

Edge 540 V3 30cc

IF YOU'RE AFTER A RACY NUMBER THAT'S NOT SO LITTLE, STEVE SALES HAS JUST THE THING



The petrol powered market has been growing rapidly in popularity for the last few years and, these days, almost every kit manufacturer has something to offer for such a powerplant, notably at the 30cc level. Black Horse already has several, this Edge 540 being the latest and one of several V3s the company produce. It's a sport-scale machine based on the 540's air race airframe and, spanning an impressive 2.05m (81"), it's slightly larger than some comparable ARTFs.

As you can see, in most respects the V3 is significantly different from the standard 540 and sports a smaller, sleeker canopy, flared root trailing edges and curved wing tips designed to allow quicker, tighter turns at speed while improving slow speed handling. The cowl, too, reflects new design features including an air intake under the chin.

UP CLOSE

Black Horse has pulled the stops out of late so a good portion of its range now sport inboard recessed control

surfaces, which really help the scale appearance of the model and no doubt the aerodynamic cleanliness. They're also pre-hinged, which helps reduce the build time

The assembly ritual is on par with any modern laser-cut, balsa / ply ARTF and, always important, a dry fit of the parts is advisable prior to mixing the epoxy. It's a task that's especially important here as, disappointingly, quite some trimming and adjustment must be made to the horizontal stabiliser and fin sections before they can be set in place. Essentially it's a case of removing excess balsa from the fuselage bed and also from the underside of the fin assembly before a decent fit can be achieved. Curiously, after this bad start, the remainder of the assembly process should pass without incident and merely entails bolting and screwing the 540 together.

I fitted high power digital servos all round. The wings call for two on each side which, I have to be honest, seems a little excessive for a 15 lb, 30cc model but time will tell, I guess. The two 10kg digital servos that I've fitted here should be more than enough and I'm sure there won't be any issues with surface blow-back. That said, I'm also pretty sure that one good quality 12kg servo on each side would also be ample.

Single servos drive each elevator half and also the rudder. Here, I fitted 12kg digital servos all round. Electrical power is a notable consideration for models of this size my choice being a 6V sub-C NiMH pack for the receiver and a separate two-cell 3100mAh LiFe for the ignition, the latter's supply regulated via a PowerBox Spark Switch – a transmitter controlled ignition switch and voltage regulator that uses a spare receiver channel.



Like the full-size, from every angle this one's a pretty racy looking machine, but it's surprisingly friendly, too.



One final point here relates to the grass flying field I fly from and a tiny undercarriage mount reinforcement modification I tend to make. Usually, I lay down a little fibreglass to add strength but, in this case, couldn't get into the bay to do it. Syringing polyurethane foaming glue into the bay was the solution that provided that extra piece of mind; overkill probably, but I always err on the side of caution having had more than a few of my fingers burnt in the past.

THE LUMP AT THE FRONT

The choice of engines in the 30cc class is growing fast, a relative newcomer being the Mintor 33. This is a very lightweight and beautifully made unit from Italy, distributed in the UK by Area 51. The Mintor comes with an electronic ignition and an ultra-lightweight muffler meaning the whole package (including ignition) comes in at just 1073g (2.3 lb) which is pretty impressive. In my case, the flip side meant I had to add 350g of lead to the nose to balance the model at the suggested C of G. Finally, I fitted a wooden 19 x 8" Xoar prop which has been shown to provide a very promising amount of power.

The Mintor is a beautiful thing and almost too good to be hidden away under a cowling - it certainly has the look and feel of a real Italian thoroughbred. Mind you, proof of the pudding would be when I ran the engine for the first time. As with any petrol engine great care is needed, especially when spinning a propeller of this size. So, with the engine bolted to my test bench and my thick leather glove on, I fired her up. The exhaust note was crisp and the engine throttled very easily with no indications of cutting even at a low tick-over. I ran 1.5 litres of fuel

Getting those tail feathers set correctly in place was the only part of the build that required particular attention.



You'll need eight servos for this one, although I'm not inclined to believe that dual aileron servos are strictly necessary.



Believe it or not, this will soon be one of four Red Bull Edge 540's from Black Horse!



The slow speed handling is excellent so those curved winglets would seem a little bit more than cosmetic.



through it on the bench and then bolted the thing into the model.

COOLING IT

With the Mintor in place I trimmed the cowl to suit and (as you can see from the accompanying photos of the model) not wanting to alter the appearance, especially so the lower

vent, didn't remove much material from the piece. I assumed the three front vents would allow sufficient air to enter the cowl, this helped by vents on the rear underside. How wrong I was!

To my dismay I was to find that there was nowhere near enough cooling for the engine and that I

would end up sending it back to Italy for repair after it overheated and seized during the first flight. Clearly, the engine needed far more airflow cooling to the point that I had to revisit the cowl and remove a chunk near the cylinder head, this, effectively, comprising the complete lower vent. Mind you, given that the cylinder head is positioned on the underside, I was quite pleasantly surprised to find that the modifications didn't ruin the front end aesthetics. Fortunately, this measure has cured the overheating problems and to this I've added a further fix in the form of a curved duct inside the port intake that serves to direct air onto the engine.

Subsequent modifications have led to the removal of the lower circular air scoop, simply to get more air over the engine.





The Mintor 33 is a beautiful thing but it does need a good supply of cool air.

I was perfectly happy with the quality of the hardware and fittings, indeed I used them all.



ON EDGE

As you'll have gathered, the first trip to the field was eventful to say the least; the engine died during the first (short) flight and although I got her down in one piece, my lovely new engine was heading back to Italy. The first few minutes revealed an aeroplane that required modest trimming and tracked very nicely, although I had little chance to explore much of the Edge's flight characteristics. First impressions were good, nonetheless, despite my initial reservations regarding the model's weight, which was bit more

than I've become accustomed to for a machine of this size and type. At 15 lbs, the Edge is by no means overweight, however it is a little heavier than other aerobatic models in the 30cc class.

TAKE TWO

Back from its holiday and refitted, the Mintor was treated to another tank on the ground before returning to the flying field. The second take-off was straightforward, the model accelerated cleanly, was airborne in no time, climb-out was predictable, and the engine response was crisp.

After completing a couple of circuits I settled in to give the Edge a shakedown. As the instructions predict, the V3 is not a 3D machine in any sense and far more suited to big smooth aerobatics – scale flying, in other words. The elevator is strong and predictable and, at full rates, the roll is good, yet not too fast. The rudder is extremely responsive making stall turns smooth and easy.

The Edge tracks extremely straight and true through both inside and outside loops and doesn't show any signs of screwing out in either direction. Inverted flight is clean and only a slight touch of down is required to keep the model flying level. The next part of the testflight was to check the stall where, to my delight, I found that the model remained responsive right down to a walking pace, which was a huge surprise. All-in-all, the Edge tracks beautifully straight making it a very predictable model to fly so, while clearly not a beginner's aeroplane, it shouldn't trouble an intermediate pilot in any way.

One point to note is that the model feels like it wants to fly fast which, of course, is what its full-size counterpart is designed to do. Taking that into consideration though and, given the Edge's all-up weight, it's all too easy to let the model come into

Rest assured, the take-off and landing phases of a flight will present no problem to the intermediate pilot.

You can't deny, she's a purposeful looking aeroplane but a pleasure to fly nonetheless.



land quickly. You'll find that it carries quite some speed on the glide, however don't be afraid to slow it up on base leg and finals for the slow speed handling is excellent, helped

DATAFILE

Name:	Edge 540 V3 30cc			
Model type:	Scale racer / aerobat			
Manufactured by:	Black Horse			
UK distributor:	Ripmax Ltd. Tel. 0208 282 7500 www.ripmax.com			
RRP:	£379.99			
Wingspan:	2080mm (81.89")			
Fuselage length:	1680mm (66.14")			
Wing area:	961sq. in. approx.			
All-up weight:	7kg (15.4 lb)			
Wing loading:	36oz / sq. ft.			
Functions (servos):	Aileron (4), elevator (2), rudder (1), throttle (1)			
Suggested engine:	30cc petrol			
Engine used	Mintor 33			
Quality:	<table><tr><td>Poor</td><td>Acceptable</td><td>Excellent</td></tr></table>	Poor	Acceptable	Excellent
Poor	Acceptable	Excellent		
Assembly:	<table><tr><td>Easy</td><td>Intermediate</td><td>Difficult</td></tr></table>	Easy	Intermediate	Difficult
Easy	Intermediate	Difficult		
Flying:	<table><tr><td>Novice</td><td>Improver</td><td>Experienced</td></tr></table>	Novice	Improver	Experienced
Novice	Improver	Experienced		

perhaps by those curved wing tips. When you do finally get back to terra firma, it's very light on its feet, too, so handling on the ground is extremely easy and predictable.

I'm happy with the model using the C of G and control surface rates suggested in the manual, these seem just fine, although I do prefer an amount of exponential. For the Edge, then, I've added 50% on aileron and 60% on elevator.

EDGING IT

All in all I must say that I've been very pleasantly surprised with the Black Horse Edge 540 V3, it's a very nice

aeroplane to fly and one that makes a welcome change to the full-on aerobatic models in my hangar. Don't be put off by the racy appearance, the model flies much akin to a precision aerobatic machine and if its two larger brothers are anywhere near as much fun, then I'm sure we will be seeing a fair few of these at the flying field.

So, if you've a wad of cash burning a hole in your pocket and fancy something in the 30cc class, something that looks good, is easy and predictable to fly and that offers precision aerobatics, then this one is worthy of serious investigation. Just remember to keep that engine cool!



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