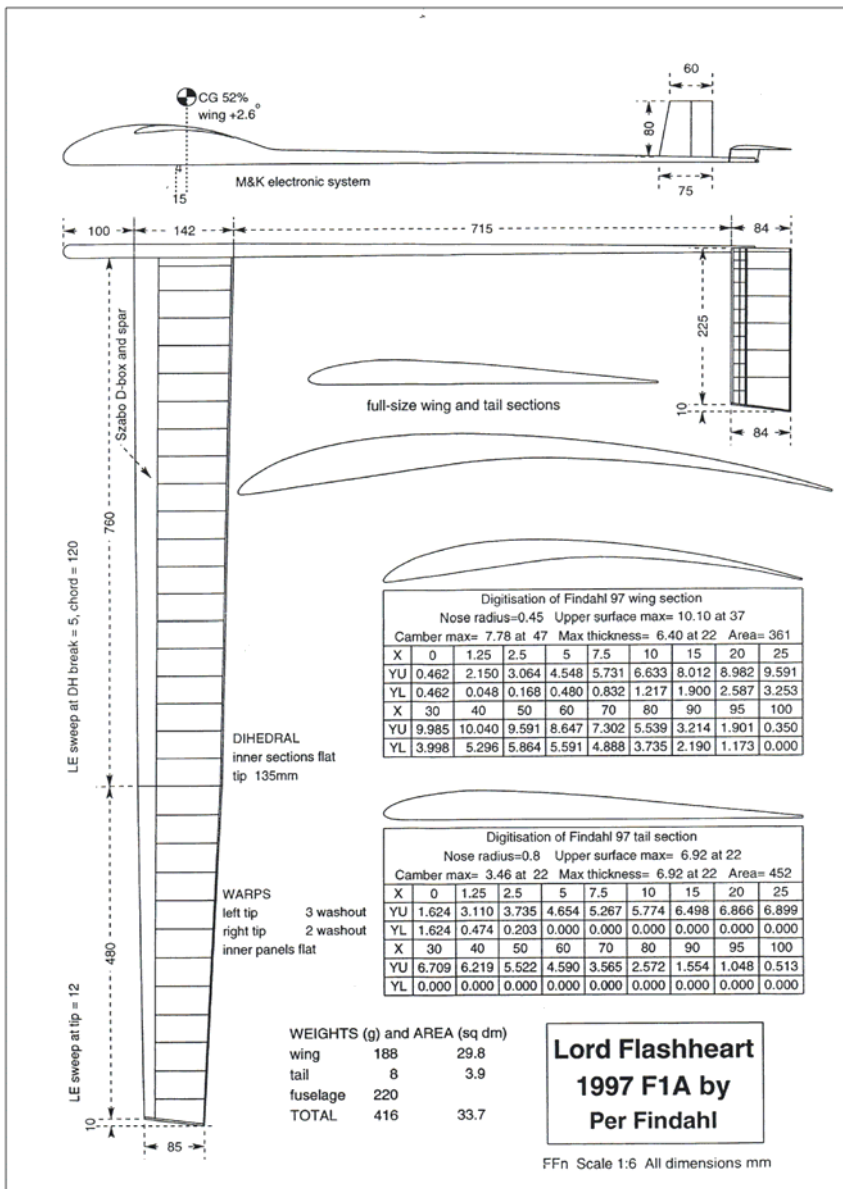


Fig. 9 Lord Flashheart of 1997/98, original drawing by Ian Kaynes in FFn



Fig. 10 Lord Flashheart on a frozen lake setting

difficult to trim the launch, as it needed to get the zoom rudder, straight tow rudder and bunt angle right. And with this wing quite soft in bending, it was difficult to get everything right.

I have thought to try this way of flying again, but now with better wings and more accurate bunt systems. I think it could be possible to gain some extra height as well as placing the model more easily in the thermal with this system. The thing that deters me is the thought of having in the model box different systems and models with different ways of flying.

The sister, or brother, model of Black Adder 36, Black Adder 37 was used by my friend Robert Hellgren in his first years of real contest flying.

In comes Sir Baldrick

My later thermal model designs were based on Black Adder 36. The models were a bit different, and this series of models was called Baldrick.

The first Baldrick was made in 1998, and after that year I made several more models based on this design. It has been a most successful design, helping me to win and place well in many Championships and in the World Cup. I don't present this model with a plan here, because it has already been presented recently elsewhere.

Electronic timers are introduced

Next I'd like to describe my first model with an electronic timer. For me it was a giant step in the evolution of the F1A models. It was now possible to trim the model exactly as I wanted. A bunt in several steps made it possible to gain much more height in the launch than before. All set-

tings and timings were also more precise than before. The electronic timer also had the advantage during the contests that I didn't have to use a pointer to set the timer, just connect the line and fly. I used the first electronic timer in a long model as you can see on the plan. The model was called Lord Flashheart, designed in 1997 and built in 1998. This model was developed from my previous Mr Bean series. Features of all these models are carbon D-boxes, carbon spars and Makarov wing section. Lord Flashheart was just finished before going to New Zealand and Australia in 1998. The first contest flights were then made in Australia, the wind on New Zealand was too strong for this model. The wing from Lord Flashheart is now used by my son Daniel for his long model. This model is now equipped with a different fuselage with a mechanical timer. Lord Flashheart was used in the fly-off at the World Champs in Israel in 1999. I had the fifth best time, but a mistake in the timekeeping made me place 9th.

The wing on Lord Flashheart was soft in bending, and the following models in this line had stronger spars to solve this problem. The design, Lord Flash 2, was the next step in the evolution. This model was used to win the

(continues in page 40)