

**BENCHMARKS** - By Steve Dorling



# HYPERFLIGHT

# ELF

Jewel Like and very cool - small in stature yet huge in performance - Elf and safety in one glorious package!

**T**he Vladimir's Models Elf from Neil Stainton's Hyperflight emporium, is a 'one-metre' class lightweight mini discus launched glider (DLG). It weighs in at a mere 95g (3.3oz) ready to fly, complete with all R/C equipment and at this weight, very little effort or rotation of the body is needed to throw it. Launches of well over 50ft are very easily achieved without undue effort on the part of the thrower!

The model is an update of Dr Mark Drela's ground-breaking Apogee and along with all the other rather splendid

Vladimir's Models range of gliders from Russia, if you've never seen one of these models up close, let alone handled one, then I can only state that to date, I've yet to witness anything built to a higher standard. Indeed, it's fair to state that from hugely expensive super Jets down to tiny indoor toys, the sheer quality of design, construction and materials of the

Vladimir's Models range is breathtaking and certainly sets a yardstick for others to emulate!

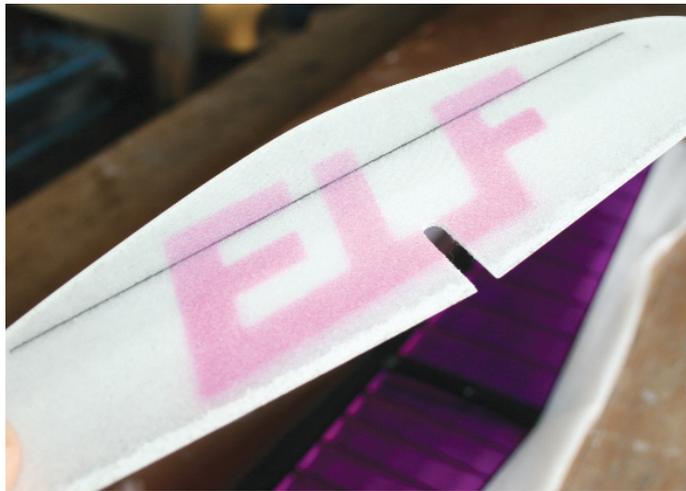
Last year, regular readers may recall my review of the lovely Blaster II from Hyperflight - another Vladimir's Models offering. The superlatives I bestowed upon that model are equally applicable to the Elf. This model is much smaller and very much

simpler, relying on rudder and elevator only and this makes it attractive on many levels. To put a full-size competition DLG in the air, such as the Blaster II, demands skills and outlay far in excess of that required for successful Elf aviation. The Elf is brilliantly simple with a very small parts count and an economy of design that immediately tells you Mr Vladimir knows a





The quality of the wing is superb and other than affixing the launch peg to the tip of choice, there is nothing further to do with this component.



Glass tissue over foam - the all-moving tail is feather-like and feather-light too!



Live hinge on the rudder - add a little Diamond tape inside the hinge next to the horn for insurance if you are a bit crash-happy!



The pod and sheath are clear flexible plastic - very tough and light too.

thing or two. With its carbon D-Box leading edge - carbon boom - glassed tissue over foam tail feathers - an all-flying tail and live hinged rudder topped off by a plastic two piece pod - it's a very minimalist approach employing the most up to date and efficient materials and methods for the job in question.

There are neat little touches all over: two launching pegs so that you may configure

your Elf for right and left-handed launchers, quality Ora-Cover (Pro-Film) on the wing, which is expertly applied and unlikely to need attention in the future, a very stiff wing and fuselage for aggressive launches and simple carbon pushrods for the tail controls. Some dedicated DLG exponents will opt for the increasingly popular spring and thread method of control surface operation, but Mr Vladimir is clearly at the

top of his game, so I used the supplied carbon rods and tubes, for repeatable dependability.

I guess it took no more than a couple of hours to put the model together and had I rushed things, then it could have been done in half the time, so here's my method, which more or less mirrors the excellent instructions!

The Vee-mount and pod were affixed to the boom with CA. The instructions are quite clear and there's not much you can do to get things wrong here, other than not achieve a perfectly central fixing, which you must do if your all-moving tail (AMT) is to clear the fin! Ensure all is square and true with a dry assembly before gluing.

The carbon tubes were affixed to the boom in 10mm lengths using thread and CA, as per the plan. It's a fiddly job but not that difficult, even for those with clubs for hands



Boom is fed into the pod from the front end and affixed in place with medium CA.



*Here are a few hints and tips to take the sting out of your Elf build and use - I hope they prove helpful.*

- Cut the lugs off your servos and mount with CA after connecting the cables - that way you can centre your controls perfectly from the outset
- Stick the rudder horn on the opposite side to that shown and you won't have to route the cable around the boom
- Use a single cell LiPo if your receiver will handle same
- Balance a little ahead of the suggested C/G position and then reduce to suit your flying style
- A little Blu-Tack inside the nose to balance will also hold the nose sheath in place
- A little Diamond tape inside the rudder hinge at the horn position is suggested by the reviewer, for durability it the horn stress point
- Dry assemble the tail before gluing to assure fin clearance

and thumbs like Cumberland sausages! Follow the instructions to the letter and you'll soon have the finished model in your hands.

### Radio Fit

You'll need two 5gm (0.17oz) servos (or smaller) and a micro receiver and while there's more room in that diminutive pod than you might anticipate, due to the large dihedral angle of the wing, there isn't quite as much room in the bay beneath as you may at first think! I went for a couple of Airtex's little blue 5gm servo's and a Multiplex M-Link 6 channel micro receiver, which really is 'micro' and then some, for a full range, six channel unit! It all fitted with room to spare - servo lugs were removed with a sharp knife before affixing the servos to the top of the boom with thick CA which was but a 10-minute job after all control surfaces aligned with the pushrod ends made up. We were ready to go, save for the battery!

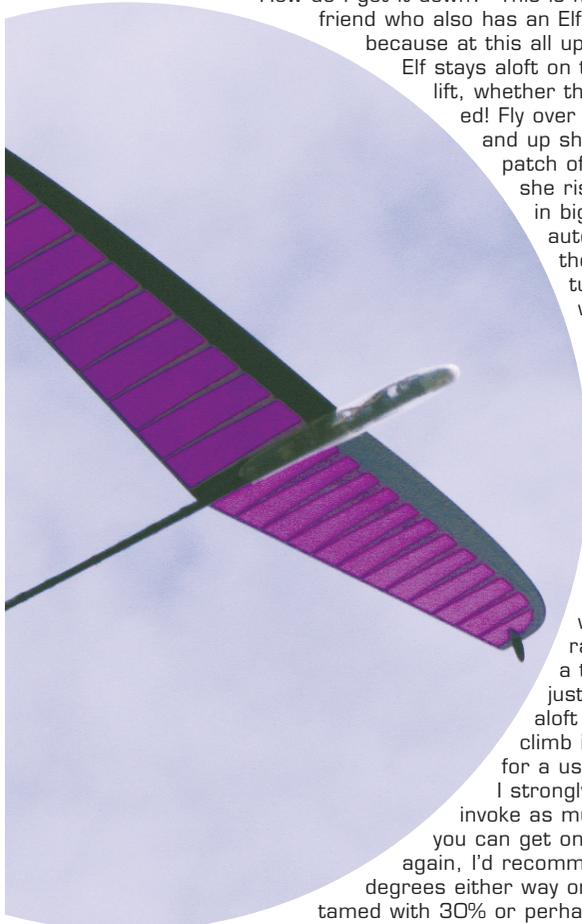
I opted for a 1S 250 LiPo set up - this of course then supplies the receiver with just 3.7 Volts or so which is more than enough for Multiplex M-Link circuitry but less than some RX's demand, so check your specifications sheet first. Hyperflight stocks an excellent 'Smart-LiPo' for the job for a little over a tenner which takes all the worry and fiddling out of the equation - see details on the Hyperflight website!

### Flying - the best bit!

"How do I get it down?" This is my first quip to a friend who also has an Elf, and I'm serious, because at this all up weight (AUW) the Elf stays aloft on the faintest sniff of lift, whether thermal or wind related! Fly over a bush or a wall and up she goes. Hit a warm patch of air and again, up she rises. 'Specking out' in big thermals is almost automatic if you set the model into a tight turn and let it drift with the wind!

Discus launches are effortless and require no skill or strength on the part of the launcher, unlike the Elf's larger discus launch glider (DLG) brethren. Think of flicking a playing card and you're about there with this one, for rather than going for a truly vertical launch, just wheeling the model aloft at a fairly steep climb is all that's needed for a useful height gain!

I strongly suggest you invoke as much movement as you can get on the rudder and again, I'd recommend at least 35 degrees either way on the AMT, both tamed with 30% or perhaps a little more exponential. Set up this way, you can really exploit



## Hyperflight.co.uk

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3.2m and 3.7m span also available

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Visit our web site to see the best range of high performance glider and electric thermal soarers in the UK. We sell various, glider bags, carbon spars, tubes, and much more.

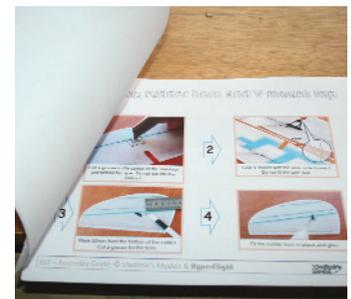
Order online at [www.hyperflight.co.uk](http://www.hyperflight.co.uk) phone 01926 314011



*That's the total hardware package. Tee-shaped carbon launch peg can be shaped to suit before affixing to the tip of choice, depending on your hand orientation.*



*The AMT mount incorporates the hinge and horn into one assembly - very neat.*



*The instruction booklet is clear and nicely illustrated.*



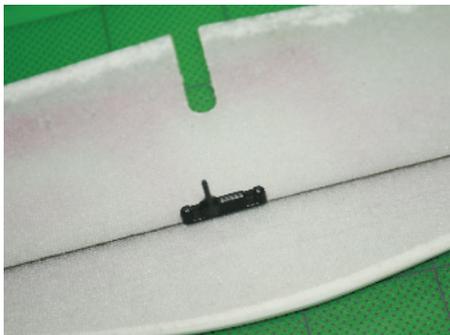
*The translucent tail surfaces are exquisite. Note the clearance slot for the AMT - check alignment before gluing in place!*



*You get two of these, shown here before and after shaping - use one or add to the opposite tip too so your left-handed mates can have a go!*

the agility and responsive nature of the Elf, heeling her around on a wingtip or pulling square loops at shoulder height and so forth which is a lot of fun! Hand catches are pretty easy too - just hover the model at nose height and pick it out of the air by the nose!

There really is no downside to this model - it's exquisitely produced to the highest standard, as are all the Vladimir's Models range! The price is most acceptable too and the speed and simplicity of the construction and build sequence means that you can have the model aloft the same day as it's delivered. It's all good and even if you crash, the light weight and strong construction reduce the chances of damage to almost nil.



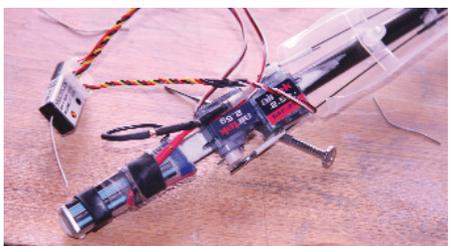
Carefully align this part of the AMT assembly to clear the fin slot when mounted.



Measure twice - cut once - shown here is the mounting position for the rudder horn.



Horns mounted with thin CA which should be sparingly applied to avoid spoiling that beautiful finish!



Complete and ready for the maiden flight - she's a thing of beauty.



Radio installation couldn't be simpler - you do need small fingers though!



Hand catching this one is very easy to do - the Elf just hangs in the air awaiting your outstretched grasp.

## Specification

<b>Wing span:</b>	1.0m	39in
<b>Wing area:</b>	11.7dm <sup>2</sup>	181sq in
<b>Length:</b>	682mm	27in
<b>Typical flying weight:</b>	95g	3.3oz
<b>Wing loading:</b>	8.1g/dm <sup>2</sup>	2.6oz/sq ft
<b>Wing airfoil:</b>	AG12, AG13, AG14	
<b>Dihedral angle:</b>	11 degrees	
<b>Aspect ratio:</b>	8.6	
<b>Centre of Gravity:</b>	75-80mm from wing leading edge	
<b>Controls:</b>	Elevator and rudder	

### Elf Typical Weights

<b>Fuselage:</b>	16.5g	0.58oz
<b>Wing:</b>	41.0g	1.45oz
<b>Hoz tail:</b>	3.3g	0.12oz
<b>Vert tail:</b>	2.8g	0.10oz
<b>Accessories:</b>	4.0g	0.14oz
<b>Total structure:</b>	69.6g	2.46oz
<b>Smart LiPo 240:</b>	11.4g	0.40oz
<b>RC gear:</b>	14.0g	0.49oz
<b>Flying Weight:</b>	95g	3.35oz

### Recommended R/C-nano gear only

**Elevator & rudder servos:** Dymond D47, Ripmax SD100

**Receivers:** Spektrum AR6250, AR6255\*, AR6100e, Futaba R6004FF\*, Orange DSM2 compatible, Jeti Duplex R4 & R5, Schulze Alpha-535, Blue Arrow R3P5-H/T \*case removed

**Battery:** SmartLipo 240

Available from [Hyperflight.co.uk](http://Hyperflight.co.uk) - price £125.

The build quality is just fantastic, the flight performance is terrific and the appearance of the model is beautiful - what more can one ask of a review model? I can absolutely guarantee that when you pitch

up with one of these, everyone will want a go! Slope or flat, power field or back garden, summer or winter - buy one of these and it'll be one of those models that you'll always have charged and ready to fly! ■

