
36" HAWKER HUNTER

For those of you who have built and flown the 50mm EDF version of the Hunter we launched last year, you will hopefully agree it was a super little model. I always thought a 70mm EDF version could always be on the cards if a 4s version became available and was both cheap enough, light and powerful. Sure enough both FMS and PowerFun have now produced a 4S unit that would really suit a scaled up version of the Hunter and in fact, the whole of the 50mm EDF range!

So this is the second model in the Midi Jet series and if I'm honest, this is probably the best flyer so far. The full-size Hawker Hunter was indeed a superb and well-mannered aircraft and operated in strike, bomber and reconnaissance roles. It entered service in 1954 with the RAF but also became the frontline choice for many other air forces throughout the world. Amazingly it was still in service with the Lebanese Air force until 2014, an incredible 60 years service span!

I have always been a long-time fan of the Hunter and when I saw photos of "Yello Summer", out of Thunder City in South Africa, it was such a great colour scheme for such a lovely aircraft.....I was in love!

One of the key elements I really wanted to achieve on these new 'Midi' size of model, was to keep the wing loading down to less than 23oz/sq' and around 3lbs in AUW.

Unlike the Gnat, which was scaled up by 130%, I decided to scale up the smaller 50mm EDF Hunter by 140%. This is so the 70mm fan will just drop in without too much alteration. I did this because the Hunter was a slightly lighter design and so it should in theory stay under the 3lb target weight. Notwithstanding this, the Hunter at 36" span did come out at 2lbs-14oz so not too bad. At this weight, the model is still very hand launchable, either by the pilot or a trusted helper.

So, this new 'Midi' jet has been tested using the 4S FMS 70mm fan unit which gives around 2.75lbs or 1250g of thrust. Also available is the 4S PowerFun unit (both available from 4-max.co.uk).....these units will give another 200g or so of thrust over the FMS version and are considerably cheaper too. Some of you may be tempted to use a 6S version of either fan, but there really isn't a benefit to this unless you already have a stash of 6S 3200mah Lipos kicking around.

So after the Hunter, and just to whet your appetite, the remaining model I have lined up for you is the Jet Provost.

To assist the builder, I have once again made available a canopy and CNC/wood pack, for those who wish to make the building process a little easier and quicker. These parts will ONLY be available through Tony Nijhuis Designs Ltd (TND) and not Myhobbystores. The plan itself will only be available in this edition of the magazine with future copies only being available again through TND Ltd. At the time of writing this article, we are experiencing yet another balsa wood shortage, so please check our web site for availability of the CNC/wood parts.

A few other points to note, the FMS fan units can be sourced from 4-max.co.uk in the UK. The battery was a 4s-4500mah 60C LiPo and servos were metal geared 10g, 2.2kg/cm torque and 17g 3kg/cm servos. For the ESC, buy a 60-80 Amp.

Lastly and possibly the most important, a photographic build log is available as a free download to print out from www.tonymijhuisdesigns.co.uk. These photos will be invaluable, and I would suggest downloading these so you can familiarise yourself with the build before you start.

Wings

The wing parts are made from 8mm (5/16") medium density balsa sheet and each wing panel is made of 5 parts. Weigh the individual parts and interchange them in order to achieve an equal balanced wing. Now glue the wing parts together to form a left and right hand panel.

Where indicated on the plan, highlight using a pen, the location of the area of balsa to be profiled. An indicative guide to shaping the wing is shown on the plan. With the wing panels flat on the building board use a razor plane to profile the wing panels to the first stage of completion as shown on the plan. Now either continue with a plane or with a sanding block, begin the second stage of profiling the wing into a smooth flowing section. Now turn the wing over and repeat the process exactly, so the wing is fully symmetrical. When happy, use a medium grade abrasive paper to finish both wing panels to a smooth flowing profile.

Now cut out the ailerons remembering to mark which one fits to which wing. You may have gathered that as the wings are shaped fully symmetrical, it doesn't matter which one is the left or right.

The wings can now be joined together and the 6mm birch ply wing spar fitted.

To finish use fine abrasive paper to round off the leading edge and the wing tips and the wings are done!

Fuselage

Begin cutting out the mid fuselage side pieces 7 and all formers 8 through to 13. Note that the elevator tubes and the wiring holes should be drilled into former 8 as shown on the plan.

Mark the location of the formers onto the left and right hand side of each fuselage side.

Check that the fan fits correctly through the hole in 8/9. For the 70mm PowerFun EDF unit, the opening in the former will have to be enlarged slightly.

Now fit the formers 8 & 10 to one side of the fuselage. Now add the other fuselage side.

Now add the remaining formers 11, 12 and 13.

Make up the fan mounting blocks from scrap 6mm birch ply. Then fix these to the sides of the fuselage just behind former 8.

Now make up the thrust tube while the fan unit is out of the model..... I have shown on the plan a cut outline of the thrust tube, before it is rolled. The tube is made from 140 micron (0.14mm) thick acetate. You will be able to source A3 sheet of this on EBAY or from a stationer....it's basically the thin clear plastic used on report covers. The easiest way to make the tube is to roll the end of the acetate around the fan unit as tight as you can, making it as a straight tube. Then secure with a small piece of scotch tape across the joint, at the fan.

The fan can now be secured with screws to the mounting plate. Now tack glue 8 to 9 in order to make a complete former. This former is made in two parts just in case the fan should ever need replacing

Now slide the rolled thrust tube in from the rear of former 12. You will have to fold the tube in on itself but as it slides through, it should pop round again. Gently ease the tube over the fan unit by 12mm or so making sure the motor wires are exiting smoothly through the slot you have made in the tube. Position the wiring slot in the tube edge so the tube seam runs along the bottom of the open fuselage.

Finally run a piece of tape along the joint length, making sure the tube is pressed hard against the inside edge of former 12. Use a couple of dabs of hot glue; one on the top and one on the bottom to secure the thrust tube to the fan casing and two 'dabs' against former 12..... it doesn't need any more glue than that!

I would suggest at this point you loosely fit the ESC and check the fan motor rotation is in the correct direction.

The 6.5mm square fuselage stringers can now be fitted.

Now sheet the top and bottom sides of the fuselage with 2.4mm soft balsa sheet. You will need to wet the outer surface of the sheeting to assist with bending.

When finished, trim the top and bottom fuselage edge sheeting flush with the top and bottom stringers

Now sheet the top and bottom of the fuselage with 5mm sheet balsa.

Now make up the nose cowl using 12.5mm. The cowl corners are lined with 12.5mm triangle.

The nose block is made from laminates of 12.5mm sheet balsa. Make sure you cut to the side profile as shown on the plan. Position and glue this on to the front of the cowl.

Now for the 'shaping' exercise so make sure your razor plane has a new blade in it.... (also available from 4-Max.co.uk)

Please remember that there is a lot of shaping around the nose and the main body of the model, to create the smooth radius curves of the Hunter, so don't scrimp on the shaping. Finally, progress on to using a sanding block along the complete length of the fuselage.

Now install the elevator control cable outers. I would suggest using the 3mm orange tubes from SLEC ltd and used 20swg piano wire for the pushrod.

Mark out the fin slot and cut this out in the top fuselage sheeting.

Fin & Tailplane

To make up the fin, using parts 18 to 19 and glue them together. Profile the fin leading edge. Put the fin aside and only glue into position once the model is nearing completion.

Now make up the tailplane using parts 15 & 16. Round off the tailplane leading edge and chamfer the elevator 17 leading edge ready for the hinges to be fitted.

Finishing off

The wing can now be glued into position. They will need to be slid through from one side. A little fettling maybe needed to get them to fit properly.

The tailplane can now be glued into the fin, making sure they are parallel. Finally glue the fin into position, on the fuselage.

The razor back pieces, 14 can be made using 2 laminates of 5mm balsa and 2 laminates of 8mm balsa. This should be shaped to feather into the fin and to match the profile of the rear of the canopy.

Glue this into position

Now cut out the intake openings in the fuselage sides, above and below the wing.

The distinct Hunter wing fairings can now be made by cutting out triangles from 1.6mm sheet balsa. A template on the plan should help. Glue these into position and line the intake edge with 3mm sq strips made from scraps of lite ply. This will strengthen the intake lip.

The fuselage access hatch can now be marked and cut out. Use a small hacksaw blade to cut through the top sheeting to the depth shown on the plans. Then, using a straight edge, cut through the side sheeting on each side to release the hatch.

To retain this hatch I used one of the small spring catches from 4-max.co.uk at the rear of the hatch, just to the side of 14. Use a retaining tongue, glued to the front of the hatch to keep the hatch secure.....as shown on the plans.

Now mark out the locations of the aileron servos and 'sink' these into the wing fairings, under the wing. Double sided tape (with a dab of cyano) can be used to secure these once covering is done

Finally, and most important of all, is the large air intake hole in the underside of the fuselage, and two on the top hatch. Make sure you chamfer and smooth the entry leading edge of the opening and don't be tempted to reduce the size of the openings. It needs to be the size shown on the plan as a minimum.

I have also shown two finger holes on the sides of the fuselage at the C of G position to give a hand grip for launching.

Covering

The prototype was covered using Cub yellow Oracover from J Perkins. The “Yello Summer” decal set and pilots are available from www.tonymijhuisdesign.co.uk

Fit all the control surfaces with flat flock hinges (from 4-Max.co.uk) and secured with glue. Fit all the servos and all the control horns. For the control horns, I made these out of 2mm birch ply and slotted these into the control surfaces.

The C of G position should be achieved with just the positioning of a 4S-4500mAh LiPo. Do not be tempted to move the C of G back from the stated position!

The battery is secure using self-adhesive Velcro, also available from 4-max.co.uk

The canopy can either be fitted before or after covering. I prefer to detail the cockpit, fit the canopy and then cover the model around the canopy, but it's up to you.

Flying

The first thing to note with these midi jets, is the wing loading is quite low; only 22oz/sq' so hand launching them is very easy. You will need a firm throw and make sure it is straight and level. I suggest for its maiden flight you get a trusted helper to launch the model for you. The model is remarkably strong and if you don't get it away first time, she'll survive.

Once the hand launch is mastered and trimmed for flight, the model will get away with little fuss and very little control input. On calmer days, expect to hold in some up elevator for a second or so after hand launching.

When you get the model airborne and assuming you have cut in the fan breather holes, you will notice how nippy the model is. Once the initial climb out has been executed and the model is fully trimmed out, you can easily pull back the throttle to half stick position and enjoy what is a very scale flying performance.

You'll find the model simply grooves and flies on rails especially on a calm day. However, if you fly on a windy day, the model will be thrown around a little so be prepared to fly with more throttle. Don't be tempted to 'bank and yank' this model as delta wings can have a habit of air braking and dropping the nose!....so be warned.

All the classic jet manoeuvres can be done with this model, but you will need full throttle and speed on some, as the model doesn't have the momentum to carry through manoeuvre such as big loops etc.....just remember to keep the routine smooth and keep what little momentum it has going.

Landings are very straightforward and generally you will run out of elevator control before the model will stall.

Don't be tempted to adjust the C of G. This model has been thoroughly tested and where it is shown on the plan is exactly where it needs to be!

The 4S 11 bladed FMS fan units do give an amazing punch and flight times are surprisingly good. So expect a good 5-7min depending on throttle use.

I have to say that enlarging the Hunter, as with the Gnat, was always on my agenda. But the outcome has far exceeded my expectation, and dare I say it, it is one of the best models in my collection. Its small enough to sit in the back of the car, ready to go, but it looks, feels and flies like a turbine model, and dare I say it, sounds like one too!...Because the 4S fan is running slower, you really do have that lovely turbine roar rather than the Dyson whine (other vacuum cleaners are of course available). So, all in all the 70mm EDF Hunter is a cracking little model and flies incredibly well. You really will enjoy flying this one!
Enjoy!

Specification:

Hawker Hunter

Wing span- 36" (908mm)

Length- 40" (1016mm)

Wing loading- 22.oz/sq'(6.5kg/m²)

Target Weight- 48oz (1.36kg)

Wing area- 0.202 m²

Addition Plans, Canopies, combined CNC / Wood pack, pilots and decal sets, are available from :

www.tonymijhuisdesigns.co.uk

email- sales@tonymijhuisdesigns.co.uk

Phone- 07563 518159 9am to 4pm