

Avian have put a lot of work into their new topless glider, designed for the lighter pilot. It is a world-class machine and well worth a look if you are in the market for a smaller, high-end, topless flexwing.

Being very familiar with Avian gliders (I own a Cheetah/Evo hybrid and have flown two new Evo 150s extensively), and as Avian had a backlog of pilots eagerly wanting to test fly the Evo 2 140, I had less air-time on it than with other reviews. I did however fly in weak wave and in boisterous spring thermals, and had a nil-wind thermalling session under a weak overcast followed by a nil-wind landing, so was able to cover all the normal hill-flying conditions.

Hooking in at 101kg at present I am very near the upper limit of the weight range, so Skywings asked BOS pilot and Evo 2 owner Richard Hunt to comment from the viewpoint of a pilot closer to the optimum weight (see sidebar). I did not try the Evo 2 under power as it would have been overloaded with a power unit at my weight.

The build quality is excellent, with all parts fitting smoothly and accurately. The test glider was a pre-production Evo 2 140 that had been subjected to the BHPA test rig. It is a testimony to the design that it still flies beautifully, despite a good stretching on the test rig and a +6g loading trying to break it! As this glider is designed for experienced pilots I will only dwell on the differences to the Evo 150 and similar topless gliders.



The top of the A-frame has been cleverly fully enclosed, minimising drag in the last "open" area left on a typical flexwing. The VG pulley block has been re-routed and is much lighter to use. The VG cleat design has been changed too and is much better than the 150 one. The cleat works in reverse to most cleats (pull back to lock) and takes a little getting used to, but overall it is a very ergonomic solution.



Avian use their own clip batten ends which locate in eyelets – by far the best system from any manufacturer in my opinion. The sprogs have been modified from earlier Evo models so that they can never be twisted or misrigged. The wing now has ultra-light carbon wing tips too.



So we have a very crisp, shiny new wing with a smooth, well cut and sewn sail, designed for the lighter pilot. It is said to have an exceptional sink rate, even with heavier pilots such as me (or designer Steve Elkins, as we are about the same weight - we are both very near the upper limit of the weight range).

So, what is so special about the Evo 2? In fact two areas are very special – the sink rate, as mentioned above, and the very fast and responsive roll rate. Even at max pilot weight it has an excellent sink rate; if you are nearer the middle of the designed weight range this will translate to an exceptional one.

Equally exceptional is the roll control. Steve Elkins had warned it would be much faster than I am used to and to avoid bumpy air on the first flight. After flying it, my analogy would be that it is like going from a Harley-Davidson cruiser to a Ducati sports bike, or perhaps from an old riding-school nag to a well-schooled Arab thoroughbred.

For those who fly but do not ride, you only need to feel a light thermic bump in broken lift and you can turn instantly to make the most of it; many other gliders with a slower roll rate would be turning later in the sink. The VG has a very long travel and the best sink rate is achieved with about a foot pulled out. Up to half VG is very

useable; more than this I only used for transitions and into-wind glides – standard stuff.

In very light, broken thermals it is the fastest-turning glider I have ever flown, topless or single-surface, although I appreciate that being at the top of the weight range helps. Even so, when you have tuned in to the handling it is a great advantage and makes the glider feel even smaller than it is.

As the Evo is a full comp wing it will be highly competitive in racing tasks, especially when working small scraps of broken lift or threading around other gliders and paragliders on crowded ridges. Spiral stability is neutral and perfect for soft, wide thermals, yet it easily handles the occasional small, toxic spring bullet. Ground handling and take-off are both very straightforward.

The glide is great and I am told it will match any current comp wing. I did not have the chance to compare it directly but it seemed very good when flying across gaps, etc.

The stall characteristics are little different from most high-end comp gliders. Push out too much, either level or in a turn, and there is a soft but insistent push back.



## specification

Model	Evo 2 140
Sail area (m <sup>2</sup> )	13.6
Span (m)	10m
Nose angle (°)	129 - 132
Aspect ratio	7.4:1
Packed length (m)	5.4
Short-packed length (m)	4.25
% double surface	90
No. of battens	25, + 6 undersurface
Airframe material	7075-T6
Flying weight (kg)	33
(includes packing but not bag)	
Pilot hook-in weight range (kg)	75 - 105*
Certification	BHPA (Certificate no 1201177)
Price	£6,897 as tested**

\* Equates to an optimum pilot (naked) weight of 12 - 12.5 stone. Add 15kg for most modern harness/parachute/boots/clothing combinations.

\*\* Base model with Dacron sail £5,999. Options include laminate sail (£308), ultra-low-drag control frame (£353),

carbon outer leading edges (£315) and carbon wing-tip fairings (£237).



Push a bit more and you experience a quick nod; if you pull in slightly you are immediately back to flying normally, with almost no height loss. The feedback is soft yet positive, direct and very easy to feel. Only the most heavy-handed could stall this glider inadvertently. The "stall warning" feedback is much more apparent than on most other gliders, yet the stall itself is a complete non-event, again despite the high wing loading with my less-than-sylph-like weight!

Landing is also very straightforward. For my first attempt I choose a modest upslope in a fair breeze - I was slightly apprehensive after a scary experience with an earlier small glider from another manufacturer. I need not have worried and could have chosen an easier, flat field nearer my car!

The glide is long as you round out, as you would expect, but the flare point is easy to judge. If you are in the middle of the weight range it will be a really great glider to land.

I had great fun on the glider on a later nil-wind thermalling session, with very weak lift on a shallow slope and some restitution from trees. Inevitably I went down, to a totally nil-wind landing with a few drops of rain to add some extra interest. It was a little faster than I am used to but the flare point was easy to judge, even with a few raindrops on the leading edge, which is never a good idea. Again, if at the correct weight it should be an absolute delight.

## Summary

The Evo 2 140 is perhaps the best high-performance topless glider yet from Avian. I would recommend it highly for lighter pilots. Heavier pilots should look at the Evo 150. I'm told Steve is now planning to work on the Puma - a lighter version with a kingpost - that will be ideal for bigger carry-ups.

## Manufacturer's comment

The Evo 2 140 has been a long time coming but was well worth the wait. Interestingly, the major sail change around the top of the A-frame, enclosing the top of the uprights and making the flow far cleaner in that area, was first done using Computational Fluid Dynamics. The sail change was trialled on the Worthing Birdman glider, where every little bit of performance is critical. The Evo became the first and only glider ever to fly over the elusive 100m from the pier.

The Evo 140 gives truly exceptional sink rate and surprised all of us during the development stage. In test flying against the Evo 150, recognised as having the ultimate light-lift performance, it was found to match its sink rate at the same 103kg clip-in weight despite being a 7% smaller wing. The Evo 140 is very light compared to the competition but we had not expected to make quite such significant gains.

STEVE ELKINS, AVIAN HANG GLIDERS

## A lighter pilot's view

### Richard Hunt weighs up the Evo 2 140

My background is one of flying Solar Wings' Rumours 1, 2 and 3, followed by a good ten years on a 13m Aeros KPL3. You could turn this by looking, but at the cost of being the most difficult glider to land I have ever flown. When the time came to replace it my criteria were good landing characteristics, good handling, a great sink rate, great glide and great support. This happily coincided with the start of the Evo 2 140 production, and I took delivery in time for last year's Cambridge aerotow competition.

In the bag and on the shoulder it feels lighter than my old Aeros, and it being a foot shorter certainly helps. On rigging you immediately notice the high build quality, and in flight the superbly low sink rate. Under grey skies my first flight was an XC, leaving the field whilst watching the rigids launch and land. The same weekend also demonstrated a matching into-wind performance, punching forward into a significant breeze with ease.

On the aerotow the Evo 2 140 is straight and untroubling - just dial in the amount of VG to select your preferred pitch pressure. I found a quarter VG was the right sensitivity for me, something that translated across to a new Evo 150 I recently had the pleasure to fly.

At my 90kg clip-in weight I found a need to move the hang point back a notch from its middle setting to a trim speed and bar position which was comfortable for thermalling. I now fly with between a quarter and a half VG on to minimise sink yet still retain handling (this is with aluminium outer leading edges - carbon ones are available as an upgrade).

At my weight there is a tendency to wind in a little the more VG is pulled on. This requires some high-siding in small, cheeky thermals, but once set in the core it sits there quite happily. The handling is of course the trade-off the more you apply, but I am still able to turn the glider. For comparison, a 14m Combat 2 I flew required considerable input to turn, and that was with no VG.

With almost no VG the Evo 2 140's phenomenal sink rate disappears - perfect for landings. This is another area the Evos excel at. If I have one criticism it is that landings are now so easy I fear my technique is getting slack!

Returning to the build and design of the glider, there are several very nice touches. The eyelet technique used for the battens works brilliantly - no more sore fingers from spring-loaded battens which claw their way through the trailing edge. Sprogs are supported permanently in position and are a work of art in themselves. They only require zipping into the sail to do their job so there is little chance of forgetting them, unlike on other gliders where they need to be attached. Other nice touches include the very slick speed-frame (featuring a neat little turbulator to further reduce drag), and the tumbling of aluminium parts such as the cross-tube junction to give smooth corners.

Flying the Evo 2 140 gives you great confidence from the outset. The glider delivers on the promises made by its good looks by effortlessly cutting through the rough stuff. I have flown on days where the air has been reported as not being the smoothest and not noticed. That's not to say you don't feel small areas of lift, you do - the feedback is great. It just seems to filter out the naughtiness for you.

