

Peter Miller falls in love with a pretty little groover!

PEGGY-SUE

Around Christmas time, a little bird whispered in my ear that *Super Custom* were about to manufacture a .30 size four stroke - and I knew that I just had to have one. In hopeful anticipation, I spent quite a lot of time over the festive period designing a model to suit. The specification I decided upon was for a fully aerobatic design, which would be very sleek and pretty, and with a fancy colour scheme.

The final design owes a lot to a rather beautiful biplane that I designed many years ago (and never published!), and not a little to the full size *Monocoupe* which is one of my favourite aircraft.

While the construction may look a little more complicated than most sports models, the

bonus is the resulting lightness: the complete model only weighs 3lbs 5oz. The extra construction time also pays off in a rather more attractive shape than your average slab-sider.

Fuselage

Build two fuselage sides flat on the plan. Use hard $\frac{3}{16}$ in. square stock for the longerons and medium wood for the uprights

and diagonals. Note the two pieces of wood that form the slot for the tailplane. Do not cut the stern post at this time. Cut and fit the wing seat: this is made from $\frac{3}{16}$ in. sheet and can be medium to soft wood.

When the sides are complete fit the $\frac{3}{16}$ in. ply doublers on the insides, this only extends up to the lower edge of the windows.

Cut out the formers and bend

up the undercarriage. Bind the latter to F2 with wire and solder the joints thoroughly. Do not solder the lower ends of the legs together yet - this undercarriage prevents rearward movement and yet the rear leg does not get bent in an 'arrival'.

The undercarriage legs are bent to allow the fitting of the rear wheel fairings, if you do not intend to use these, you could make the legs straight. The 16swg arms are soldered to the legs at the same time as the lower ends are joined - I suggest that you leave this until the model is almost complete, as those prongs could do some damage to you or parts of the model.

Wheel fairings are more practical than spats, and are shaped from scrap $\frac{1}{16}$ in. sheet before being epoxied onto the 16swg support arms.





The Super Custom 30 4-stroke provides plenty of punch - and quietly too.



PEGGY-SUE Specifications

Type:	R/C sports aerobatic
R/C functions:	Engine, elevator, aileron and rudder
Power:	0.26-0.30cu.in. 4-strokes, 0.20-0.25cu.in. 2-strokes
R/C equipment req:	Standard size 4 function R/C system
Wingspan:	50in. (1270mm)
Wing chord:	9 1/2in. (241mm)
Wing section:	Semi-symmetrical section: NACA2412
Wing area:	450sq.in. approx.
Tail section:	Flat plate
Tailplane area:	80sq.in. approx.
Finished weight:	3lbs 5oz. (1503g)
Wing loading:	17oz/sq.ft
Control throws:	See text

Assemble the fuselage sides with F1A, F2 and F3. Chamfer the rear of the fuselage so that when joined it is 1/16in. thick, then glue together. Fit the cross braces.

Now fit the piece of 1/16in. x 1/4in. along the sides under the windows (see section at F2); this is trimmed to blend into the nose at F1A. You can now add all the supplementary formers i.e. F1B, F2A etc. Also fit the pieces of 1/16in. wood up the sides of the cabin window framing, these are trimmed to a triangular shape as seen at F2.

Glue in place the two stringers that run down each side: these are tapered to nothing

at the leading edge of the tailplane. Next cut out the window frames from 1/16in. ply and glue in place, before making the lower fuselage skins from 1/16in. ply. Glue these to the sides.

Fit the instrument panel and cover the turtle deck with yet more 1/16in. ply, then add former F2B and the bottom stringers. The underside of the nose can now be covered with three pieces of 1/16in. ply.

Slide a piece of scrap 1/16in. sheet through the tailplane slot, but do NOT glue this in place. Build the fin and seat it in position, gluing it between the top of the tail posts, which have to be cut away to take it, and

also gluing it to former F4.

Add the top stringer from 1/16in. sheet and fit small triangles of wood to support this as shown at 'Typical Section at A' on the plan.

The cowl is built up from 1/16in. and 1/8in. sheet round the engine and then carved to shape. It is retained in place by three small self tapping screws through C1 and into F1. Cut holes through the soft balsa cowl and 'line' with aluminium tube to give access to the screw heads. They look a little like gun blast tubes!

After covering, the windows are glued inside the 1/16in. ply frame, which is a very neat,

realistic and strong method. The windscreen is glued inside the forward extensions of the side skins and to the fairing at the top. When the windscreen is dry, drill a series of very fine holes along the bottom edge and into the turtledeck, then run a fillet of glue around the base of the screen. A strip of trim film finishes it off.

Wings

The wings are built in one piece. Pin down the lower leading edge sheet and join at the centre with a scarf joint and a butt strap. Next, pin down the lower spar and fit all the ribs - supporting the rear of the ribs with a strip of balsa. Add the top spar and leading edge strip.

With the wing securely pinned in place, pull the lower leading edge sheet up and glue to the ribs and leading edge. DO NOT glue to R4 yet.

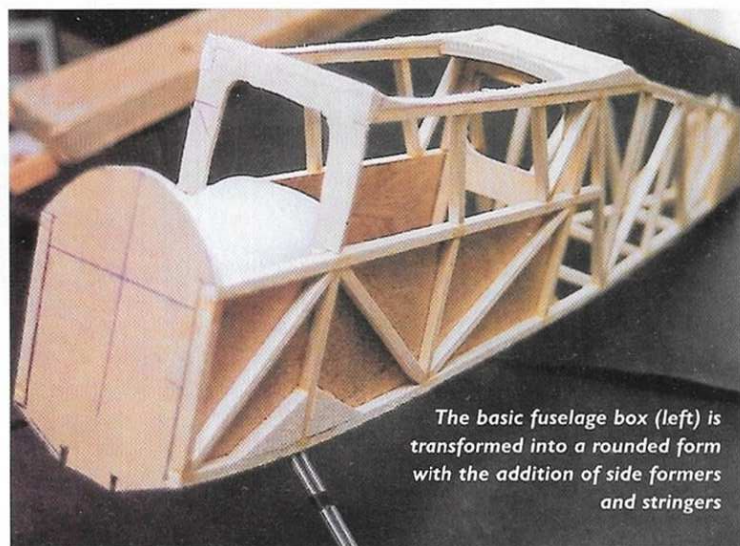
Lay down the 1/2 x 1/16in. strip at the aileron spar, the spar, the aileron L.E., the lower T.E. sheet and the aileron cap strips.

Rock the wing back and support the front of the wing, so that the rear of the ribs rest in their correct positions. Glue in place. When dry, fit the aileron ribs and all the top trailing edge sheeting and the aileron spar sheet.

Add the 1/16in. sheet tip and part 'Tip A', and glue the leading edge strip to the tip. Rock the wing forward again, support the trailing edge and pin everything down firmly. Check and double check that there are no warps, then leave for the cement to dry thoroughly.

Fit the 1/16in. ply plates for the wing bolts: drill through the holes and bottom skin. Fill in above the plate with scrap balsa and sand to match the ribs.

Add the top L.E. sheet - you can do this in two halves. Don't forget another butt strap at the join. Do not try to form the tips yet.



The basic fuselage box (left) is transformed into a rounded form with the addition of side formers and stringers



Fit a $\frac{1}{8}$ in. ply web in the centre bay and fit $\frac{1}{16}$ in. sheet webs to the rear of the spar - make sure that these do not extend over the leading edge sheet or you will have trouble when fitting the cap strips.

You can now take the wing off the board: offer up a little prayer and check for warps...

The tips can now be formed: the lower sheet will conform to the shape without any slitting but you may need to make some in the top sheet to get it to go round the slight double curvature.

The remainder of the assembly is perfectly standard.

Drill back through the lower skin for the wing bolts and then use a piece of sharp tube to cut counter-bores for the bolt heads - I used 4 mm nylon bolts.

Tail surfaces

The tail parts are built up from separate pieces, which is slightly cheaper and certainly lighter than using solid sheet. I used struts from K&S - 1/4in. streamlined brass tube - to support the tailplane. Use medium grades of wood to ensure a light tail end.



Getting there: work with the plane, knife and sanding block transforms the look of the front end.

Covering

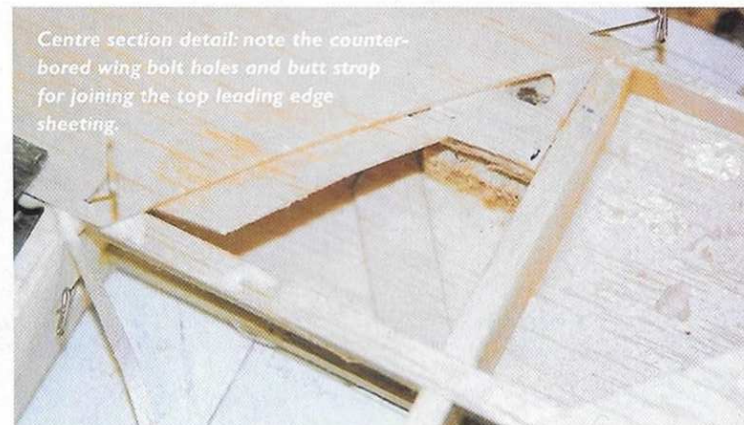
I covered the model with the new Solarfilm Supershrink Polyester material. This is fabulous stuff, it pulls up tighter than traditional Solarfilm and has a less 'plastic' feel. I am sold on it.

Covering is done in the normal way, except that the fin has the covering stuck down to the edges only and to the longeron, NOT the base of the fin. When it is shrunk, the covering forms a beautiful faired fin which flows into the fuselage and top stringer. Not really my idea, this is the way the full size aircraft fins are covered!

The final colour trim looks great - it also looks as if it took

for ever to do. It didn't, I am lazy and my attention span is limited, so if I can't do it quickly... forget it.

Those scallops are cut with a circle cutter: take a piece of card and mark the distance you want the points to be, set the circle cutter to a greater dimension and start cutting. The fuselage red was cut using a thin card template, which was also



Centre section detail: note the counter-bored wing bolt holes and butt strap for joining the top leading edge sheeting.

location shown on the plan is OK. The servos are mounted on rails behind F-M with their output arms just below the level of the window sills.

The engine is fitted on its side, but if you are using a two stroke you may need to angle it so that the silencer clears the fuselage side.

I was certainly not disappointed with the new

Inside of the wheel fairing, showing its supports. Drag reduction without the disadvantages of spats!



used for the pinstripe. As for the black pin stripe, this was done the same way, but cut each scallop separately. Don't try and cut a long strip of them, it doesn't work. Trust me.

The lettering was cut for me by ABC Decals, The Old Vicarage Workshop, The Old Vicarage, St John's in the Vale, Dalebottom, Keswick, Cumbria, CA12 4TF, Phone/Fax 017687 80069, E-mail: sales@overlander.co.uk

Installation

The battery rests on the floor just behind F2 with the receiver above it. F-M is a movable former which is glued into place to suit the space needed. The

Super Custom FS30 four-stroke, it is a beautiful little engine, powerful and easy starting. It is very similar indeed to the Magnum XL30 reviewed in the June issue, and is close to the OS FS 28 - but the carburettor is different: for a start it is of the twin needle design which allows the idle mixture to be adjusted easily.

The exhaust system is different from the OS's too: a bit more complex and quite robust, the silencer being very effective. While the SC does not have a choke, I found that it

starts instantly without that.

A four ounce fuel tank is quite big enough for four strokes, and will provide a reasonable length of flight with a two stroke.

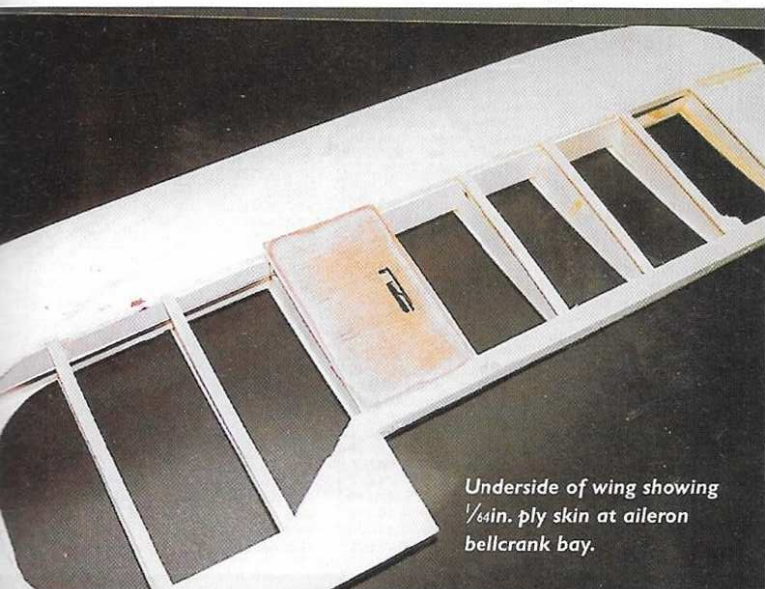
Control throws are: **Aileron:** High Rate $\frac{3}{4}$ in. each way, Low Rate $\frac{1}{2}$ in. each way. **Elevators:** $\frac{3}{4}$ in. each way. **Rudder:** 1in. each way. The low aileron rate gives very smooth, positive, roll control and is a good starting point - but I like somewhat more livelier ailerons, and the higher rate gives that without being 'twitchy'.

Let's Go, Peggy-Sue!

Like a first date, the first flight with any model is a little nerve wracking. What's her character like? How does she respond to your er... control inputs? Is she dull, over excitable or just right?

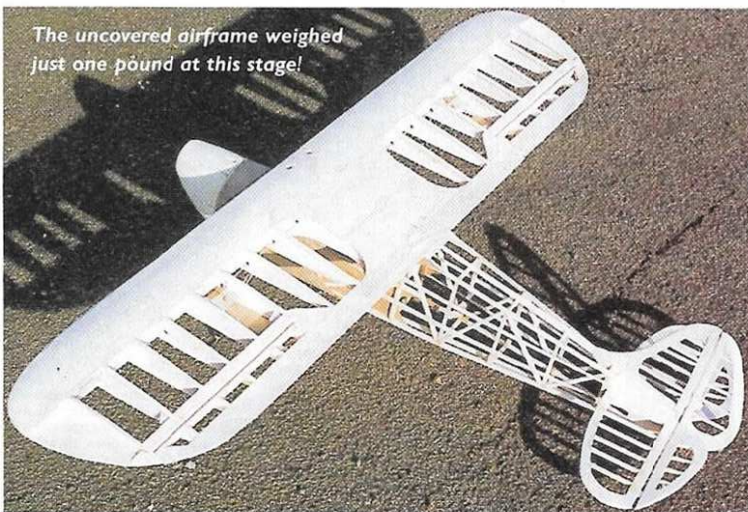
The first take off was dead smooth and straight, I didn't even have to touch the rudder and then *Peggy-Sue* climbed away. I began to wonder if she was too steady - or will she rock 'n roll.

I applied some right aileron and *Peggy-Sue* rolled nicely: opposite aileron and she went the other way just as smoothly.



Underside of wing showing $\frac{1}{4}$ in. ply skin at aileron bellcrank bay.

The uncovered airframe weighed just one pound at this stage!



Next a loop, and then another, great! What about an outside loop? No problem.

Well, I like inverted so over on her back, a little down held in and more smooth flying. What about low speed handling? This is where they can bite. I throttled right back and fed in full 'up' slowly and she just flew on, with no tendency to drop a wing.

Spins are smooth, quite fast and recovery is almost instant. Oooh, I love her! Stuart Pickett who flies my models while I take the flying shots loved her too (she's my girl!) and after the pictures had been taken, he flew her for most of the tank.

On the second outing I really

had a ball, I flew for eight minutes without flying straight and level for more than a few feet. I just strung together everything from loops, rolls, vertical rolls, outside loops, Cuban Eights, reverse Cubans and so on in one small area of sky. She never once misbehaved the whole flight.

On this session I even took her off from a very young wheat field, and landed her back on it. This doesn't always happen!

We're going steady now

I can tell you that *Peggy-Sue* and I will be going out together most Sundays now 'cos she's my kind of model. ●