

High Five

Mike White introduces a scaled up version of his popular Pepper Sprout profile fun-flyer for .40 size engines



'High Five' is a 25% enlargement of my 'Pepper Sprout' which appeared in the September '95 issue of RCM&E. I was not trying to design an out and out fun fly model; there are plenty of good well designed models of this kind available as kits or plans. No, I was after something a little different, a compromise between the performance of a 'Wot 4' and one of Parc-Amber's 'fu' designs and something which was quick to prepare when I arrived at the field. With High Five all one has to do is fuel up, fire up and fly. You can fly as fast as the propeller will pull it or as slowly as it will go without falling out of the sky — that's pretty slow! It will do all you ask of it and still stay together — as long as it's been properly built!

Power chosen was an OS 40 FSR throwing an 11 x 4 propeller (and sometimes a 12 x 6). Any good .30-.45 two-stroke will provide you with plenty of fun, especially if you couple up to a computer transmitter. You know, they're the ones which the rich kids on the block operate! Me? I now use a Futaba 'Skysport' which is all I want. When I was flying for one of the airlines we had a saying, "Captains have to know how to write, first officers



Yes, you could be forgiven if you think that you've seen a similar design before. High Five's smaller sister, the .25 size Pepper Sprout featured as a free pull-out plan in the Sept 95 issue.



Prior experience with fun-fly type models is recommended before tackling High Five. She's not difficult to fly, but those huge control surfaces need treating with respect.

have to know how to write a little, and flight engineers only have to know someone who can write." Well, I know someone who operates a computer transmitter — honest!

Anyway, with the Skysport I can, at the flick of a switch (so long as it's the correct one) couple flap and elevator (up elevator with down flap) which will give loops, the diameters of which will be only a little more than the length of the fuselage - they're really just 360° rotations about the horizontal axis. Couple in some up flap for rapid touch and goes, or some down flap if you want a long floating glide at the cheap rate.

Try this one: Stand the wings vertical and apply rudder to start a climb. As it does so, feed in elevator so that the model rotates. It takes some practice though. I suppose that it is the reverse of a spin and looks really weird. I have only managed to do two good ones so far and it does take a lot of power.

Any standard size radio will fit within the wing, with enough packing to protect it. You could save a little weight by fitting a micro servo for the throttle and a mini on the rudder, although I don't really believe that the cost is justified. One item where I believe that an extra investment is worthwhile is a larger battery. With this type of model, and an 8 - 10oz tank, the servos, all five of them, are on the move continuously. With the large control surfaces the battery drain is much higher than on a normal sports model. My preference is for a five cell (6 volts) 850 mAh receiver pack for good insurance. Six volts give better servo response and the extra capacity should last you a full flying session. There is a drawback however, in that it will take longer to charge the pack if you only have a 50 mAh charger. If so, then charge the pack for 25 hours to obtain a full charge. An alternative would be to carry two standard packs and change them halfway through the flying session.

I used Sullivan plastic push rods for the

Datafile

Plan Specifications

Name	High Five
Designed By	Mike White
Aircraft Type	Hot Dogger/Fun-Fly
Wingspan	43"
Wing Chord	14.5" mean chord
Wing Area	625 sq. ins. (4.3 sq. ft.)
Aerofoil	Symmetrical
Dihedral At Each Tip	Nil
Fuselage Length	40.5" to fin TE
Tailplane Span	20.5"
Tailplane Area	130 sq. ins.
Tailplane Section	Flat plate
Fin Height	7"
Engine Range	.30 -.45 two-stroke
Fuel Tank	6 - 8 oz
Rec. Number of Channels	Four (five servos required)
Control Functions	Aileron, elevator, rudder, throttle
C.G. (from L.E.)	3.25"
Elevator Throws	+/- 1.5", rates on +/- 2", rates off
Aileron Throws	+/- 1", rates on +/- 1.5, rates off
Rudder Throws	2.5" each way
Sidethrust	Nil
Downthrust	Nil

Materials Used in Construction

balsa	Balsa, ply, foam
Fuselage	Balsa
Wing	Balsa
Tail Surfaces	Balsa
Weight, Ready to Fly	4 - 4.5 lbs.
Wing Loading	15 - 16 ozs./sq.ft.

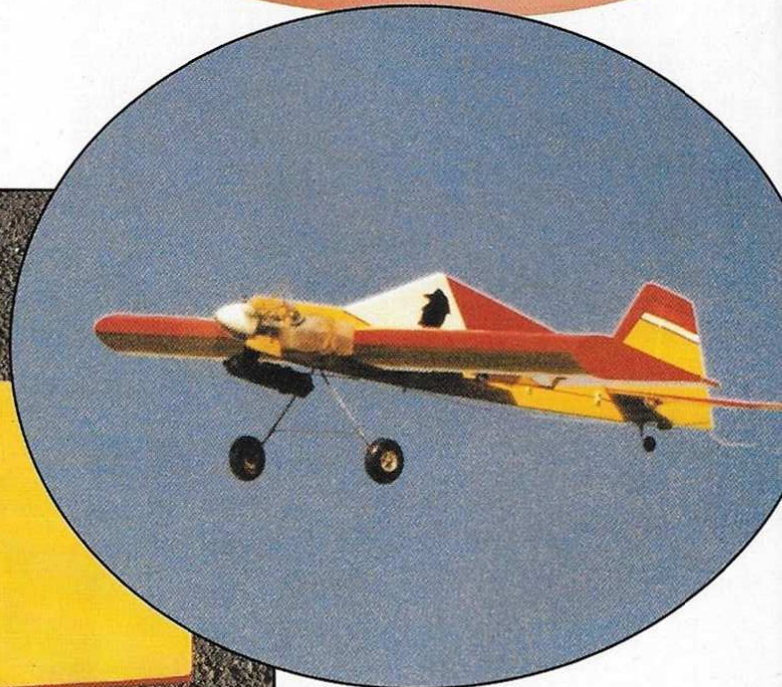
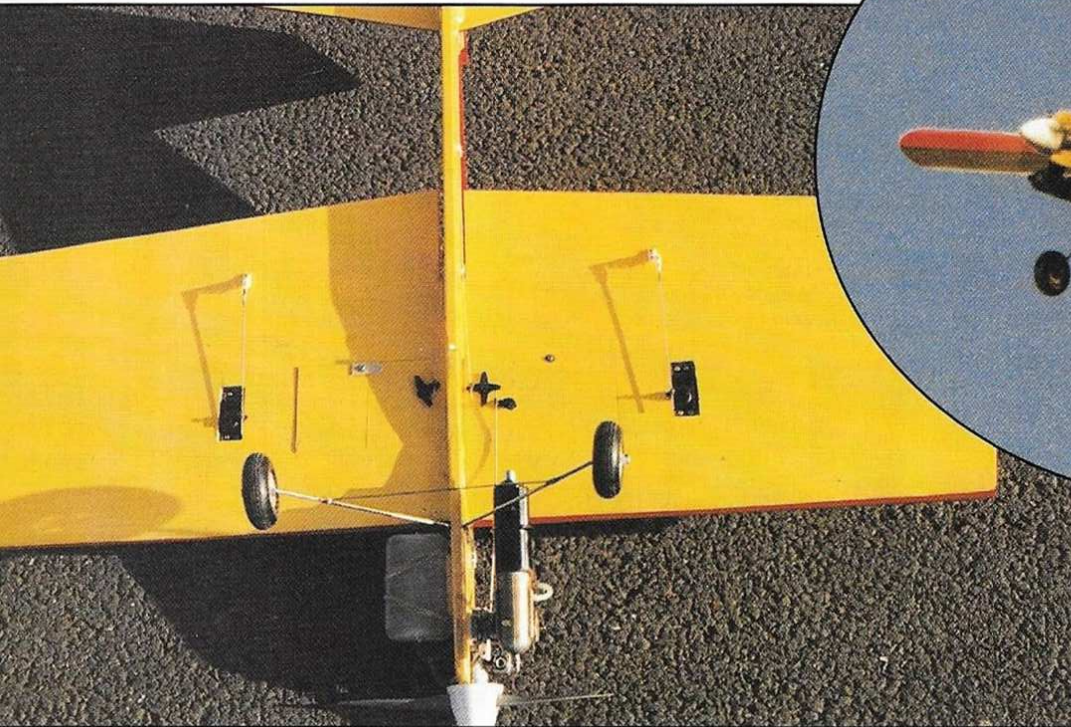
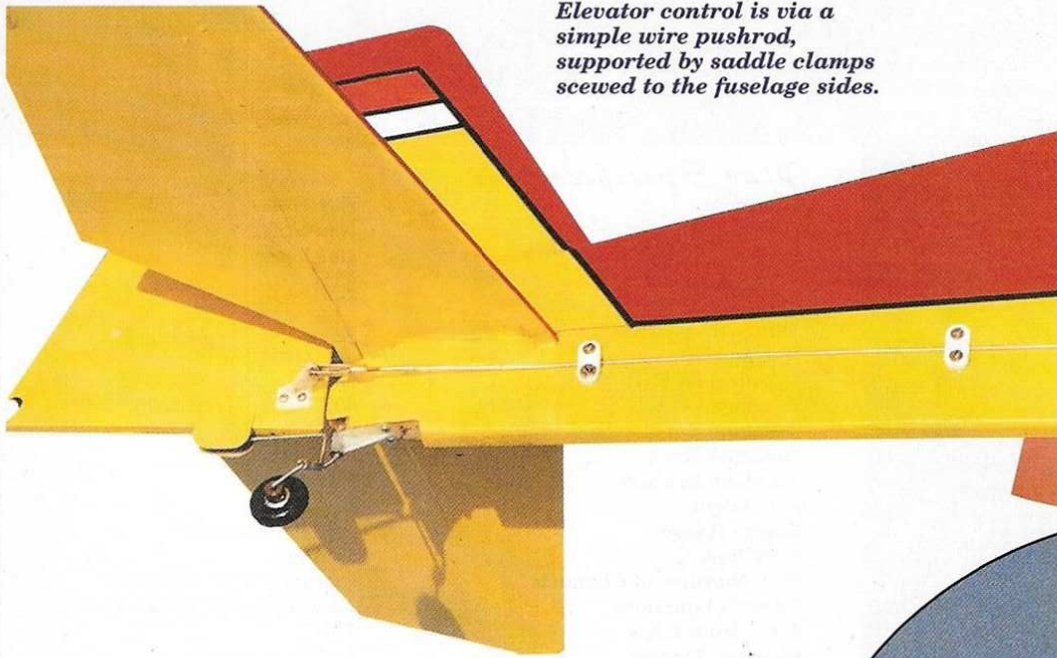
elevator and rudder surfaces, but on one of the models I have used 15 swg piano wire with no ill effects to the receiver operation, even though the aerial was taped alongside it.

High Five is not a model for the faint-hearted, although it can be tamed by

Model flying on the Isle Of Man, and not a tailless design in sight!



Elevator control is via a simple wire pushrod, supported by saddle clamps screwed to the fuselage sides.



There's no excuse for deadstick landings anymore! Having the fuel tank banded to the fuselage side means that the fuel level is easily visible during a low pass.

All the R/C gear is installed in the wing, with the rudder, elevator and throttle servos in the centre section and the aileron servos outboard.

reducing the aileron throws. Even with reduced aileron, the model rolls fast, so be warned. Because of this it is not recommended for those without some experience in flying 'hotter' types of model. Building instructions are therefore really only to highlight the more unusual points. If you can see a better way of doing something, then by all means go ahead, but do give it lots of thought before you do!

Fuselage

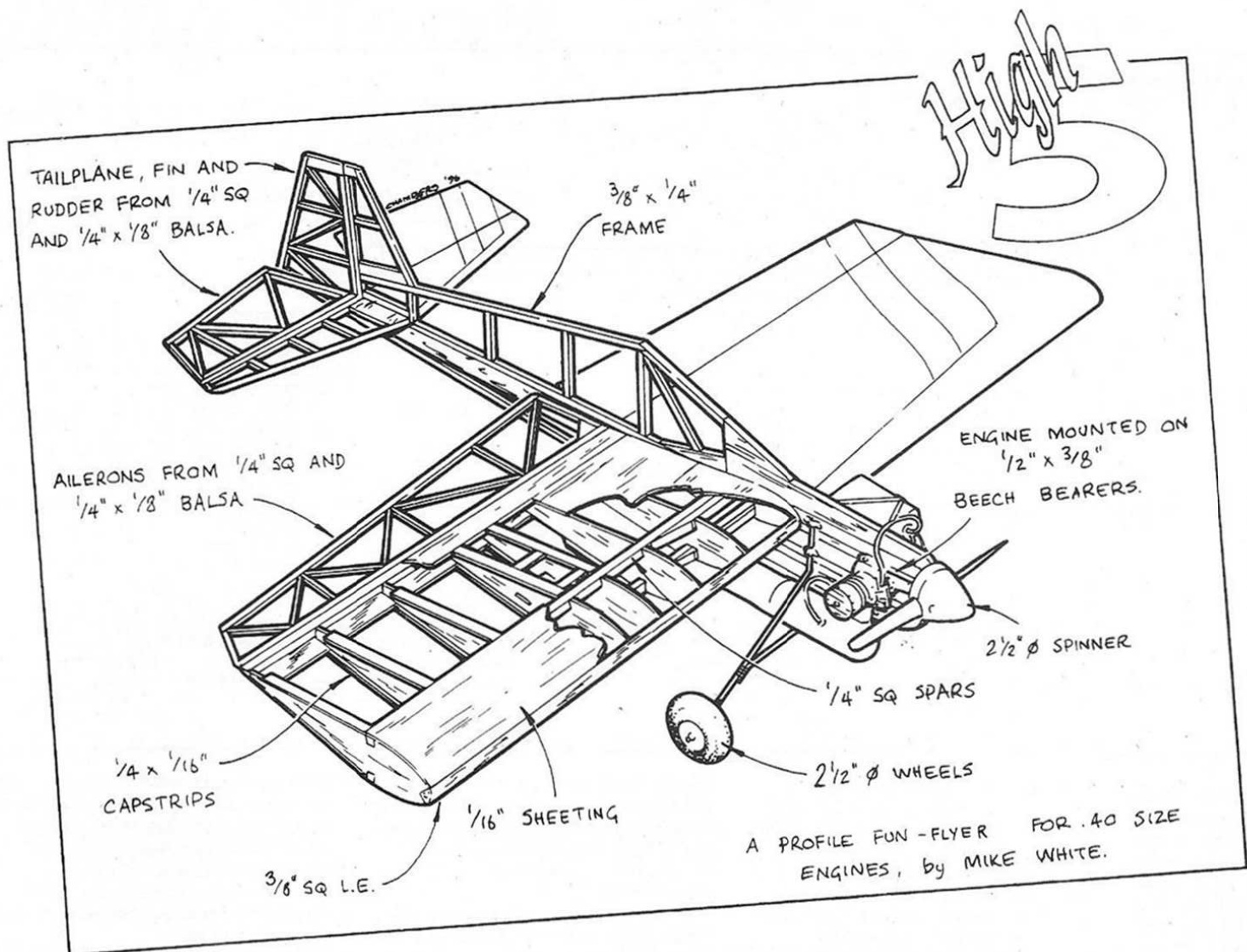
Select the hardwood longerons from straight grained spruce, pine or ramin, spruce being the lightest. Make sure that it is also knot free. Before cutting or gluing, degrease with some thinners, especially pine. Glue these to

the 3/8" sheet spacer so that the measurement across their extremities equals the dimension between your engine's bearer lugs. Glue the beechwood bearers to the longerons and clamp. Pin this over the plan and fill the space between the longerons with polystyrene foam. Packing from radio or fridge cartons is sometimes suitable and may be cut with a simple hot wire or hacksaw blade. This unit may not be of the same dimensions as the plan because your engine may not be the same width as mine. It matters not, so long as the longerons are laid parallel with the plan lines while the polystyrene foam is being glued. When ready, cover both sides with 1/16" ply (1.5mm) and leave clamped

together for 24 hours if using PVA or aliphatic glues. Make up the top framework and remainder of the sheet construction and lay to one side. Do not glue to the hardwood/ply unit yet.

Wing ways

Choose hard balsa for the mainspars and pin one down to the plan and glue on the ribs. From the spar aft you will see that the rib is a straight line, so you can pin each one straight onto the plan without packing. When gluing the root ribs (R1) to the spars, ensure that the space between them is correct. This must be a sliding fit for the fuselage unit just completed. To this end it is a good idea to lay the fuselage between them when gluing,



but do ensure that it does not become permanently fixed to the wing — yet! Fit the false TE and its sheeting, LE and top sheeting, cap strips and servo bearers, but omit the centre section sheet until the wing and fuselage are permanently glued together. When ready turn over, pin down and complete the underside sheeting. But again, omit the centre section sheeting.

Now is the time to join the fuselage and wing together. First make sure that the inside face of each root rib is clear and free from globs of glue. Put a good smear of glue onto the fuselage sides in the rib area and onto the inside face of each root rib. Push the fuselage into the gap and push it right home until the engine bearers butt against the mainspars. Clean off the excess and set the wing at zero incidence on the fuselage to line up with marks previously made. Add all remaining fuselage items and centre section sheeting.

Covering and assembly

I used Solarfilm throughout and this

included the control surface hinges. I always go over all of the Solarfilm and trim joints with Clearcoat or another good fuelproofers, applied with a very small brush. Doing this stops the film from peeling off when cleaning down. Cover the wings and fuselage first, and then paint the fuselage forward of the wing LE with Solarlac. Cover the tailplane fin and rudder before attaching to the fuselage. Install all of the radio gear, pushrods and undercarriage etc., tape the engine in place temporarily, check the balance, and adjust the engine position until it is correct. When satisfied, drill for the engine retaining bolts and install the engine.

Flying high

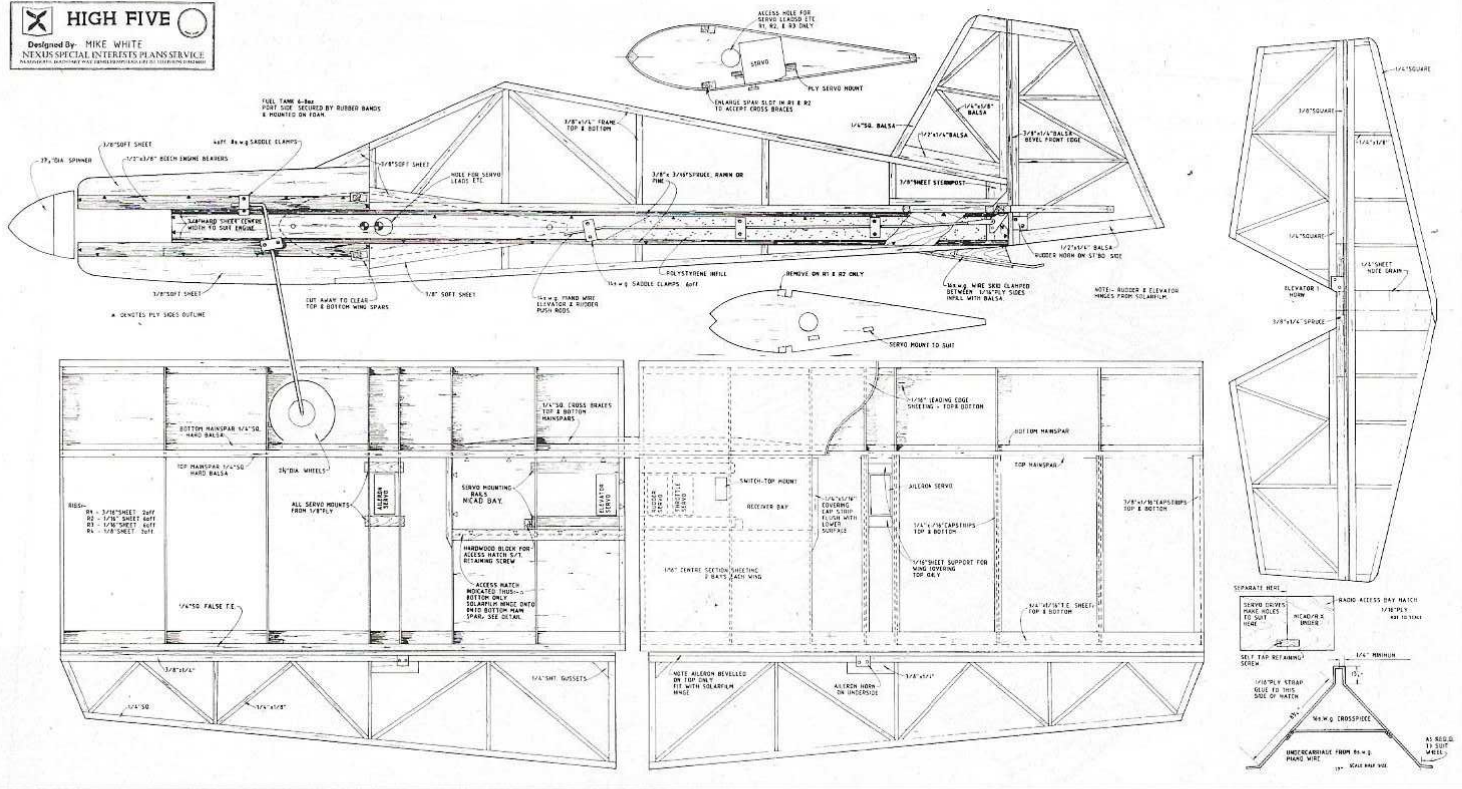
On your first take-off, do not hold the tail down as with the larger engines and a bit of wind it will get airborne very quickly in a nose high attitude and become a bit of a handful - you can try this later when you have some experience with the model. Set in a few clicks of up elevator trim, feed in some right rudder and let the tail rise, keeping it level by using the elevator. With no wind and this trim it will be

off the ground in 20 yards or so using a .40 engine and an 11 x 4 prop. Later, do your own thing with short take offs and under and overarm hand launches. Do not exceed 4" pitch propellers for best results.

When the power is reduced for the approach, with down landing flap set, you can expect some nose down pitch change, which should be offset with up elevator trim. Do not try to drag the approach out too much, as the wing is quite 'draggy' and the plane will stall out on you. Keep the speed up a little until you know what to expect with your particular flap set-up. With some up flap selected (to get you down in double quick time) there is a nose up pitch change, which again should be corrected with elevator trim. High Five will now descend almost vertically.

Some thoughts on radio installations

It is desirable, to be able to wring out the most from this model, to use a computer radio as exponential rates can be used for the hottest hot dog flying close to the ground. You could



set it up so that at low throttle settings, 3/4" up flap is automatically selected. This will get you down really fast for those rapid touch and goes. Crow set up could also be used.

With dual rates, set the aileron to 3/4" up and down, rates on, until you are used to the model and then increase the movements to that given on the data sheet.

If you use a transmitter with no dual rates, don't despair. To begin with set the aileron throws to 3/4" up and down and the elevator as given, then slowly increase them until the model gets difficult to handle. Aim to keep your manoeuvres as close in as possible, and as close to the ground as you dare!

Whichever type of transmitter you

use, gradually increase the elevator and aileron throws to your own liking, even though they may exceed those given. They may be increased until handling becomes a problem, then reduced slightly.

If your balance point is within the range given on the plan, then the elevator response will not be too rapid at the low rate shown. Do not decrease the throw as you will not have enough elevator for the round out on landing.

The future?

Just before I started designing 'High Five', I was doodling with a double sized 'Pepper Sprout'. I had the wing drawn up full size, 72" wing span and a 26" root chord. I thought, "Hell no.

Nobody would build a wing this big, it's ridiculous." So I went down to this size and put the 'big fella' on hold. Now look what's happened! Parc-Amber are doing it with a 72" monster! It just goes to show, when you get an idea carry it through, you may have a first...

How about a biplane fun fly of 72" span and 26" root chord, powered by a 60cc petrol engine? That really would be a show stopper!

If you would like to ask any questions or chat about this model, I can be contacted on 01624 813654. You can also write to me at 12 Coolil Breryk, Ramsey, Isle of Man IM8 3HJ, but please include an SAE - unless you are sending a picture of 'High Five' for my workshop wall! ●