PHOTO: GARRY HUME

flight test

AVIAN RIO 2 15 AND 17

Garry Hume reports

This is something of a double test, of the new Rio 2 15 in free flight and the Rio 2 17 under power. I was able to fly about 20 hours on a combination of both wings this spring and early summer. The varied flying conditions included ridge lift in strong UK winds (sometimes with wave interference), zero wind and both light and off-the-clock Alpine thermals.

My preference for power flying is a low-performance wing. On take-off in very light, switching winds the wing can be perilously close to the stall, and one's "undercarriage" is often incapable of running any faster before lift-off. On a heavy topless or a rigid the safe window is even tighter than on say a Target, especially if you have to abort. As a result many pilots will wait for a bit of wind, which to some extent defeats the object of power flying, which is most fun in light or nil wind.

What is needed, to give easier take-offs and landings, is a glider with more wing area but that will not distort and twist too much. And a glider slippery enough to allow decent progress into wind, which does not handle like a truck. The Rio 17 has been a long time coming (a bit too long perhaps) but is definitely worth the wait.

Build quality

The model I flew was a pre-production version, yet every component fitted perfectly without slop or needing forcing. It was a joy to put it together and other pilots noted the same. Every part of the glider is beautifully engineered, with A-frame pins sliding in like silk – something that not every manufacturer can achieve. The sails on production gliders are laser-cut, but on my test wing I could see the plot pen lines for batten pocket locations. I'm told this will be minimised on production models.

Areas of design worth noting on both models, which are pretty much identical other than size and tubing for heavier loads on the 17, are:

- The particularly wide, flat keel pocket allows a remarkable amount of lateral sail movement to maximise roll response.
- The cross-tubes have a very neat ball joint in the centre.
- An easy and effective VG system that can really tighten up the sail, assisting with forward progress in smooth air.
- A keel mounted hang-loop system. The geometry is such that it is in front of the A-frame junction. For power this is ideal as you can move the hang point well forward to get better positioning of the base bar (compensating for the engine out back and additional twist in the wing under load).
- Very neat, impossible to mis-rig, sprogs to maintain washout near the tip. However they project past the leading edges when the glider is in the bag, making them somewhat vulnerable.
- Avian's very neat clip batten ends. These are much more robust and reliable than the beak-style clips used by several other manufacturers. The Avian system is tougher and does not wear out the sail (the beak style tends to wear through it, particularly near the tips).
- The luff lines are now located a few cm inboard from the sail edge. This makes for a much more efficient profile and reduces pitch-up when ground handling.
- A long travel VG (for an intermediate) on both models.

Flying

Rigging was very straightforward and the only noticeable difference to other intermediate gliders was to locate the sprogs and then simply close the tip zip. With only six battens and two under-battens per side, rigging is simple and quick.

Before power flying I flew the Rio 17 a few times on the hill. My first flight was in very light conditions. Paragliders were staying up, but only just! After about 30 minutes scratching it was down to the bottom for me... but then a low save at a couple of hundred feet let me thermal back up to an incredibly easy nil-wind top landing, thanks to the huge flare window and low flying (and stalling) speed.

However it was apparent, from the moment I took off, that at just above the certified 90kg minimum clip-in weight I was underweight on the glider. Roll was slow, as I had expected, although balanced by an incredibly easy landing more like a paraglider.

After missing a thermal on a very light-wind day I managed to make a perfect fly-on-the-wall landing, something I would not have attempted but for the tremendous confidence the landing characteristics of the Rio 2 gives. Later the same day I spent ages thermalling low down before bottom landing in nil wind – again the easiest glider to land that I've ever flown! The Rio 2 can be banked over and really abused by pushing out in the thermic surges. It is predictable, turns tightly and goes up in extremely light lift.

However, flying later the same day in wind and thermals, and unpleasant wave interference, I found I was much too light for the glider in terms of roll authority. For free flying it is best suited to bigger, heavier pilots. I would recommend a clip-in of at least 96kg for general windy UK flying.

Under power

With the extra weight of a power unit the Rio 2 was a revelation. Roll control was now light, precise and easy, even in the horrible wavy rough stuff I encountered high over the Lake District one windy evening. All that wing area makes for easy, confident take-offs with absolutely no hint of wing dropping – and for especially easy landings.

Even with my light body weight I could happily hold 38mph airspeed on ¾ throttle with a Wasp unit, and penetrate a strongish 20mph wind at height over fells and valleys. Maximum speed was around 42mph at my (light) weight.

The VG stiffens the handling and helps with penetration, but stiffens the roll noticeably. The stall, impossible to achieve on the hill, was just a very gentle soft mush with the power unit, the bar gently pushing back and a very slight dip to regain a few mph of airspeed. Turning with too little airspeed (a common low-airtime error) gave no hint of a wing drop. Thermalling with the power unit was intuitive and pleasant – not all gliders are so good with the weight and inertia of a power harness.

Summary

If you want a brilliant power wing for fun and low-stress flying, with spare load-carrying capacity for larger pilots or vol bivouac (max clip-in weight is

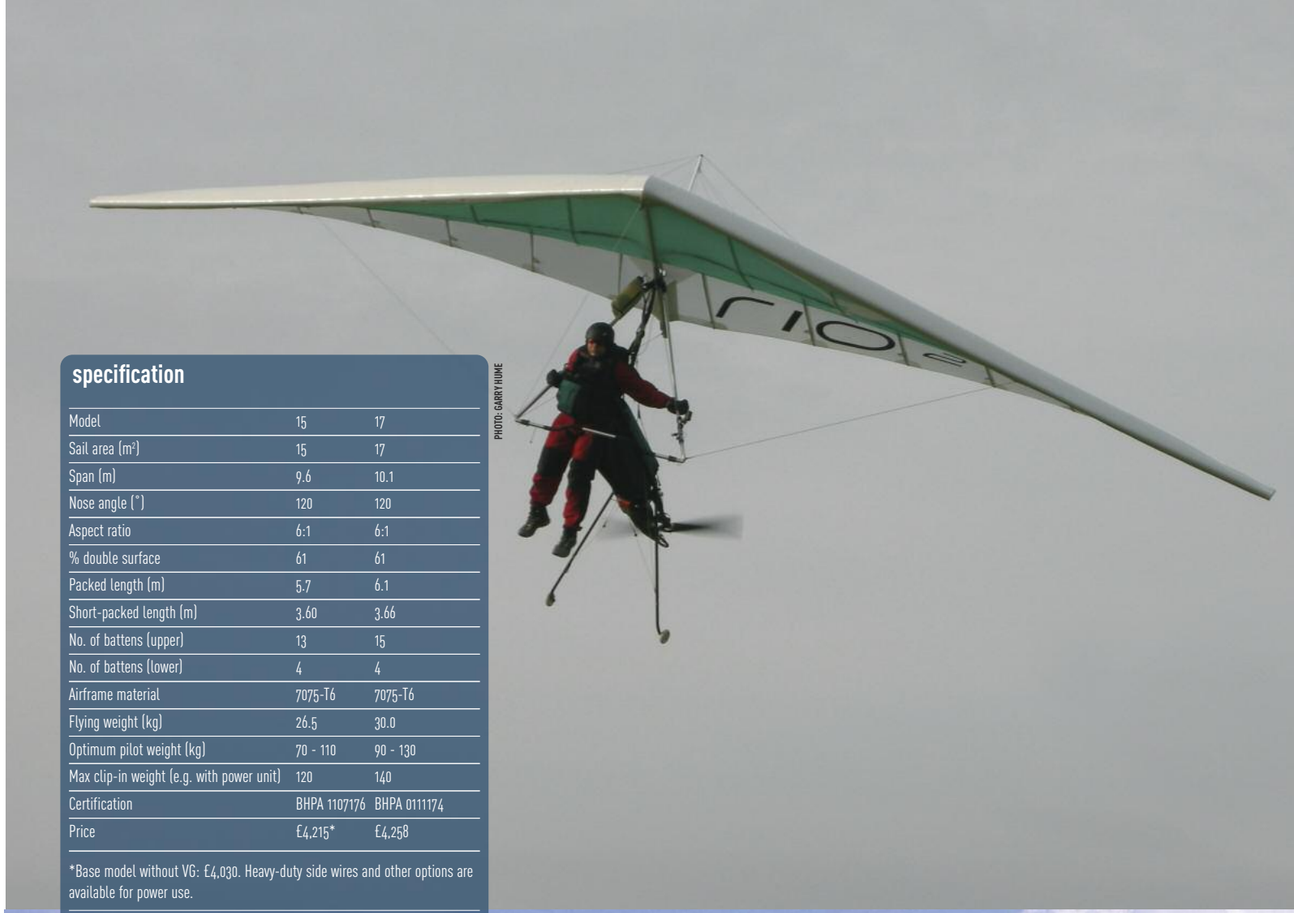

PHOTO: GARRY HUME

specification

	15	17
Model		
Sail area (m²)	15	17
Span (m)	9.6	10.1
Nose angle (°)	120	120
Aspect ratio	6:1	6:1
% double surface	61	61
Packed length (m)	5.7	6.1
Short-packed length (m)	3.60	3.66
No. of battens (upper)	13	15
No. of battens (lower)	4	4
Airframe material	7075-T6	7075-T6
Flying weight (kg)	26.5	30.0
Optimum pilot weight (kg)	70 - 110	90 - 130
Max clip-in weight (e.g. with power unit)	120	140
Certification	BHPA 1107176	BHPA 0111174
Price	£4,215*	£4,258

*Base model without VG: £4,030. Heavy-duty side wires and other options are available for power use.

Manufacturer: Avian Hang Gliders, Stretfield Mill, Bradwell, Sheffield S33 9JT, tel: 01433 621308, e-mail: avian@hanggliding.co.uk, website: www.hanggliding.co.dk.

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140kg!), the Rio 2 is the best choice you could make. It is much better than older (but still in production) single-surface wings, with far better build quality and performance.

If you are of light to average body weight I would not recommend the Rio 17 for free flying. You would want to be around 86kg (13.5 stone) minimum to get the very best out of it for general free flying. At my weight (74kg in my cotton socks) or lighter, you really want the Rio 15 for free flying or mixing power and free flight 50/50.

But if I only flew power, or had another wing or a paraglider for free flying, I would definitely choose the Rio 17 every time – highly recommended!

I have to say that the Rio 2 17 is the best power-compatible wing that I have flown to date for fun, low-stress flying. If you are in the market for something to replace a ragged-out older glider, or want to concentrate more on power flying and treat yourself to a new wing really made for the job, or if you are over 13.5 stone, this is a glider to seriously consider.

Manufacturer's comment

We are confident that with the Rio 2 hang glider design has taken a big step forward, not least in lightness, easy landing, manoeuvrability, power-friendliness and sheer user-friendliness. Use of the new hardware developed for the Evo 2 competition glider has helped save weight and add strength, but also make the glider even more state of the art.

Thanks for doing the test flights Garry. Your feedback has already helped us further improve the glider, making it even easier to rig and de-rig.

STEVE ELKINS, AVIAN HANG GLIDERS

Rio 2 15

And so to the Rio 2 15, briefly reviewed by Joe Schofield in the June issue. As I agree with his findings, I thought I'd produce a different take from my normal tests, based on around 15 hours in the Alps and some coastal flying in strong winds.

The glider was again a pre-production example. It did have one or two minor niggles when rigging, but these have now been fully sorted and incorporated on production machines (e.g. an extra pulley in the VG to make folding the wings easier when de-rigging).

The glider is beautifully suited to any competent flier. Less talented new pilots however may progress better by gaining their first 20 hours on a single-surface glider, especially if they fly in areas with tight landings, due to the glide performance.

I tried pushing out in turns, then roll reversals, to see if it would drop a wing or stall – but it responded perfectly every time. I tried late and early flares and it landed perfectly, and better than the original Rio which would very slightly drop a wing with poor landing technique.

As for old-but-maybe-not-so-bold pilots, just as with paragliding there are many good reasons for trading down. Topless hang gliders, like DHV2-3/EN D paragliders, are designed as serious competition/XC machines. Some are easier to fly than others, but modern versions are great machines with generally excellent handling... provided you are current and get at least 25 hours a year on them.

Just like competition paragliders, topless gliders can also bite if the pilot is not current. Ben Philpott's article on learning to fly his T2 shows how easy it is to get into a PIO on aerotow (*Return of the Punter*, June). Most toplesses, and especially the T2, can weave in turbulence until really dialled-in to the glider. (I know this first-hand, having flown a T2 several times at Wallaby for a "First Impressions" review a few years ago.) And I have quickly lost my topless "edge" after flying a rigid or lower-performance intermediate for a few weeks; it took a few flights to really get back on form. Rant over!

But from choice, on the very best XC days I always fly my topless. On the first day of my Annecy trip I was able to complete a five-hour 85km closed-loop flight deep into the mountains and back. I then chose to really wring out the Rio 2 15 for much of the rest of the trip, partly to see how it would stand up to the long transitions I'm used to making on my topless. Would I have as much fun as usual and be able to get back to the campsite without a retrieve?

In fact I ended up flying the Rio 2 more than I would have flown my topless. When faced with almost certain top-to-bottom conditions I still chose to fly, resulting in two superb flights in restitution lifit. With no hint in the overdeveloped sky that restitution was likely, I wouldn't have even bothered to rig my own glider.

On my first transition on the Rio 2 I choose to push it a bit, leaving halfway down les Dents de Lanfon in sinking and turbulent air to cross the lake to Roc des Boeufs. Ideally you want to be in lift and level with the top to arrive comfortably on the other side. I was pleasantly surprised to make it, with full VG helping out. And I was able to comfortably overtake and out-glide my French friend Joël on his 2-3 paraglider (albeit a four-year-old design).

Working tiny bullets on the spine-backed Roc des Boeufs, I could stand the glider on a wingtip and aggressively spiral up past several gliders with no need to high- or low-side, no hint of wing dropping, etc. The glider is pretty much impossible to stall in normal flight. I did note that I was making the transitions at 30mph rather than the 40mph of my topless.

And one morning I managed to cross the lake from Forclaz to Entrevernes, a site with a dangerous take-off that requires the use of another higher launch to access it. I arrived at least 200 feet lower than if I'd been on a topless, but made it comfortably back to the main Forclaz LZ - way better than even an EN D paraglider could achieve.

Turbulence is handled very well by the Rio 2 15, even in some pretty extreme conditions when the wing wires went slack and then really twanged. The glider did not twitch or change heading. It is slightly more "wingy" in turbulence at speed than, say, a Sting 3, but seems to have the edge in agility over most gliders I have tested in tiny thermals.

Later, in front of a large audience, I made perhaps the most perfect, twinkle-toes nil-wind flare at Annecy, having spent an hour thermalling over the landing field. Out of the blue a French instructor strode up, shook my hand and exclaimed, "*Impeccable* Monsieur, *im-pec-aaaable!*" Truth to tell, my landing technique had been greatly flattered by the wide flare window and the way the glider dumps excess lift. I'll admit that my landings have been getting a little untidy, tending to run off rather than commit to an early flare. But the confidence gained on the Rio 2 even improved my landings on my topless! And I was very glad to be on the Rio 2 when the wind switched on finals giving me a 2mph tailwind - the glider handled it perfectly!

In stronger winds and very long transitions, a topless has of course more performance. But the Rio 15 is so-ooo much lighter on carry-ups (26.5kg instead of 38!) that trading down is a serious option, especially if work or other commitments mean less flying than is ideal to stay fully current.

At 53 I can still (just) carry my Cheetah up Coniston Old Man, an 1,800ft climb over rough terrain. But as Nigel Page pointed out recently (*Is 50 a dangerous age?*, June), sooner or later my age will self-regulate and I will have to trade down. If I had the money I would buy a Rio 2 now, but my Scottish blood means I need to get a bit more use than the 465 hours I have had so far out of my Cheetah!

I had planned to fly the Rio 2 15 with a power unit, but technical problems and weather precluded this. I have flown the original Rio a few times under power, and can only assume the new Rio 2 15 will be better, especially as the hang point can be moved further forward and the tip washout is better maintained by the sprogs.

Postscript

The sprog design's vulnerability to damage whilst the glider is de-rigged was a concern at Annecy. As the glider was being handed down to me from a minibus I dropped the end. I very slightly bent an outer sprog tube, which broke on trying to straighten it. I repaired the tube with fibreglass and was able to complete the flight test without issue. I mentioned this to Avian on my return; they immediately redesigned the fitting with a more flexible and robust tube incorporating easy replacement. The mark of a good company is not how it behaves when things go well, but how well they react to problems. One could not ask for better service.