

# Junior 60

*The Ben Buckle 'Electric Junior 60' was originally kitted by Keil-Kraft as the 'Junior 60' nearly 50 years ago.*

*Mike Goulette has prepared this kit review and says "The model is an absolute delight to fly. It will do multiple touch and goes, cruise around on ridiculously low throttle settings and can be safely manoeuvred at very low airspeeds" and all on a low cost motor.*



## Some background

Although I generally fly gliders and helicopters these days I have had a long interest in vintage models and I joined the UK chapter of the Society of Antique Modellers (SAM 35) when it was formed in the early 1980s. One of the models that I recognised then as a classic was the Junior 60. At the same time I became active in electric flight and the two came together when I built an electric "60" in around 1981. This was built from an early Ben Buckle drawing that I think had been drawn from an actual model rather than from the kit plan. My model was powered by an MFA Olympus belt drive and six very poor Sub-C nicads. Nevertheless it flew, including unassisted ROG (rise off

ground) take offs, although the flight duration was very short. This particular model met its end after I converted it to "wet" power and the wings folded during a loop. I was delighted, therefore when Editor Stephen asked me to review the Ben Buckle electric "60" kit as it has given me the chance to compare the advances in electric flight in 15 years as well as a chance to do some real building rather than mess around with foam and glass or assemble plastic and aluminium.



Astro speed control fits on top of the motor mount.

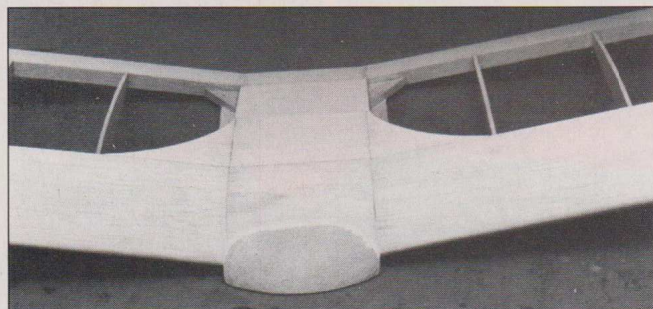
Left: Keil Kraft transfers embellish the fin.

## The Model

Eddie Keil's Junior 60 was designed to take advantage of the emerging post war market for "gas" models. Although powered flying had been banned during the war, quite a few petrol engines had found their way in to

The wingtip leading edge was covered with a separate piece of 1/16" sheet balsa.

A fairing block is fitted to the centre section leading edge.



Fin and tailplane ready to cover. Note the reinforcing strip in the centre of the tailplane.

the UK from visiting GI's and from our troops who had been posted abroad. The diesel era had yet to dawn in earnest and these early petrol engines were relatively heavy for the power they produced, just like our electric motor/batteries in fact! Consequently the Junior had a very short nose. This was a little problematic when the much lighter diesels came along later and was addressed in the 1964 redesign that became the equally famous "Super 60". The Ben Buckle electric conversion takes advantage of the short nose by placing the flight batteries up front, underneath the motor and RC equipment.

In the 1950's the Junior 60 became the model of choice for the emerging sport of RC flying and the kit was reissued in 1955 with details for RC conversion. This was, of course, rudder only and the changes were confined to widening the fuselage to make it easier to fit the bulky valve radio receiver and the large batteries and to showing a moveable rudder. The Ben Buckle kit version has a small rudder and a very small elevator which work just fine for an 'RC assist' style of flying.

## The Kit

The kit is comprehensive and includes wheels, linkages, hinges, and the parts for the electric motor mount. There is no die cutting (and definitely no LASER cutting for this vintage aeroplane!), the ribs and other preformed parts are accurately bandsawn to shape. Parts fit was excellent, particularly the rib to spar fit which allowed the

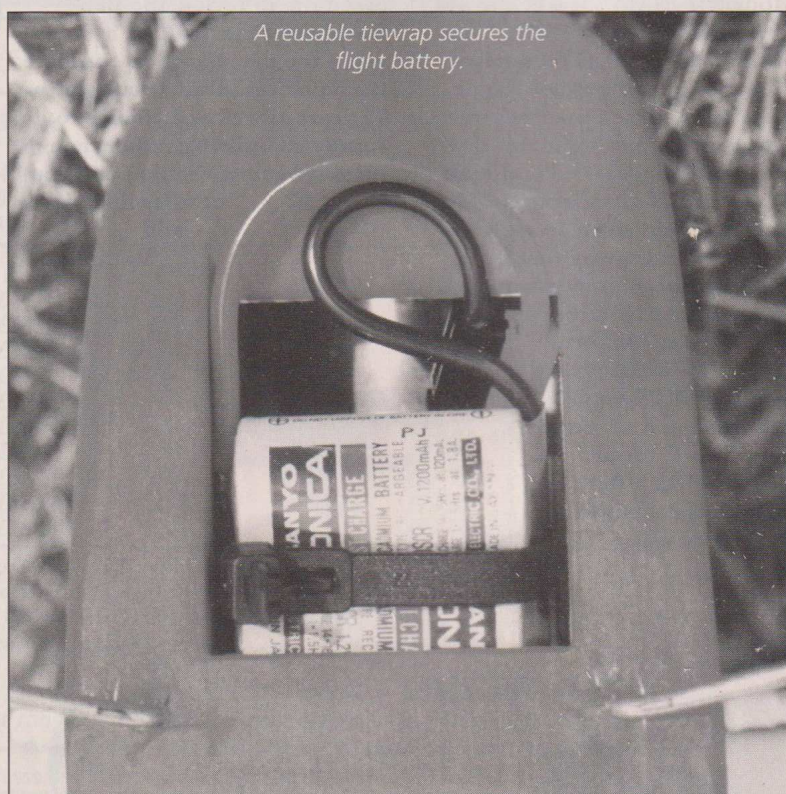
ribs to be slid in to place and then fixed with thin cyano (sorry, I mean Seccotine!). Wood quality was generally good, I replaced a couple of 1/4" square longerons because they were soft but otherwise I used all the wood in the kit. There were ample quantities of material supplied, however my

kit was missing the 1/4" dowel for the wings and tail, which proves that this kit was not specially selected for review. The instructions include a "helpline" with a phone number for the manufacturer so this sort of problem is easily fixed. I only had two gripes regarding the contents. Firstly, the two sheet plans (based on the kit drawing, unlike my early model) were folded rather than rolled. Obviously folded plans take up less room in a kit box but the fold lines always make it difficult to get the plan to lie flat on the building board. Secondly, the piano wire undercarriage parts in the kit did not match the shape on the plan very precisely and some additional bending is necessary to get the wheel axles correctly aligned. These additional bends are out of plane of the initial bends that have been done for you. I think that a

beginner with limited facilities would have great difficulty in getting this right.

Electric modifications are shown as a reduced scale drawing on the main fuselage plan and are quite clear. The motor mounting arrangement is definitely from the "brick outhouse" school of design with a 1/4" ply plate screwed to 1/2" beech bearers. I have no doubt that it could cope with an F5B motor at full chat! I built in about 3 degrees of down and right thrust and this seems about right with no trim changes with the motor on or off. I decided to use the "Master" Speed 600 and gearbox shown on the plan, however it would be very easy to adapt the motor mount to accommodate other geared or ungeared motors. The drawing shows the speed control on top of the motor mount, under the cowling and you will need a fairly small unit if you want to do it this way. I used the tiny Astro Flight 217 which is ideal. Don't worry if you only have a large controller, however, because there is plenty of room in the cabin to accommodate it.

The flight pack slides in to a battery compartment under the motor and this makes battery changing on the field very quick and easy. There is no means shown of retaining the battery in place, however, and I added a reusable tiewrap at the front to hold the pack in place. You should be able to see this in one of the photos.



A reusable tiewrap secures the flight battery.

## Building the model

This is building the old fashioned way and although it is very easy, modellers weaned on today's lite-ply and foam construction methods may find it somewhat long winded. I found it very enjoyable and by making good use of both cyanoacrylate and fast setting PVA, quite quick. The instructions and the plan notes cover the major issues so I will just concentrate on hints and tips.

The fuselage sides are built up over the plan from 1/4" square balsa and it is worth spending a little time to get the parts to fit precisely. I usually cut slightly overlength and then adjust the final fit using a sanding block. The fit should be gap free but not too tight or you will get distortion of the longerons from the locked in stresses. Build the second side directly over the first one, this helps to ensure that you end up with a square fuselage when you put it all together. Use a sheet of

polythene or similar between the two sides when you build the second one or you will end up with just one double width side! No method for retaining the removable top half of the cowl is shown on the plan.

I used a dowel at the rear and a small magnet at the front to hold it in place.

The tail surfaces are simple strip and sheet outlines. The fin attachment looked very insecure to me, however. The centre section of the tailplane is covered with 1/16" sheet after sanding to shape and the fin is butt glued to this with no reinforcement. I fitted an additional 1/4" square chordwise strip under the sheeting at the fin attachment point and after fitting the fin I drilled a couple of small holes up through this strip into the fin and then cyano'd small pieces of cocktail stick in to the holes as reinforcement. Belt and braces maybe, but it gives me peace of mind having crashed a vintage model a few years ago when the fin folded over in flight.

The plan includes details for building a two piece wing, however if you decide to do this I suggest that the wooden dowel joiners are replaced by 6 SWG wire joiners in to brass tubes. I would recommend, however,

that you build the wing in one piece as it will be both stronger and lighter. The plan shows the central dihedral brace should be made from 3/32" ply, in my kit this was cut from 1/16" ply which should be adequate for gentle flying. If you want to occasionally perform some non-vintage aerobatics I suggest you replace it with 1/8" ply or double up the 1/16". I took the former route with my model.

The upper leading edge of the wing is covered with 1/16" balsa sheet and the plan is a bit vague about what happens at the wingtip. I used a separate piece of sheet to cover from the tip rib down to the tip bow. This can be seen in one of the photographs.

I covered my model with "vintage" Solartex. This material is translucent and is an excellent substitute for silk or nylon. A couple of genuine Keil-Kraft waterslide transfers were applied to the fin to finish off.

RC installation was very simple and followed the suggestions on



*Landing - no prop! It had come off during the flight.*

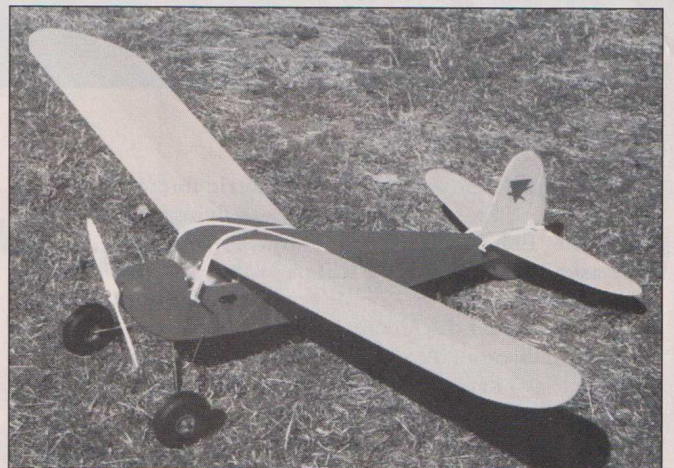
the plan. If this had not been a review model I would have replaced the rudder pushrod, which has a very long unsupported wire rod to the clevis at the rear end, with a closed loop system. In a low speed model like this the consequent slop is no problem and it has worked just fine in practice.

## Flying

And now for the interesting bit. For the first flight I fitted an 11 x 7 wooden prop and an old pack of Sanyo 1200 SCRs. After range checking with motor off and on, the model was hand launched by John Dominy (who also took the in-flight photos) into a stiff breeze. She climbed away steadily and handled the wind fairly well. Control response was mild but quite adequate for the intended flying style of the



*Mike Goulette and Junior 60. Guess which one is the younger.*



*Rubber bands, balloon tyres and a wooden prop, all that is missing is the smell of diesel fuel, thank goodness!*

model, i.e. RC assist or Ab Initio training. The second flight was ROG and the Junior got easily away after a short run. Subsequent flying sessions in calmer weather have shown that the model is an absolute delight to fly. It will do multiple touch and goes, cruise around on ridiculously low throttle settings and can be safely manoeuvred at very low airspeeds. I have even managed to get it to go up in a thermal, mind you, bricks were climbing faster! In short, I love it.

The best prop I have found so far is the Master Airscrew Electric Series 11 x 7. This has a thin highly undercambered blade section and seems to match the motor/gearbox very well. Flight times are around 6 to 10 minutes on the old 1200 SCRs and would be about 50% better with 1700 SCRCs.

## Conclusions

The model is a classic, the kit, with minor exceptions is excellent, it flies like a dream. If you fancy electric vintage go out and buy one. This kit was kindly provided by Irvine Engines, if your dealer hasn't got one, tell him to ask Irvine Engines.