Turbo Raven

DAVID ASHBY TAKES SEAGULL'S RACY NEW BIRD TO HEAVEN AND BACK

Wayne Handley's Turbo Raven was quite an aeroplane. One of the few aircraft with a thrust-to-weight ratio higher than 1, the all-composite machine was capable of prop-hanging, had a top speed of 300mph and was one of the fastest-climbing propeller driven machines ever built, reaching 10,000ft in just over a minute. I'm using past tense here as sadly, owing to engine failure, the aircraft was lost in October 1999. Luckily, Handley survived, and although the Raven was never replaced, a YouTube search provides a quick reminder of the aeroplane's extraordinary performance.

RARE BIRD

Seagull Models' prolific output continues to impress, not least due to the unusual types we're seeing from the company. Accordingly, this rarely modelled, imposing aerobat is a very welcome addition. It's an all-balsa and ply ARTF, decked in Oracover and suited to engines in the .46 - .55 two-stroke or .52 - .72 four-stroke range. Although I've opted to employ an electric power system, had I gone the i.c. route I'd have used nothing less than a .60 two-stroke or .91 four-stroke, since Seagull do sometimes understate their power requirements. I guess the Raven would get off the ground with a .46 in the nose, but that's just about all it would do, so engine selection needs some serious thought - not least to do this impressive model justice. On that subject, while many might fall into the habit of saying that a nice four-stroke would go a treat, I'd disagree. Sure, you can't beat the sound of a four-stroke in most models, and of course fit one if you must, but have you ever heard the whistling whine from a turbo prop? A two-stroke would sound more realistic if you ask me.

YOU'RE GORGEOUS

This really is a beautifully made ARTF, in fact I'd go further and say that, at times, the quality is quite sublime.

words » **David Ashby** | photos » **Graham Ashby / David Ashby**

…nobody, and I mean nobody, is making ARTF models better than this at the moment.

Seagull could have run shy of reproducing the Raven's distinctive wing tips and employed stick-on plastic mouldings instead, but it hasn't. To its credit, then, the all-wood, film-covered tips are top drawer. This quality level continues throughout the airframe, indeed particularly impressive is the moulded fibreglass cowl, which is pre-painted and includes sturdy dummy engine exhausts.

Levels of fit and finish are excellent, too. The Oracover hasn't needed a single pass with the film iron to remove bubbles and the hardware included is very good. Honestly, nobody, and I mean nobody, is making ARTF models better than this at the moment.

PROBLEMS?

"Come on David," I can hear you say, "there must be something that needs attention?" Well, if I were pushed into finding something, I'd say that the rather stubby spinner included is better replaced, particularly from an electric power viewpoint, though you'll probably be doing this anyway if you're thinking of using an outrunner. At the high speeds they operate, outrunners need to turn balanced spinners, and this one isn't.

One important point for electric flyers is that you should ignore the suggested power system on page 14 of the instruction manual. The items listed are just wrong, for this model

Top marks to the Seagull team, they've done a superb job with this one.

As you'd expect, the mighty rudder holds knife-edge pretty effectively.

The Turbo Raven is a fine looking aeroplane and a real head-turner.

won't fly very well with an 830kV outrunner, 10 x 7" prop and 4s battery. As such, I can only assume that the text has been transposed in error when the manual was being written.

CONVERT

Nowadays, I tend to start any build with the engine or power system for this gets the cowl fitting drama out of the way, leaving a straightforward assembly process to enjoy.

An electric conversion set in the form of a motor stand-off and ply battery shelf is included with the kit, the stand-off being glued to the firewall. The arrangement works well but may not be quite such a good idea if there's a chance of retro-fitting an i.c. engine. Should this be the case, it might be worth securing the motor extension by fitting your own bolts and captive nuts.

I used standard digital servos throughout (although good quality analogues will be fine), with power to the Rx courtesy of a separate LiFe battery, connected via a heavy duty standard switch harness, having first disengaged the ESC's BEC by unplugging the red wire from the throttle lead. In point of fact, it's far better to add a small extension to the ESC lead, then disengage the red wire on this. These plug pins never quite go back as snug as they left the factory and the ESC may see service in future where its BEC is required.

My electric flight system comprises a Power 60 400kV outrunner, 15 x 10" prop, 60A ESC and 6s Li-Po, the resulting measurements equating to 950W peak and 46A - a level of power that suits the model perfectly.

ALL TOGETHER

Where the build is concerned, there's little to report. Fitting wing servo retention blocks to the covers can rank alongside cowl trimming as a chore, but the Raven's laser-cut block arrangement, neatly recessed into the wing servo covers, makes the task plain sailing.

The wheels supplied seem a little on the small side, but larger ones could easily be accommodated within the spats. Horns are of the dependable threaded bolt type and are quick to install through the pre-cut holes. In fact, the level of pre-build is extraordinarily high throughout, with captive nuts pre-installed and holes pre-drilled. The result sees the model fall together with incredible ease.

It's suggested that the pre-painted ABS plastic wing fairings are glued into position using cyano, but that's a recipe for disaster. Unsightly glue smears and white mist will inevitably result, so canopy glue would be better. Mind you, the pieces sit snug without adhesive when the wings are bolted firmly into place.

Supplying a believable pilot figure is something many ARTF manufacturers need to address, so it's good to see a convincing chap in the box. Cyano is suggested where canopy retention is concerned but, frankly, you're asking for another messy disaster if you reach for the stuff. Again, canopy glue is what's needed here.

BALANCE & THROW

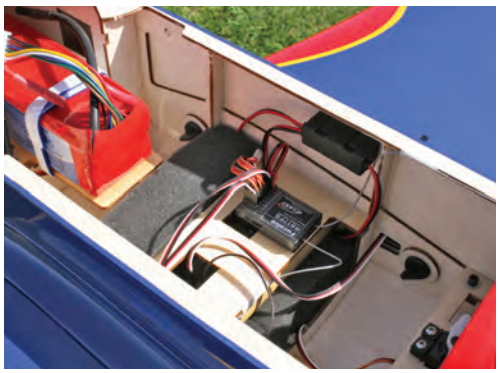
There's quite literally oodles of space for the radio gear, with pre-cut trays guiding servo placement. Thoughtfully, the ply tray for the elevator and rudder servos is retained with bolts and can be removed to ease the installation process.

The Raven's long nose means the C of G needs to come back a bit further

than normal, so a handy Rx battery hatch on the underside towards the tail will undoubtedly see use. The cavity is large enough to accommodate some stick-on weights, too, should the need arise.

On that subject, the suggested C of G is 5.7" (145mm) back from the l.e. at the root but, for test flying, I'd strongly suggest you bring this forward by 0.4" (10mm). Rearward C of G recommendations seem to be a Seagull trait and in this case that suggested is most certainly the furthest rearward point that should be used. I'll admit the model's not unmanageable with it here, but great care is required if you're using this setting, especially on calm days.

The control throws outlined in the manual differ little between high and low rates so I dialled in the high rates for the first few flights, along with a little exponential (20% across elevator and ailerons) and have stuck with these. Rest assured, they should suit the intermediate and experienced pilots for whom the model is intended.



The quality of the hardware is very good, these threaded bolt style horns being the Seagull norm.

Lift the canopy hatch and a spacious interior awaits. Note the 6s 3,200mAh pack.

HOT STUFF

The Raven flies very well indeed but, first things first, and as I touched on earlier, I've been delighted with the power system's 950W. Better still, 1kW seems just the right amount of electrical urge for this airframe. Not a silly amount, but enough to really make the model perform, with an appreciable climb rate.

Take-off is perfectly straightforward, indeed the model tracks well, requiring just a little right rudder to keep her straight. Squeeze the elevator and you'll find she leaves the ground soon enough.

I'd sum the Raven up by saying that it's an incredibly smooth flying, predictable machine that's no more difficult to fly than any other low-wing aerobat, although a few modest caveats apply, which I'll come to. She tracks beautifully though turns where the long nose shows no tendency to dig in. At the high rate, she'll roll fast too, but not uncomfortably so. Just a glance at the strip ailerons will tell you that aerobatics must follow the traditional route, the Raven looking at its best when performing smooth, almost jet-style manoeuvres. Here, a fast, low pass will be more than enough to get a big silly grin, such is the model's presence - a presence that's enhanced by the whistle from the big prop and the electric power system.

She's surprisingly capable in some areas, knife-edge being one such. Here, no coupling is required with the C of G at 5.3" (135mm), although a good dose of rudder will be needed. Point rolls are no problem and inverted flight begs just a whisper of elevator stick pressure.

Whilst spin entry and recovery is straightforward, I wouldn't describe the Raven as flicky when the sticks

The wheels supplied seem small and since there's plenty of clearance, larger ones would be easy to fit.

Okay, I'll admit it, I mucked up the spat decals. I fear it's back to sticker school for me!

At last, a decent-looking pilot has been included!

TOP RIGHT: The long nose drives the need to get weight aft, hence this rear battery bay.

The Turbo Raven really looks the part when flown through smooth, flowing manoeuvres.

are in the corners, but then violent manoeuvres don't really suit.

So, does she bite? Well, yes, but not in a nasty sense, although with the C of G at 5.7", if you slow her right down and raise the nose then a wing will drop, particularly on calm days and especially when landing in such breeze-free conditions. The Raven needs to be flown right in for landing; slow her down and tease the elevator with about 2ft to go and she'll just unceremoniously plonk down. This being the case it's important to maintain a modicum of speed when landing. Fly a nice, wide, smooth approach, all the time gradually losing height, and all will be well. Turning too soon and diving to reduce altitude will just result in the model flashing past and an inevitable 'go round'. As for a 'cut and glide'? Well, that's just asking for trouble!

Endurance from the system has been good. I tend to land after seven minutes or so, but 3,600 - 3,800mAh 6s packs still have a good 20 - 25% remaining after this time - plenty for a few aborted landings.

TURBO CHARGED

Some trivia: Did you know the feathery beast after which the machine was named is one of the few that appears to perform aerobatics for fun? This Raven's a lot of fun, too. I mustn't keep going on about how well it's made but, well, you get the message.

It's a stunning aeroplane, a real head-turner, a flightline talking point and, if you ask me, it's what your 950W power system was made for. Just remember to get that centre of gravity forward from the suggested point for the first few flights. Thereafter, I very much doubt you'll be moving it back. The Raven shouldn't be your first low-winger for as I mentioned earlier it's best suited to intermediate or experienced pilots, and in some respects the flight envelope reminds me of a good .60-size warbird. So, if you're happy with one of these then you'll have no trouble at all here.

DATAFILE

Name:	Turbo Raven
Model type:	Semi-scale aerobat
Manufactured by:	Seagull Models
UK distributor:	J. Perkins Distribution Tel. 01622 854300 www.jperkinsdistribution.co.uk
RRP:	£179.99
Wingspan:	60" (1520mm)
Fuselage length:	51" (1300mm)
Wing area:	4.1sq. ft. (0.4sq. m)
All-up weight:	8 lb 4oz (3.7kg)
Wing loading:	32oz / sq. ft. (9.8kg / sq. m)
Rec'd engine:	.46 - .55 two-stroke .52 - .72 four-stroke
Power system:	Power 60 outrunner, 60A ESC, 15 x 10" prop, 6s 3,200mAh Li-Po
Functions (servos):	Aileron (2); elevator (1); rudder (1); throttle (1 or via ESC)
Quality:	Poor / Acceptable / Excellent
Assembly:	Easy / Intermediate / Difficult
Flying:	Novice / Improver / Experienced