

BRACKLESHAM BOARDRIDERS

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Interview with Ken Winner – Designer of the North Rhino 08

The North Rhino, now in its seventh incarnation, has the longest history of any kite model on the market. The name “Rhino” has always stood for power, performance and hangtime even while it has morphed from a “C” kite to a five-line hybrid and now to a flat delta geometry with an entirely new and unique bridle.

Does the Rhino still stand for those three keywords power, performance and hangtime?

Ken: Yes, of course, but now more than ever. With the Rhino's new geometry and unique bridle – unlike any other – it has what it has always had, but more. Why? The Attack Control Bridle permits huge, twist-free changes in angle of attack, which gives the Rhino both unmatched low end and high resistance to back stall. This is the bridle for the rider who likes direct bar feel yet wants to be able to just pull in on the bar and go.

What ideas guided the Rhino development and what features embody those ideas?

Ken: Above all we were looking for easily accessible power. That is, we wanted the rider to feel powered even if he didn't have the experience to fly the kite perfectly. This led us to the Rhino's unique geometry and bridle. Interestingly, we didn't think, “aha, we need a flat delta geometry.” Instead, through testing a wide variety of geometries, we found we were getting the most power with the extremely swept, triangular and fairly flat geometry that you see in the Rhino. Of course, this shape would not work with any existing five-line or bridle system, so we had to come up with something entirely new to support the unusual shape. We found that the new geometry gave tremendous power, so we decided not to look for great power in our profile. Instead, we went for a low-drag, high-speed profile. This is characterised by a fine entry, a relatively flat run aft and minimal cupping in the leech. Just enough to stifle fluttering.

The Rebel '08 already performs very well. Why would someone choose the Rhino over the Rebel?

Ken: The Rhino:

- a. Is faster than the Rebel, so it's better for racers and speed kites,
- b. has lighter bar pressure so it's even easier on the elbows,
- c. has the most power per unit area of any kite we've ever built, so someone who needs a lot of power can find it in the Rhino,
- d. has tremendous shape stability, so it works really well for heavy riders,
- e. doesn't back-stall easily, so doesn't require as much kite flying skill,
- f. jumps really well – especially in the smaller sizes.

We've noticed that one brand has gone to very few segments while the Rhino has gone to even more. Why is this?

Ken: The effect of segment is this: The more segments, the cleaner and more precise the shape of the canopy.



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When you have few segments, the entry of the canopy is quite straight in those segments along the leading edge. However, the force of wind on the thin, structure-less fabric of the canopy just behind the leading edge converts those straight sections into spanwise curves. Inevitably, the force of the wind causes the canopy to billow in the back, pulling shape out of the entry of the canopy and leaving the entry starved for cloth. The fewer the number of segments, the more irregular the shape of the canopy profile.

Conversely, the greater the number of segments along the span of a kite, the more closely the true, real-life shape of the kite matches the ideal shape that we would produce if we could.

The limitation on the number of segments is that the canopy really needs some sort of support at each seam between the segments. This means there needs to be a rib or a CamBatten between every two segments. That means weight and complexity.

Where do you draw the line between too few segments and too many?

Ken: It's a judgement call and with the new Rhino, since it's strictly a performance-oriented kite, we've gone for a total of 16 segments in the canopy rather than the 12 in the Rebel.

As we noted above, having few straight segments leaves the entry of the canopy flat and starved for cloth. Increasing the number of segments, on the other hand, increases the profile shape in the front of the canopy and makes the profile shape more consistent from point to point along the span of the kite.

In '07, the Rhino had quite a large number of ribs to get this excellent profile stability. How has this changed for '08?

Ken: With the '08 Rhino we wanted to keep the stability of the '07 without keeping the weight and complexity of eight ribs. Since the center portion of the canopy tends to keep its built-in shape reasonably well even without a lot of rib support, we decided to shift our ribs away from the center of the kite and concentrate them more toward the tips – the place where luffing and fluttering is most likely to happen. When combined with the flatter tip profile, heavier canopy cloth in the tips and increased number of segments this proved effective.

Do you need to be an expert to be able to fly the Rhino08?

Among other things, our design plan for the '08 Rhino called for reduced tendency to back stall, easier relaunch, lighter bar feel and a four-line option. All these goals, which we achieved, made the Rhino easier to fly and manage. Less back stall means the rider doesn't have to fly the kite perfectly to get max power. Lighter bar means no need for resting in the micro-loop or against the sliding bar stopper. The flat delta shape relauches more quickly from the usual relaunch positions. The four-line option means people who tumble their kite a lot won't get it wrapped in the fifth line. Interestingly, self-landing on four lines is amazingly easy. You have to see it to believe it. While these are all features that make the Rhino easier to fly and manage, I still think the Rhino is for the more advanced rider.



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Please tell us more about the Attack Control Bridle.

Ken: The benefits of the Attack Control Bridle are mainly a direct, precise and light bar feel. Low bar pressure is especially good for riders concerned about tennis elbow and related ailments. Furthermore it allows the Rhino to change angle of attack to an extreme degree with no canopy twisting or distortion. This means, especially for not so skilled riders, that they can easily get the power out of the kite.

The '07 Rhino offered some real performance advantages for heavy-weight riders. Is this also true for the '08?

Ken: While we reduced the number of ribs in the '08, we spaced them more cleverly and added some heavier canopy cloth in key areas. The net results is even more shape stability, less distortion under heavy load and just about zero flutter.

If you put a 100-kilo guy on a Rebel in powered conditions, the kite distorts when he really loads it up. Put him on a Rhino and no problem. Zero distortion; zero flutter.

A bad flying kite is not always the result of a bad design but can also come from a bad tuning. How do we know the nose line has the perfect length?

Ken: The nose line should be very slack when the Rhino is sheeted out (bar is away from the rider) and should become progressively more taut as the Rhino is sheeted in (bar pulled to the rider). When the kite is fully sheeted in (bar all the way in) the nose line should be virtually straight, but should have a very slight sag.

If the Rhino back stalls when lightly powered and sheeted in, the back lines are too short. If the Rhino feels like it has no bar feel and no power, the back lines are too long. Adjust at the bar.



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