Product Review

TS Hobby F-20 Tigershark 400 EDF ARF

by

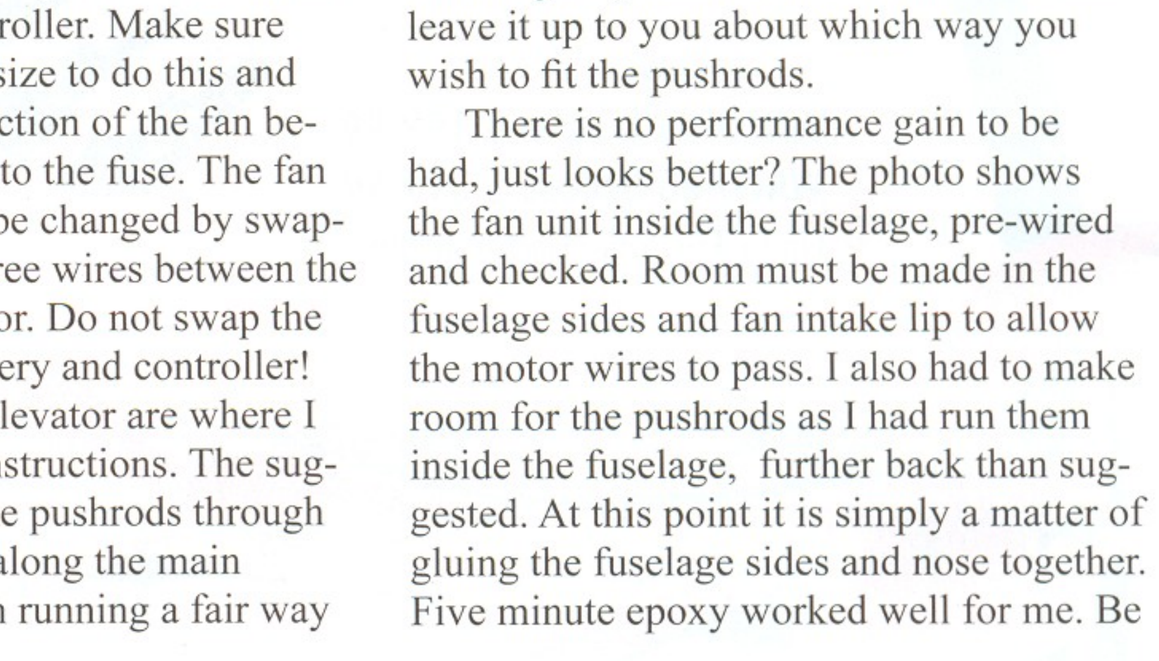
Bill Hamilton.

Electric Ducted Fan models have been around for some time now. I have had more than a general interest in EDF since starting out in 1997 with an EDF Skyhawk using Nicad batteries and brushed motors! Things have changed since then.
The TS Hobby F20 Tigershark has the combined benefit of all the latest technologies to make an EDF model that is light, with performance to spare.

One other aspect of this model that really drew me to it is that it comes with an optional set of air retracts, with a steer-able nose wheel as well! It's just too cute! The F20 is basically an ARF kit, but, don't be fooled, there is a fair bit of building to be done. The kit consists of Styrene fuselage shells and molded Depron wings and tail feathers. Having to build the model gives you an opportunity to be creative though.

More on this later. The F20 kit is does come with a very comprehensive list of hardware. The brushless motor, power fan 400/6 70mm fan unit and brushless speed controller are all included. Enough of the banter, lets get on with assessing the model.

Construction begins with gluing the nose halves of the fuselage together. This is very straightforward and includes the mounting plate for the elevator servo and



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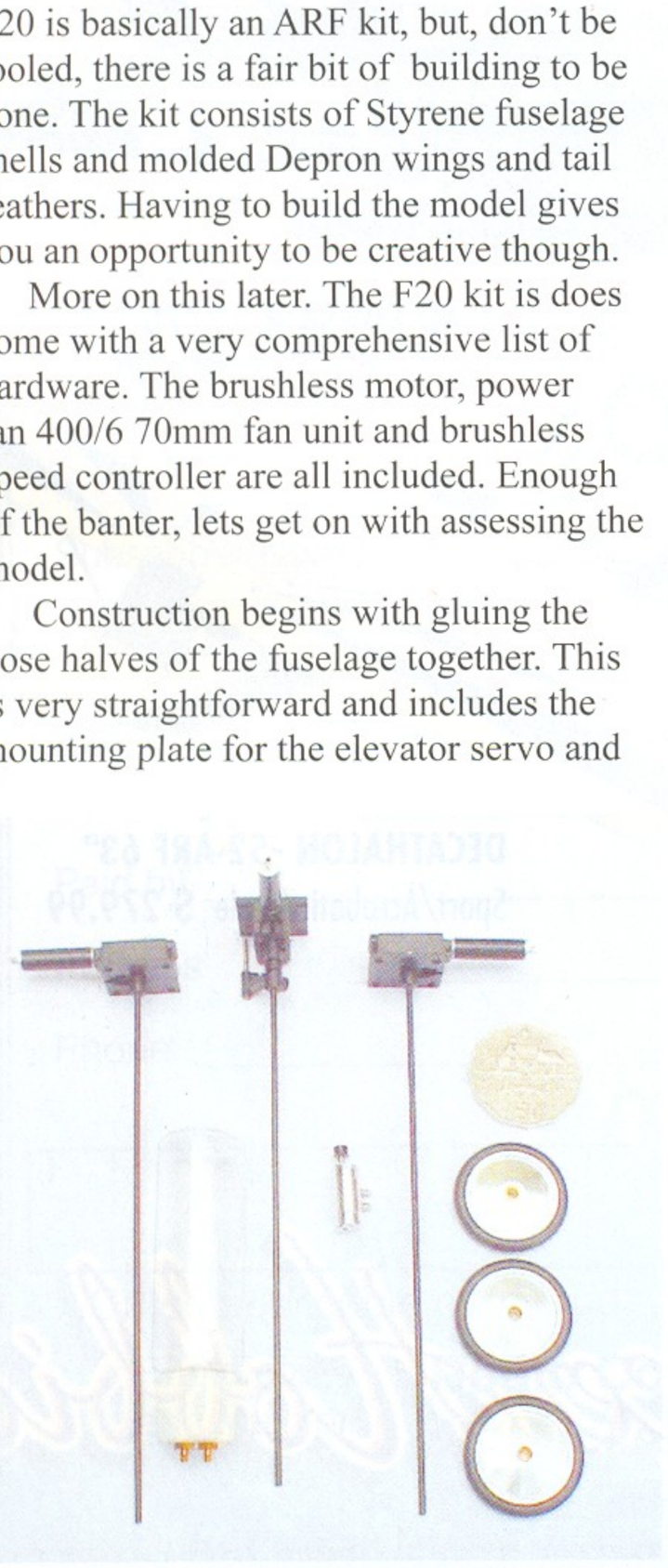


Expect a little bit more work than the usual ARF product.

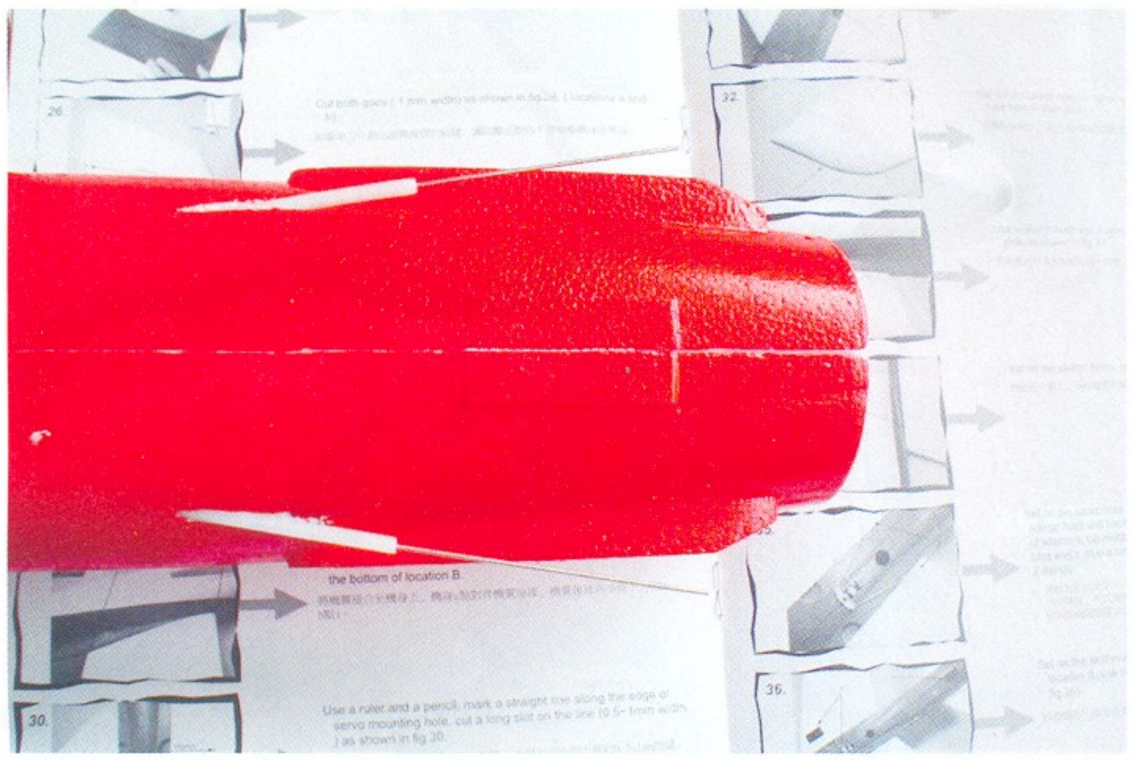
The retracts are very cute.

This preparation consists of running the sleeves for the elevator pushrods through the foam fuselage and wiring in the speed controller. For the speed controller you will need to extend the wire by 50mm between the motor and the controller. Make sure you use wire of equal size to do this and check the rotation direction of the fan before closing the unit into the fuse. The fan rotation direction can be changed by swapping any two of the three wires between the controller and the motor. Do not swap the wires between the battery and controller! The pushrods for the elevator are where I did deviate from the instructions. The suggested way is to run the pushrods through the fuselage half way along the main wing, this leaves them running a fair way along the outside of the fuselage. I made a decision to run the pushrods further inside the fuse and come through the side closer to the tail, therefore neater? The photos should give you an idea of what I did and leave it up to you about which way you wish to fit the pushrods.

There is no performance gain to be had, just looks better? The photo shows the fan unit inside the fuselage, pre-wired and checked. Room must be made in the fuselage sides and fan intake lip to allow the motor wires to pass. I also had to make room for the pushrods as I had run them inside the fuselage, further back than suggested. At this point it is simply a matter of gluing the fuselage sides and nose together. Five minute epoxy worked well for me. Be sure that everything fits and all is tested, there is no going back from this point!

Once the fuselage is together the rest is straightforward. The tail feathers are attached with five minute epoxy. The suggested method is simply a 'butt' glue joint. I deviated here, again, and pushed some dowels into the foam to add some strength.

battery. Next is setting the fan unit into the fuselage. To do this the diameter of the fan must be reduced at the intake lip. The instructions suggest a pair of snips to do this, I used the bench grinder which also worked effectively. Once the two fuselage shells will push together fully with the fan inside you can prepare to glue the unit together.



For improved appearance I moved the pushrod exits further aft.

The dowels are skewers from the kitchen, which worked really well. The main wing is attached in the same fashion with an added fibreglass brace that is glued in to add strength across the fuselage. I also fitted the dowels here just to be sure. All of the control surface hinges are a part of the moulded surface. You do need to cut the ailerons and exercise the hinge line to free the control, then, connect the control horn and pushrod. The supplied horns and links are effective and easy.

The canopy is straight forward, with the help of magnetic latches and a bit of time spent attaching the decals and you are done. The all up weight of the model is under the suggested 550 grams! This is a first for me as most models come out above! I must also say that 550 grams is not heavy at all. This is one key to the good performance that this model has. I tested the input power with the 3S 1200 mAh Lipo battery pack, which gave 266 Watts! 25 Amps at 10.5 Volts and an impressive 430 grams of thrust, good power to weight! I also tested the model on a 3S 2200 mAh battery pack- 301 Watts and 490 grams thrust! This battery adds only 70 grams too!

The flight setup of the model is one thing that is not covered thoroughly in the instructions! The C.G. is the only reference, so I guessed what the control throws should be. I set the model with 3mm up and down on ailerons and 4mm up and down on elevator. There is a small difference in the up and down movement of the aileron when a single servo is used, due to the linkage angles, so aim for 3mm max.

The optional air retracts.

I could not resist the air retracts! The units are small and include a steer-able nose wheel which means a rudder can also be connected. This is a lot of trickery for a small model, which just adds to the impact! The servo to drive the steering and rudder is installed at the beginning of the fuselage assembly and must be factored in right from the start. The pushrod linkage is a bit of work and must be thought-out completely before the fuselage is assembled.

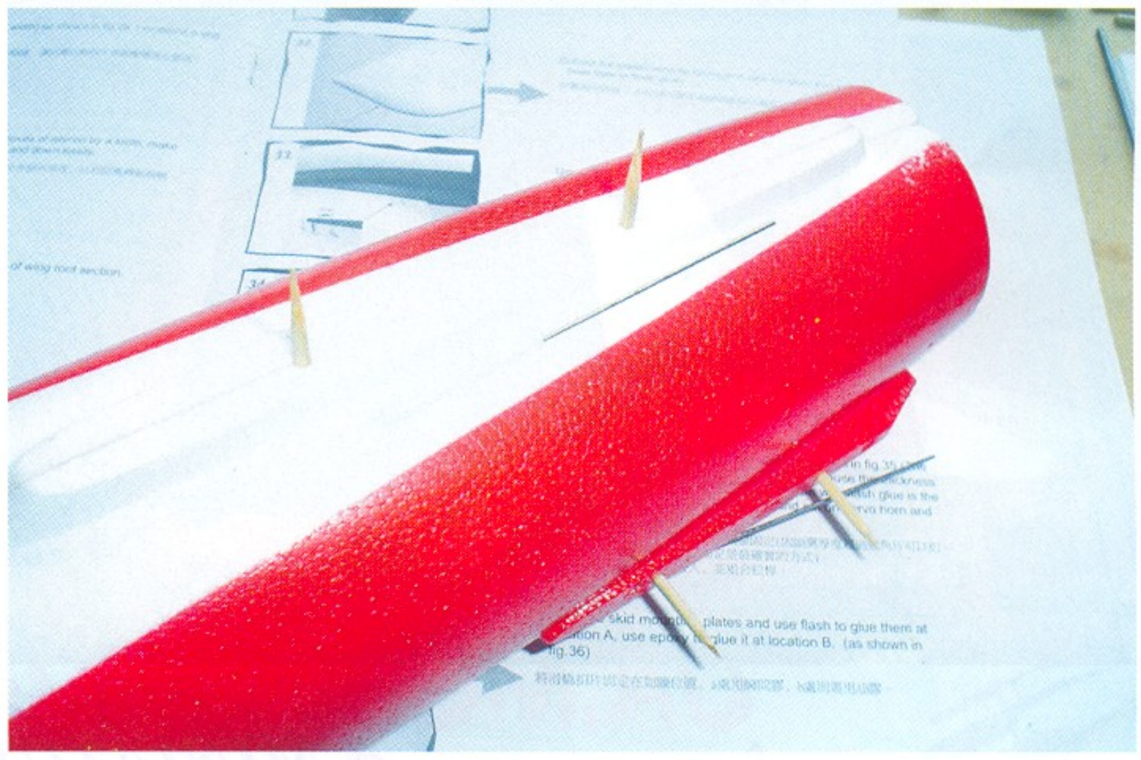
Again, I ran the pushrod further through the internals of the fuselage to keep the links short and neat, more work and head scratching though! The main legs were installed with hardwood, 10mm square and 60mm long, glued into the wing to screw the retracts into. Otherwise there is no strength in the wing skin to mount the retracts! The complete retracts do not add much more than 70 grams to the weight. The 550gram AUW that I quoted was with the retracts installed! As cute as the retracts are, there needs to be some consideration to the fact that a sealed runway is necessary for the model to rise of ground. I did fly the model from a sealed runway with ease, so if you have access to a strip and some problem solving skills, the retracts might be for you.

The test flight.

The test flight was from a sealed runway. A range check was performed and cleared, the C.G and throw directions were confirmed and the model was ready. The takeoff run was a little long as the model took a while to rotate, but, the acceleration was impressive. Within 20-25 meters the model was aloft and climbing well.

Once levelled out, the model was speeding around impressively. The flight included loops and rolls without effort and some fast low passes. I was impressed! The speed of the model is enough to satisfy the average speed demon! The test flight lasted four minutes and ended with a nice wheels down landing.

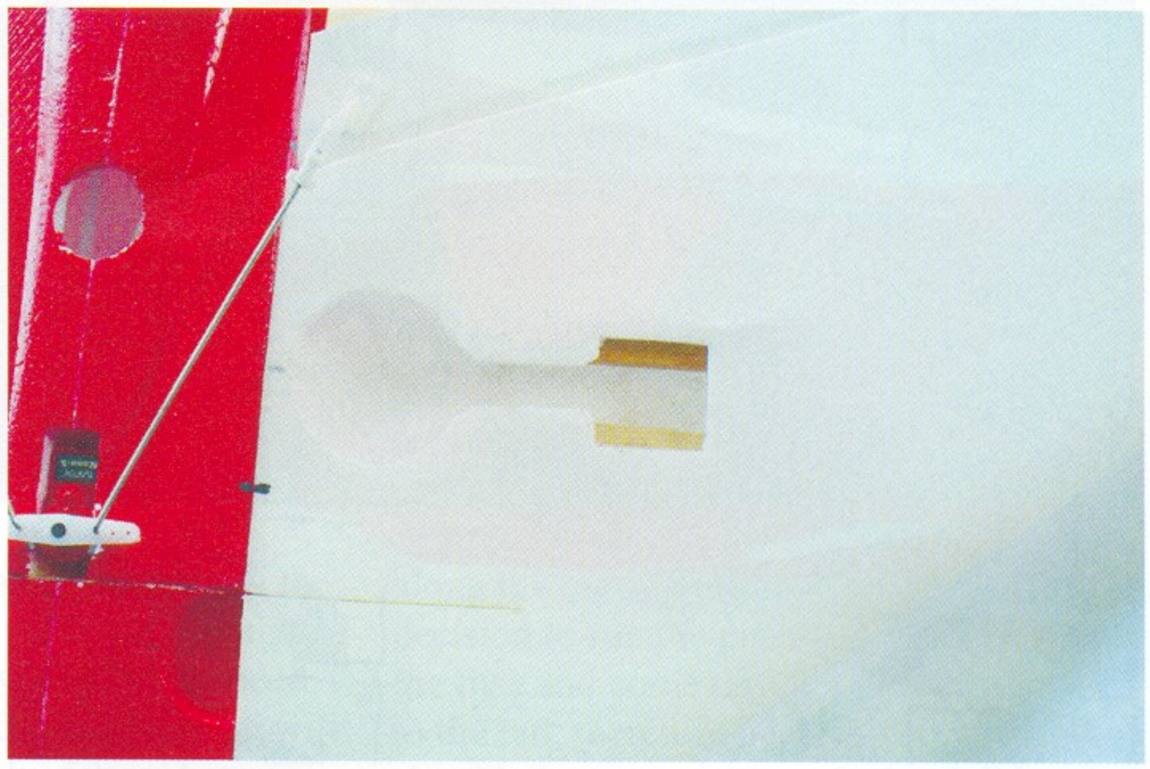
The second flight was in a grassed paddock, so the wheels were locked-up and the model was hand launched. One aspect of



Tailplane dowels.

the light weight and good power to weight ratio meant a hand launch is a breeze. The model climbs away instantly. This flight was equally as impressive as the first and I can confirm you will be happy with the performance. The throws I had set seem to be fine and the C.G specified is correct for an easy to fly model.

In conclusion the model is an impressive performer - no doubt! There are two small considerations though, the first is the building involved, especially if you choose the retracts and the second is a consideration to the scale appearance, a scale purist will notice the model is not scale to an F20 Tigershark, also the rearward EDF intakes. I personally can overlook these aspects of the model, as performance is what I find drives me and it is in this regard that this model shines. Those retracts are also just too cute!



Perhaps a lot of trickery for a small aircraft but they are awfully cute.

High speed plane and pilot.

The F-20 Tigershark is distributed to hobby shops by Model Engines Australia tel 03 8793 5555 www.modelengines.com.au

MINIATURE AERO SPORTS NEW SOUTH WALES INC.
Member of M.A.A.A

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Best Regards
Joe McGuffin
President

HEATHCOTE SOARING LEAGUE

On the 6th of May NSW F3J Championship will be held at the Heathcote Soaring League field, Maddens Plains. The HSL field is on the Old Illawarra Highway, Maddens Plains, just south of Helensburgh. $10 entry
Inquiries - Fred Lodden 02 8236 4862
Alan Lowe 02 9544 7898
or Bruce Robbins 02 4285 5432

MASNSW 2007 Events Calendar

Those Events marked with an * are MASNSW Point Score Events.
Unless otherwise advised MASNSW Meetings are held the 2nd Friday of every Month.

April				
*1	Sportsman Pylon Racing (Q500) & F400 / F3D	TBA	John Little	0411 244 390
13	MASNSW General Meeting Aviation Museum	Bankstown		8:00pm
15	2m Thermal Glider Millennium Cup Round 3	Queanbeyan	Fred Lambert	02 6297 3206
21-22	Wagga WW2 Scale Contest	Wagga Wagga		
*22	Sportsman Pylon Racing (Q500) & F400 / F3D IMAC	Brian McFarlane		4284 6611
29	Sportsman Pylon Racing (Q500) & F400 / F3D	TBA	John Little	0411 244 390
May				
5-6	COMSOA Scale Fly-in	Metford	Paul Robertson	4946 8334
6	NSW F3J Championship	Maddens Plains	Fred Lodden	8236 4862
*20	2m Thermal Glider Millennium Cup Round 4	Hexham	Shawn Armitage	4960 8737
*20	Sportsman Pylon Racing (Q500) & F400 / F3D	Shoalhaven	John Little	0411 244 390
26-27	Scale Rally	Goulburn	Neil Gilbert	4883 7401
June				
3	Electric Fun Fly Day IMAC	Lou Amadio		4228 4906
9-10	Large Scale & ARF State Champs	Taree	Dean Erby	0437 397 451
9-11	AMPRA Pylon Racing To Be Confirmed	Cootamundra	John Little	0411 244 390
*23-24	NSWSAS/FSAA Scale Flying Round 4	Blacktown	John Rolfe	9734 6288