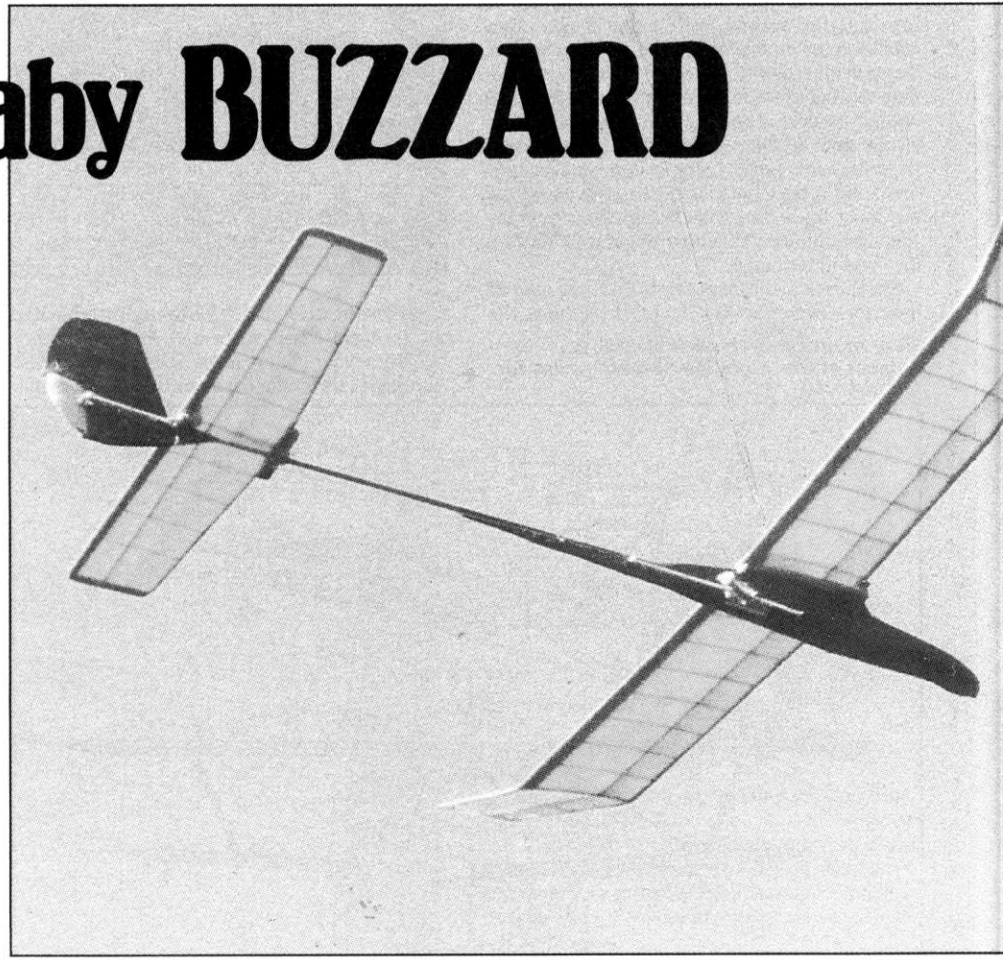
BUILD FROM OUR FULL SIZE PLANS!

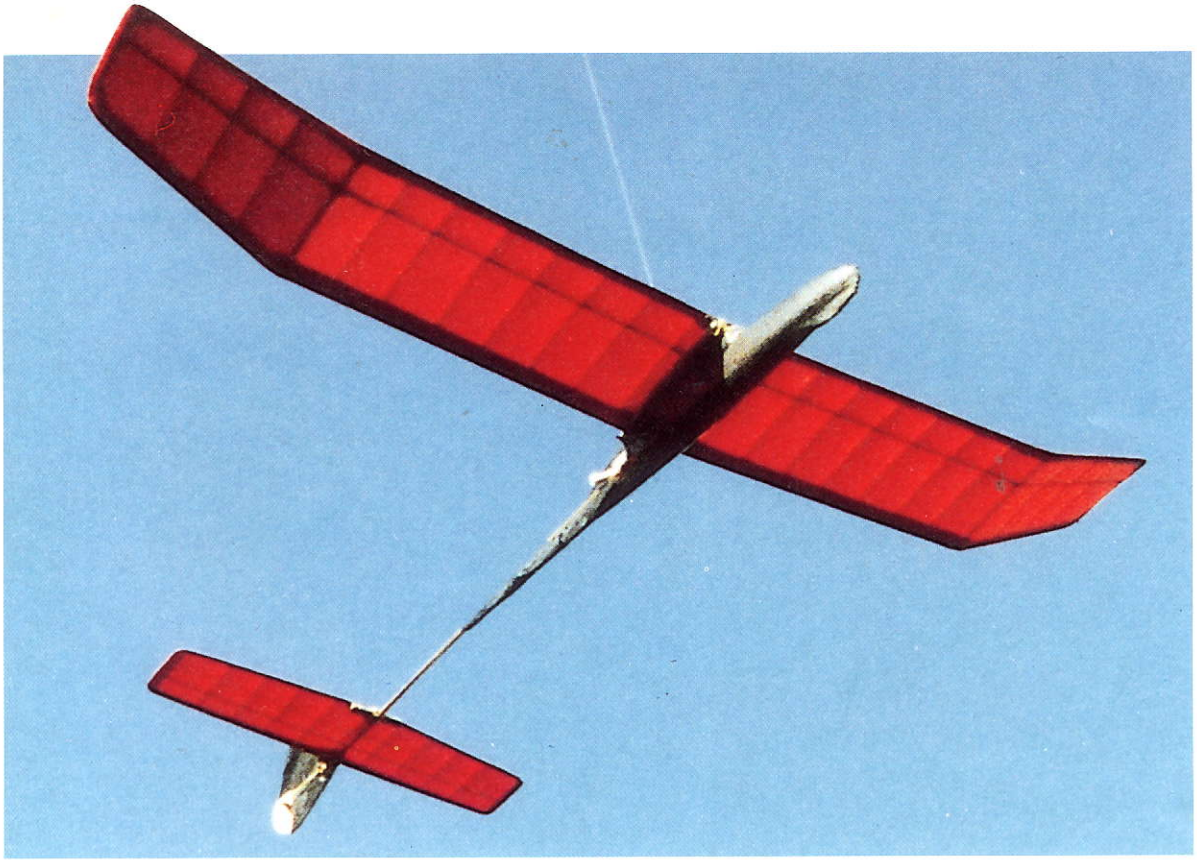
Baby BUZZARD



Build this A/O class glider by Brian Faulkner and have some fun with hi-start

The A/O class glider

In 1991 John Wingate proposed a new small field glider competition, it was accepted by the Timperley committee and a club contest was arranged for the 8th of December. This fun event was inspired by the Thermic 36 designed by John Zaic, published in "Model glider design" by Frank Zaic. The rules limited the total projected wing and tail area to 139.5 sq ins with a minimum weight of 2 1/2 ounces. Launches were to be made using a 'Histart' with 50 ft of thread and 10 feet of rubber. Baby



Baby Buzzard is an A/O class glider for use with hi-start and ideal for club competitions. It is capable of a good performance so fit a dethermaliser!

Buzzard was based on my A/1 and A/2 gliders but with a lower aspect ratio to give a centre section chord of 4" with tapered tips to 3" chord. A tailplane area of 24.75 sq ins was chosen which is 22% of the wing projected area of 122.5 sq. ins. For stability the tail moment was 17.25" giving a fuselage length of 26.375". With this geometry the centre of gravity was predicted to be at 55% of the wing chord from the leading edge. These basic proportions have been found satisfactory on my A/1 and A/2 gliders but I wondered if a small 30" glider would be stable.

Flights trials

On a cold cloudy day with light drizzle initial hand glides seemed satisfactory. Some tests with the 'Histart' had shown on a small glider that 1/16" sq rubber was the ideal size. 1/8" taking the glider up too fast causing it to unhook prematurely and stall down, landing usually on its nose. R.H. Warring gives this advice in the Harborough book 'Model Gliders' published in the early 1940's. With a small initial stretch of the 'Histart', Baby Buzzard climbed very fast to half the line length then returned to earth with the line still attached. The faulty 60% CG was to blame. More weight was added to the nose and the wing incidence increased. The next launch was better, but the towring was reluctant to release. In the R.H. Warring book, the A.P.S. gliders Aegeus, Leander, Aeolus and others had towhooks inclined at 50 to 60 degrees to the horizontal axis of the glider. I have always wondered if the towring would slip off in a protracted hand tow. However the reason for these angle hooks became clear to me, these gliders were probably launched by 'Histart' or Catapult launch as it was known in 1942 when the S.M.A.E. rules allowed 75 feet of thread and 25 feet of rubber. Some long flights were made using this launch, for example a British record of over 20 minutes flown by Mr Chasteneuf.

Fortunately I had a pair of pliers in my bag and quickly I bent the towhook to the shape in sketch 2. This field modification cured the problem and on the next launch Baby Buzzard climbed to the top of the line, then turned right as the auto rudder slackened off, and the tow ring released leaving the glided to circle away.

After several more flights adjusting the tail packing and rudder setting to give a straight tow and floating circular glide, Baby Buzzard was drifting to the limits of the flying field as the wind strength increased. Sunday the 8th of December was ideal for flying, early frost, clear blue sky, a light breeze and by mid day a weak sun gave some light lift. After a few test flights Baby Buzzard was launched on the first contest flight and I was surprised when it caught a thermal and drifted, gaining height, across the park. Since I had not fitted a dethermaliser fuse I thought it was on a one way trip to Valhalla. Luckily Baby Buzzard escaped the Thermal God and landed after 3 minutes 11 seconds. Further flights were made with a D/T fitted, but by late afternoon the thermal activity had died down.

I found the A/O glider contest a real fun event, requiring a different technique to the towline glider. If you have difficulty obtaining help to launch your glider, or at the field your friends are too busy flying, this 'Histart' is ideal. An extra bonus is the enjoyment of watching your glider climbing on the line. It also avoids running with your head down looking out for rabbit holes.

Construction

Some notes on the construction may be helpful. Build the wings and tail first to allow any warps to be corrected. The original had all surfaces flat except the left outer wing panel where 1/16" washout was built in (Place 1/16" packing under the left trailing edge at the tip when building) It is suggested that the spar slots are cut out after assembly, marked from a steel straight edge or stretched cotton. The tip spars are set back from the centre spruce spars and well cemented together to give a strong joint. Pick firm straight wood for the LE and TE to achieve a warp free wing and tail. Choose stiff quarter grained sheet for the ribs. Cover with light grade tissue and be sure to stick the tissue down well to the underside of the ribs. I have found that thinned PVA which glue is suitable. Obtain a light hollow GRP (fibreglass) or carbon fibre tapered rod as sold for HL gliders. If you are a real do it yourself modeller build one from spruce. This is placed flat on the plan then on the parts S1, S2, S3, S4 and FB cut out and located. Epoxy FB to the GRP boom. Cut to size the 3/16" x 1/8" and cement in place these upright members to form the spine. Remove from the plan and building board then check the spine for straightness. Cut out and cement the 1/4" medium balsa side members to each side of the spine. Cut out and cement in place the 1/16" sheet half formers. Build, fit, cover and dope the fin and rudder. Bend, solder and fit the swinging towhook, and the 18 SWG brass pivot tube which is fitted, epoxied and bound to a spruce 1/8" sq x 3/4" long cross piece which is epoxied to the underside of the wing platform WPI and WP2. Make sure the towhook will swing freely without friction. Now assemble the wing and tail to balance the glider. Add lead to the ballast box to achieve the correct balance at 55% with the nose block in place and the 1/16" side pieces temporarily pinned in place and after the 1/4" side members have been carved to taper towards F1. It is advisable at this stage to fit less than the full amount of lead since the final assembly, covering and doping could make the glider nose heavy. For this reason I set the balance at 60% but forgot to make a final balance check when completed. The extra weight amounting to a 2p coin was cut from lead and epoxied under the nose. After completing the balancing epoxy the lead into the ballast box, then cement the 1/16" sheet sides to the shaped 1/4" SM members. The fuselage can then be sanded to a streamlined shape and the cabin added. Finish with sanding sealer until the surface is smooth and cover in lightweight model span, dope, then add 2 coats of banana oil.

The Timperley glider class A/O is intended to be about half the size of the A/1 glider to reduce the chances of continual flights out of small flying fields and annoying farmers yet provide an interesting contest which is pure fun. Good flying.