Kathy's Clown

Finished, and it's time for the picture call, could be the first and last flight! Despite using a lot of 3 and 4mm light ply 'KC' weighed in at 1oz. over the minimum of 3.5lbs.

Build from our Full-Size **PLANS**

Even if you don't get to race it, this simple to build 'Quickie 500' design by Cliff Stone will give hours of aerobatic fun

Back to the future...

Quickie racing is here at last, first conceived in the USA about 20 years ago! Glenn Spickler designed a model he called 'Quickie 500', bolted a K&B 40 FS on the front and surprised everyone at the flying field. That was the birth of what we now know as Quickie 500 racing. Dimensions have not changed since those first days, all are geared to standard 3" and 4" wood sizes. The wing can use 48" wood as a one-piece structure, the original Spickler design was a built-up wing, hence, the 47.5" constant cord thickness rule, plus tip. That first model set the standard; it was quick to build with 500sq ins. of wing - hence the name which has stuck.

It strikes me that Quickie has a stability not seen in the other racing classes. Model dimensions and general layout have not changed in 20 years, a credit to the original concept. 'Kathy's Clown' has been designed to meet the rules and concepts governing Quickie 500 racing in the UK, although, as with those early designs, she is not tied only to racing, fun flying has been considered as a practical option.

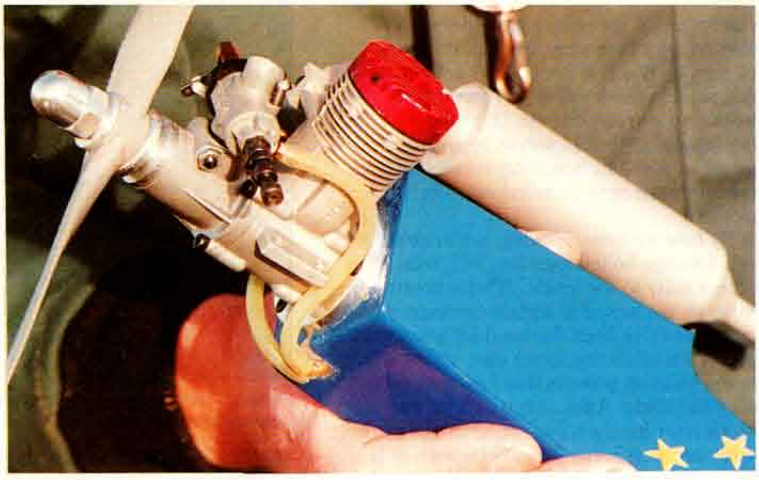
So, to the glue and string!

To build KC requires the minimum of experience, time and cash but, as with any model, accuracy and weight are important. There is little that could not be found in the average aileron trainer. A weekend in the workshop, building with 'super glue', epoxy and aliphatic resin, will see the basic model complete. Attention to details takes a little longer. However, a further week of evenings will see Kathy's Clown in her element.

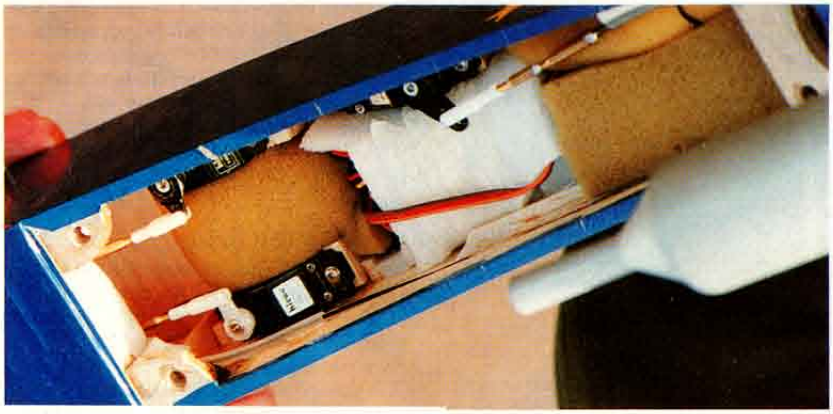
Having been around R/C models for 25 years, my stock of spare bits and pieces is vast but it was decided that everything must be currently available from your local model shop. So a visit to Steve Blake's Models in Luton was arranged. An hour or so later we emerged with every thing required for the basic machine. Be assured, there is nothing specialist required.

The wing is foam and I obtained mine for the prototype from Barrie Lever Models. Lever wings are more expensive than most but, because of the cutting system used, an accurate wing can be assured, and they come complete with a carbon trailing edge. Until you have worked with this type of wing, it cannot be appreciated just how good they are, saving time as well as giving peace of mind.

The wing is quite conventional, but do not



Top: very good indication of the narrow frontal area created by the unconventional fuselage shape. Top right: the front end showing the Spurway 'mount' and 'safety nut'. Note the exit of the tank feeds through the top of the fuselage behind the bulkhead.



Above: radio installation presented no problems using small (not sub-miniature) metal geared servos. Larger devices can be used but space, weight and CG present problems. Right: just to prove she does fly, one end of the field to the other, at 1/3 throttle, semi knife edge for the camera, a touch of top rudder, no problem.

General front underside view. The next model will have the engine mounted at 90 degrees to the vertical - makes life so much simpler.

be tempted to cut corners - those wing braces are functional. Use 24 hour epoxy resin to glue them in. A tip is to warm the resin and hardener first then mix together in a pre-warmed container. The mixture becomes almost as thin as water and will spread into confined spaces better. Works well with glass cloth too, where wetting is better, using less resin. Raising the room temperature helps reduce the viscosity of the resin and makes it easier to work.

My suggestion is to glue on the leading edge, roughly shape, then join the two wing halves. As no dihedral is used, final sanding and shaping is more accurate along the length of the wing. The plan shows 1/4" balsa set in as a face to the ailerons. As mine are top hinged, I worked from the top. Use a new blade, cut through the top skin and remove revealing the foam. Very carefully cut down through the foam feeling for the bottom skin. DO NOT cut the bottom skin. The foam digs out very easily, the 1/4" stock needs to chamfered in sympathy with the lower wing surface and glued in. When the excess is removed, finally sand the wing.

Make up the torque rods and bearing tubes using l2swg wire, lmm brass sheet and silver solder. Now cut out the ailerons, splitting the 1/4" stock in the middle and bevelling the facing wood as shown on the plan. Personally, I never face aileron ends on a racing machine, but in view of the fact that 'Kathy's Clown' may be used for sport flying and therefore will last a year or two, yours is the option at this stage. Tape the ailerons back into the wing, lay the torque rods in position and mark around them. The wing and ailerons can now be routed carefully so that the brass bearing tube is flush with the wing surface, and the torque rod spurs are a neat fit in the aileron. Be sure to make the pivot line central on the hinge line - this is not possible vertically, but it does not seem to matter so much.

Glue in the bearing tubes and rods with epoxy, and sand flush when dry; sanding a little of the bearing tube indicates you have got the vertical correct. Do not glue spurs to the ailerons at this stage - this will be the last job on the wing.

At this stage it is best to start the fuselage - all very straightforward really, the only break from convention being the shape in plan form, i.e. Fl and F2 are the same width, creating a long pear shape rather than the more conventional teardrop. You are at liberty to change the sizes of F2 and F3 if you so desire, but the pear shape is a well tried deviation from convention, often used in my successful series of Club 20 'T Bird' designs back in the mid 'seventies. As per plan; cut the 'light ply' sides and doublers and glue together with aliphatic resin or slow drying super glue. Glue Fl and F2 in place ensuring all is square, add F3 (do not glue yet) and pull the rear fuselage sides together. Use a piece of scrap balsa to keep the rear end open, allowing for the pushrod exit, then clamp with a large bulldog clip. Check alignment, glue F3 with super glue and add both stretchers at the front of the tail saddle. All is now locked, a natural shape has been formed and the rear top sheeting can be glued in place, but stop short of F3.

Backwards and forwards...

Now is the time to turn your attention back to the wing. Fitting the wing to the fuselage is so simple without a top on the fuselage. Make the cut-out for the undercarriage plate, be sure to cut back to the wing brace. The undercarriage fixing bolts double as wing bolts, the wing fixing plate is drilled and tapped to suit your bolts. If using captive nuts, the plate angle will need adjusting, then fill the gap with balsa, forming a pressure saddle for the wing. Glue a pre-drilled 2" x 4" x 1/16" ply load spreader on the underside of the wing at the trailing edge (my original uses carbon cloth and pressure inserts).

Cut the 'rear corner bolt plates accurately to maximise glue area, siting them hard onto the wing forming a pressure saddle. Drilling and tapping these plates is the preferred system, but captive nuts can be used. It is now time to address the aileron servo well and wing bandage. Servo wells on Quickies are

controversial, many laying the device on its side on top of the wing, the bearers being formed by two 1/4" hard wood dowels, flatted and set into holes drilled in the wing. It works, so you can choose. Of prime importance is that all servos be mounted as far aft as possible, hence my method of wall mounting the servos, as indicated in the pictures.

By now we have the wing, undercarriage and fuselage bolted together, with total accessibility to the inside. What a breath of fresh air compared to a glass fuselage; not once has there been the need for guesswork. 90% of the joints use super glue, giving a flow to the building process that I personally find very satisfying. A tip... keep a super glue accelerator handy, it can speed things up, but don't use it on joints that will be seen, it is difficult to sand and will look ugly.

Time for a cuppa

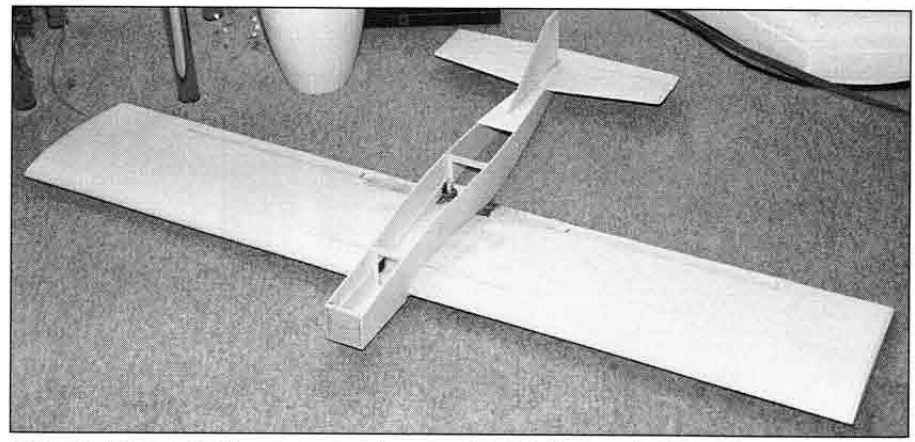
Time to pay some attention to detail. Glass bandage the wing join, 2" is adequate but 4" cut from a woven sheet is better. Epoxy resin is preferred, remember to warm the resin. Strength needs to be added to Fl, servo wall mounts and wing fixing plates. There is always more epoxy resin than needed after dealing with the wing bandage, so make a mixture of chopped carbon tows (chop to 8-I0mm) and resin, the stiffer the mix the better. Pre-wet all corners with resin and apply the carbon mixture a little at a time - too much, and it becomes very difficult to handle, the pictures show the result. An extremely strong but light joint is achieved. Do this work before finishing for the day then it's time for a cuppa' and reflection on progress so far.

Sucking eggs?

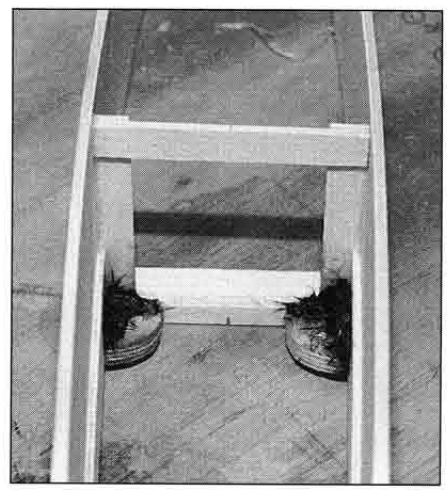
A little planning is now required. How is the engine to fit, routing the throttle cable, tank installation, simple but necessary. The final building work is tail and fin. Now there is nothing simpler, you really don't need me to tell you how to suck eggs - do you? No, just use a medium/ hard grade of balsa on the tail, the fin is medium. All that remains is to add the rest of the cross grain sheeting to the fuselage, light ply at the rear to carry the tail skid, light ply at the tail seat for strength and the same for the underside of the tank compartment. But before all this is done, mount the motor, install tank and throttle cable, and make all push rods - no different to a trainer. Incidentally, rudder is best operated with a cable.

Time for thought

Things to consider, the dimensions are critical if 'KC' is to be used for racing, so be sure that they match up to the rules. Modern .40s are generally heavy, the ASP I have used in the prototype is one of the lightest, it is also modestly priced. The heavyweight in the bunch is the Rossi, so care must be take with the CG, if necessary shorten the nose



General work complete after a weekend and one evening. Note the rear sheeting maintains shape, but stopped short giving complete access to the inside of the fuselage.



Strengthening the wing fixing with chopped carbon cloth, highly recommended on any stress joint. F3 former is made in the old fashioned way - light, cheap (often cut from scrap) but above all, strong in all directions.

moment by 10-15mm (a simple modification to the plan, before you start to build of course). For racing, most Q500 models seem to have the installation of servos and battery behind the trailing edge with a hatch for access. How to finish Kathy's Clown? Film is quick, clean and light, but it is up to you.

Mounting the motor is something that is again personal, but working on the non-specialist route, a conventional metal beam will suffice. But, as can been seen from the photos, a back plate mount is my personal choice, on the grounds of weight, or the lack of. Make your own or Pete Spurway can supply the excellent unit shown - he does a nice line in safety Prop Nuts as well as the humble captive nut.

A tip or two...

On the prototype, the wing tips are simple 1/4" medium balsa. To customise your version, the wing blanks may be cut to a total span of 47.5" and a more 'racy' tip added. The same customisation could be applied to the fin. It is up to you, I would not be offended.

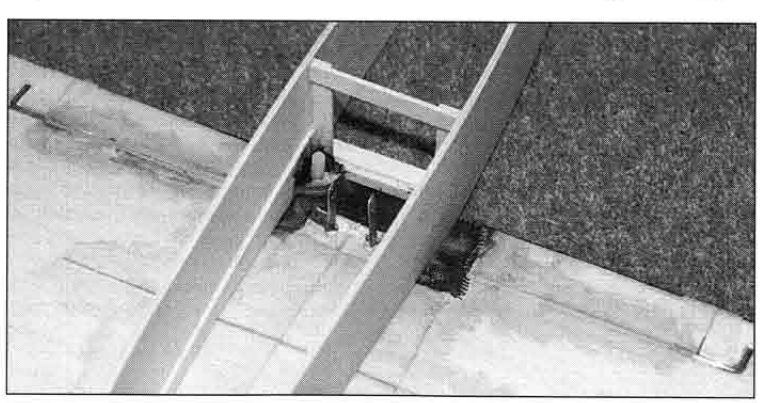
This is as far as I feel we need to go on how to build Kathy's Clown. Much has been glossed over, however, the general building experience assumed should be sufficient to cover these eventualities. You will need a few models under your belt before appropriate flying experience could be considered adequate. To race, a 'B' certificate will be required, as well as membership with insurance of the Model Pilots' Association or BMFA - the insurance cover offered by either organisation is currently recognised by the MoD.

And so to the field

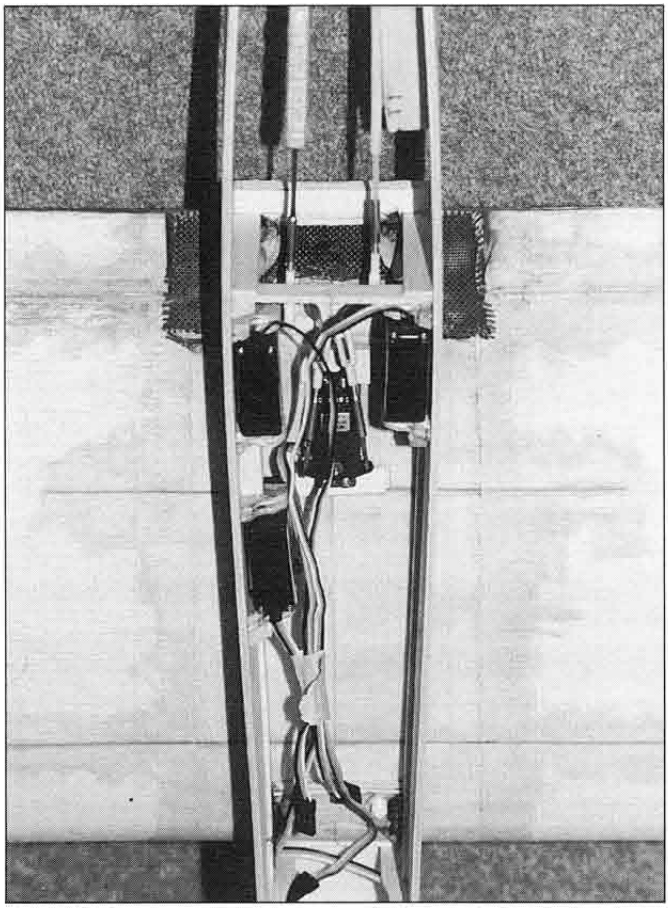
Does she fly? That is always the question one asks of a new design. KC flew like a dream. As the ASP motor was new, we took it steady at first. Almost disappointing, no excitement, take off was a little left, rudder held it fine, no aileron trim required, those Lever wings really are good. A gnats of up trim and that was it. Does she stall? Well, slower and slower until eventually the ailerons became ineffective, finally sliding to the right. That was the best I could do. The wing section really is what was hoped for in the secondary roll of fun model.

Now to land. Kathy's Clown needs a long, flat approach, she refuses to slow up, those lines are clean, very clean. Back in the air for some faster flying. To date, mild aerobatics have presented no problems. There is therefore no reason to believe more spirited stirring of the sticks will be anything but immensely satisfying. But would she achieve her prime objective? With the motor a little leaner, I did some test pylon turns. The response was excellent, she holds on her side where she is put, pull elevator and it is reminiscent of my Club 20 models, the whip around the corner is exhilarating.

KC has fulfilled expectations and next time out I will go for more wind, those landing are so hard to 'spot' in calm conditions. Be warned, this is not a beginner's aeroplane, don't be fooled by the simple lines, she is quick, responsive and agile, challenging but satisfying, and full of fun. An unexpected spin-off with this model was the fact that the combination of wood, foam, ASP, Irvine super silencer and APC propeller seemed to produce a surprisingly quiet model. We are not talking whispers but, by the standards of your average .40, it was a pleasant surprise. One was aware of the lack of drumming usually associated with the regulation issue glass racer fuselage. I will soon be trying smaller props with more pitch, keeping RPM the same. This will have the affect of reducing the tip speed (= less prop noise) whilst maintaining or increasing available thrust. That's the theory.



Close-up of aileron torque rods, 4" wing bandage and carbon cloth load spreading at trailing edge. Carbon cloth needs to be top and bottom forming a sandwich.



One weekend and two evenings, the basic installations are now complete, all that is required is to finish the sheeting, a final sand and covering.

Tears of a clown

Why, you may ask, the name? A tribute to my late wife. Kathy, my dear wife, always thought me a bit of a clown and it was at her inspiration that this model was designed and built! There is a 'Mark I' half built, that was not really gong together right. As mentioned, inspiration produced Mk II offered here. So, in her memory, 'Kathy's Clown' seemed fitting...

RM Quickie Trophy

A championship will be run throughout the year, points will be awarded and, at the end of the '95 flying season, the pilot with the most points will be presented with the 'Radio Modeller Q500 Championship Trophy'.

Addresses and info

Rules and race dates from:
Graham Clarke c/o Modelcraft, 61 Spon End, Coventry, CVI 3HE. Tel: 0203 676409. As well as the official Quickie meetings, Kathy's Clown can be raced at most Sport 40 meetings, in their Open class. Simply inform the CD when phoning your entry.
Dates so far for Sport 40:
April 2nd, Brooklands
May 21st Middle Wallop
July 30th, Odiham.
Dates so far for Quickie/FAI:
23rd April; 14th May; August ?? (Quickie only?) to be confirmed. Talk to Graham about venues.
Motor mounts, safety nuts and things metal:
Pete Spurway, (St Albans) 0727 851223
The safety nut is a requirement of Q500 rules and essential for obvious reasons. One wonders how any modeller (that is club or competing) would fair in the event of an insurance claim. A hairy business these days with millions at stake. The vinyl 'Quickie 500' and 'Kathy's Clown' logos can also be obtained in various sizes from Pete Spurway.
Barrie Lever Wings:
18 Tormead, Hythe, Southampton, 504 5AN. Ansaphone: 0703 844495