



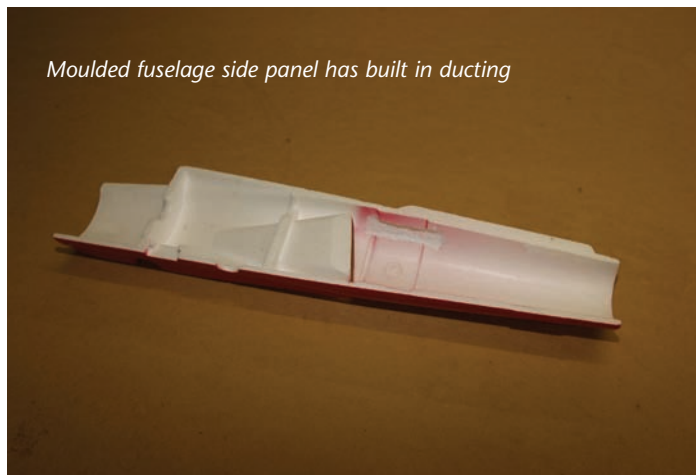
Tigershark F20

Greg Butterworth tests this fast electric jet from Graupner

Having seen a number of club mates flying a variety of small foam Electric Ducted Fan (EDF) models recently the chance to get hold of the Tigershark reviewed here for a thorough test was an opportunity that could not be passed up.

There has been a crop of such 'EDF' models, assisted greatly in their performance envelope by the rapid advance in LiPo battery technology and the fall in its high street price.

'This Tigershark is a convincing model'



Moulded fuselage side panel has built in ducting



Tigershark fan unit, and the Hacker brushless motor used

About the Tigershark

This Tigershark is a convincing model spanning 700 mm with a length of 760 mm, so not large by any accounts. The completed model remains fully assembled and transportation will not be an issue. Control is via electronic speed control, ailerons and elevator. Although we opted to keep controls basic the instructions provide detail on conversion to rudder as well as the installation of air operated tricycle undercarriage.

Within the kit we find the moulded plastic ducted fan unit. The fan unit is designed around a '400' sized motor although in this instance the motor is not included. This leaves the builder the option of many various power plants depending on performance and budget.

A 'standard' budget motor will yield an rpm of around 2,000 per Volt – this translates to a fan speed of around 22,000 rpm. In the quest for performance and speed we opted for a somewhat higher specification motor in the form of the Hacker B40S. With this motor installed we should expect around 3,550 rpm per volt and with a 3s LiPo, this means fans speeds of around 42,000 rpm.

The Tigershark is an entirely foam construction and the instructions point to 'final assembly' being required. In practice my first challenge was of what glue to use; most of the typical 'foam-safe' CA glues melted the material and saw me ultimately revert to good old fashioned DEVCON 5-minute epoxy.

TOP TIP: A good tip is to test any glues before use on scrap or a concealed area of the airframe before embarking on their use.

'the model performed without problem in both slow and fast fly-bys'

Assembly

With glue decided construction started with the nose section. Foam fuselage side shells being brought together around the ply servo tray and battery support. The tray sits on moulded rails within the fuselage sides and becomes secure once installed. Prior to the nose cone attachment the foam shells are cut away to allow cooling airflow to the nose mounted battery packs during flight.

Next the fan assembly is prepared for installation. Its initial diameter is reduced to 73 mm by trimming off the lip from the plastic moulding. I checked through the cutting process to ensure that it fitted within the rear fuselage shells in a snug manner. The next stage of preparation is to install the chosen power plant with the supplied screws.

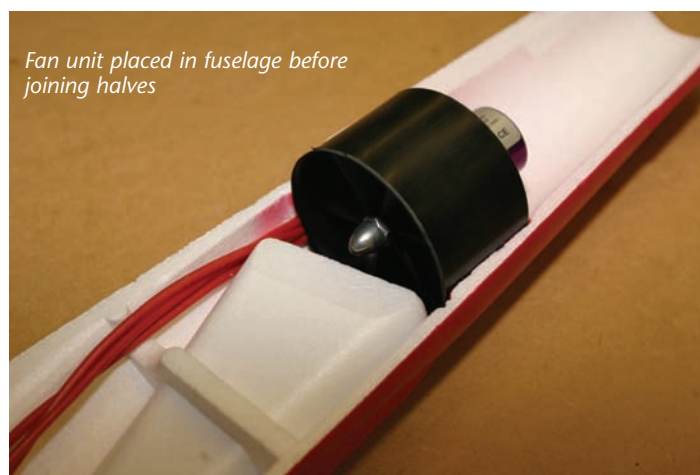
At this stage it also necessary to relieve a small area of both the fan unit and the fuselage to ensure free passage of the connecting leads from the motor to the speed controller. For the speed controller we borrowed from a T-Rex 450 series helicopter.

With the fan unit sandwiched between the rear fuselage halves, the sides can be brought together and adhesive applied to secure the joined components. To aid this process I used a couple of Velcro battery retaining straps. These allowed the fuselage to cure sufficiently before joining the front section onto the rear to complete the full fuselage assembly.

The rear tail feathers are pre moulded and simply attached to the fuselage with epoxy. I have to admit to being concerned about the strength of this with no form of spars at the tail for support.

Being just aileron and elevator controlled the fin once attached completes the job. The elevators are hooked up to the front mounted servo with a pair of pushrods run through plastic sleeved aluminium runs set into the fuselage. All the hardware required is included for the connections needed.

'a great little model to throw in the car'



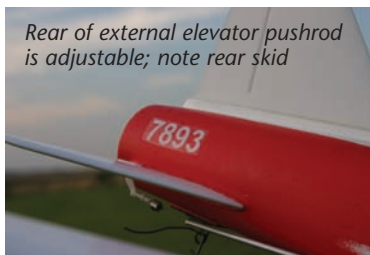
Fan unit placed in fuselage before joining halves



Fuselage strapped to hold whilst glue sets



ESC fitted and ready to fit nose cone



Rear of external elevator pushrod is adjustable; note rear skid



Above: Peering into the fuselage you can just see the adjusters for the two elevators



Left: Main wing skid

Wing Assembly and Final Fitment

The wings are attached in similar fashion but have the added integrity of a small glass fibre spar, which is let into the lower skin of the wing and fuselage to provide essential bracing in this area. Care needs to be taken to ensure that all of the flying surfaces are correctly aligned to ensure accurate flight characteristics when complete. This task is eased by, the moulded root sections of each surface to which the fin and stab are glued. The wing is a little trickier without a direct reference point, and in this case I opted for a mid point on the root profile – the more important point to ensure they are the same as each other and in line with the tail surfaces.

A single aileron servo fits underneath the fuselage and is connected to each aileron surface by means of a small pushrod. The horns for all surfaces neatly push through from the top and are secured with snap on base plates to which a drop of CA ensures a solid fitment.

The Tigershark has no undercarriage but instead three small spring legs are provided – two on the wing and a single one at the tail. These will work to protect the exposed aileron servo head although I am dubious as to how long they may stay attached on our grass strip. An option is to fit the optional air operating retract system, which is fully detailed within the instructions.

The canopy needs to be removable to afford access to the battery compartment. Once trimmed to size, a task eased considerably by the clear template mouldings; the canopy is attached to the model by means of a small magnet at each corner.

At this point we are effectively through with the construction. A receiver is mounted to the rear of the battery compartment to complete the radio installation and set up servo directions and throws. Dial in some rates, just in case for the first flight and for personal preference add some exponential to soften the centres of primary controls. A thorough check of the surfaces and hinging is essential to confirm security for safe flying.

Flying The Tigershark

With a clear evening for flying and the luxury of acres of space all freshly mown at the North London MFC, cameraman primed

Ready to fly, the Tigershark sits on its skids



Hand-launching a small model like this is always tricky, but the Tigershark has finger holes to assist

for the pictures there was no excuse. Running on a FlightPower EVO 2150 mAh pack of 3s (11.1 V) the Hacker spins up quickly to an almost turbine sounding scream and certainly inspired the confidence that this machine is going to fly. A final check on all the controls, confirming the direction once more and we are away.

Very often hand-launched models can sag on initial launch and come to an early demise but the Tigershark appears to want to fly out of my hand. With a good straight javelin throw this small jet tracked straight and accelerated as it climbed away. The trims were all nearly on centre out of the box and after a couple circuits had it trimmed with a little down in to keep the model level.

I was confident enough to bring her in low circuits for the camera and the model performed without problem in both slow and fast fly-bys. Slow being relatively fast and fast being exceptionally fast. In flight the model is very stable and handles with a neutral balance with no particular vices shown. Obviously with a model of this size and design it is important to keep the airspeed up to prevent it stalling. Being small the speed does keep you on your toes and in no time we find we have flown from horizon to horizon and covered a significant distance.

That said the model slows up well and can be accurately placed for a landing.

Summary

On balance I would certainly not recommend the model to a beginner but for someone with good aileron experience on a low winged model the Tigershark will provide a challenge or two and be a great little model to throw in the car for a calm evening and quick trips to the field.

Not a bad kit representing good value for money at under £100. You get a capable entry to ducted fan flying without the expense of a full turbine setup and you'll be flying a machine that will provide some smiles and keep you on your toes at the same time.

You can also visit the Graupner website to download a video clip of this model in action! (see Contacts).

RCMW

The high-speed passes are quite exhilarating



In the air the Tigersark comes to life and is an exceptional flyer

SPECIFICATION

INFORMATION

- Name:** WP TigerShark F20 (order code 9579)
- Manufacturer:** Graupner Modellbau
- Distributor:** Graupner Modellbau
- Price UK:** Around £100.00 (RRP €125,50)
- Model Type:** EDF jet
- Motor:** 400-size (can or brushless)
- Test Motor:** Hacker B40S
- Construction:** ARTF; all moulded foam with plywood formers

R/C FUNCTIONS

- 1 Ailerons
- 2 Elevator
- 3 Throttle (ESC)

SPECIFICATIONS

- Wingspan:** 700 mm
- Wing Area:** 13.6 dm²
- Length:** 760 mm
- Target Weight:** 500 to 550 g

TEST

Dislikes

Resilient to many popular foam adhesives

Likes

- Nice, well fitting moulded components
- Assembles quickly
- Flies extremely fast with a powerful motor
- Good value for money

Contact Details

Graupner Modellbau

- www.graupner.de
- <https://shop.graupner.de/webuerp/servlet/AI?ARTN=9579&PIC=2>