

R10, Comparison with R09

Trim speed comfort – Cohesion, movement, feedback

The R10 3 Liner is more compact with better cohesion and less sail movement than the R09, making it in general more comfortable. Feedback is very conventional so pilots moving from an R09 or other 2009 comp wing will feel at home very quickly.

The R10 2 Liner has a slightly more demanding feel than the R09 with more span wise movements and less sail cohesion as expected with the increased aspect ratio. With just 2 rows of attachment points the feel is different, rather unconventional and therefore takes a longer period to get used to.

bbHPP is very demanding; sharper in pitch with harder feedback and high aspect to manage at all times.



Handling – roll response, brake pressure, ease of centring

The R10 3 Liner has better handling in the thermal with less tendency to stall or cause an out flow of air under deep brake. Brake response has a more direct feel and roll response is similar making it relatively easy to centre in strong lift.

The R10 2 Liner has lighter brake pressure and a better response to roll making it the best handling competition wing we have made. Climbs really well on slow trim and has no stall tendencies making it very efficient in the climb. In very strong, turbulent conditions losses off sail cohesion may require more attention from the pilot.

The bbHPP is the most efficient in the climb but also the hardest work. Roll response is not very good, coupled with a very short brake range this wing can be very demanding in turbulent climbs close to the ridge.



Comfort half bar – Response to turbulence

The R10 3 liner has a very conventional feel in flight, with less out-flow of air (spillage) through turbulence or deep brake inputs.

The R10 2 Liner has good pitch stability at half speed and can be flown directly on the B risers making it easier to directly control the AofA whilst staying on the bar. Overall this gives a more comfortable and confidence inspiring feel.

The bbHPP has the advantage of a less flexible secondary structure to add stability to the profile at lower angles of attack, coupled with the direct control of the B risers and you have a confidence inspiring wing that remains open when pushed through turbulence. However due to the harder feedback and more aggressive pitch the wing is still not the most comfortable.



Trim glide performance – Pure trim speed glide in still air

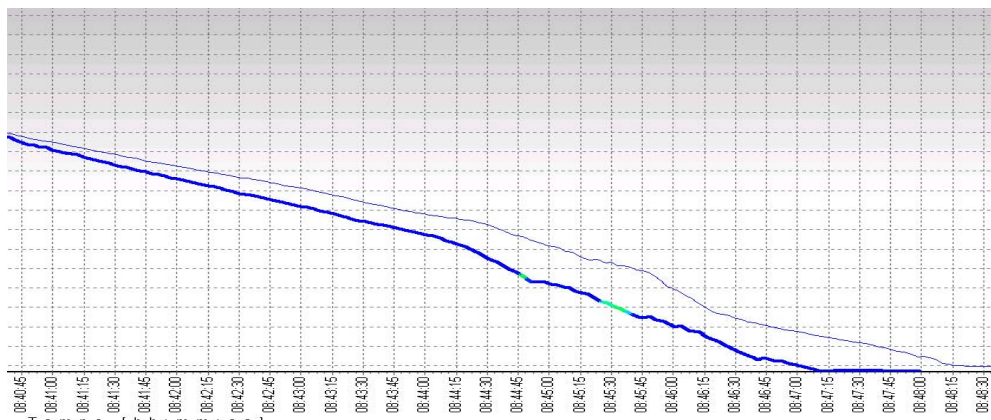
This is where we see the smallest differences between the wings. We calculate performance by comparative testing, i.e direct side by side gliding in real conditions. We repeat the test many times until we are completely confident with our findings.

At 40km the R10 3 liner has approximately 1.3 points in glide more than the R09.

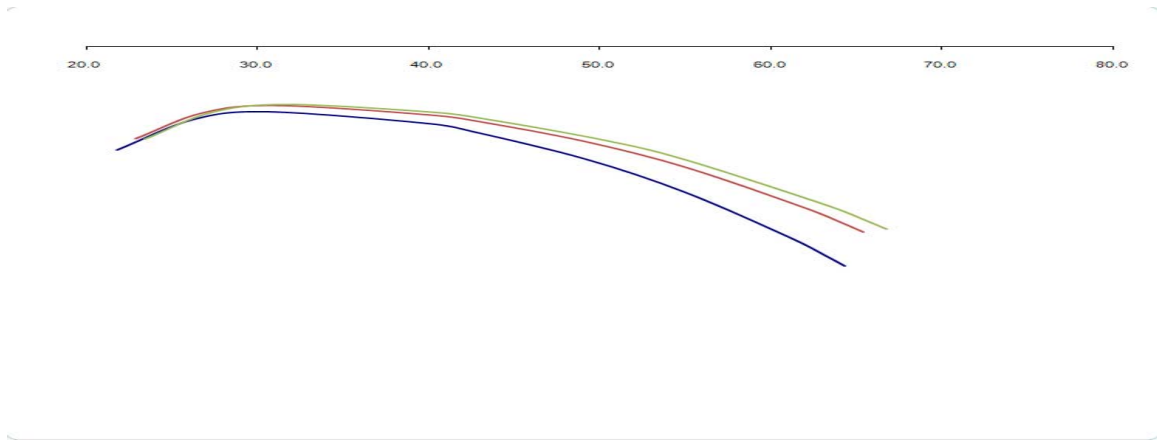
R10 2 Liner has a glide advantage over the R09 by about 1.7 points in glide.



Actual trim speed glide comparison data R09 (thicker line) and R10 3 liner, still air.



Theoretical polar curve showing R09 (blue), R10 3 line (red), R10 2 line (green)



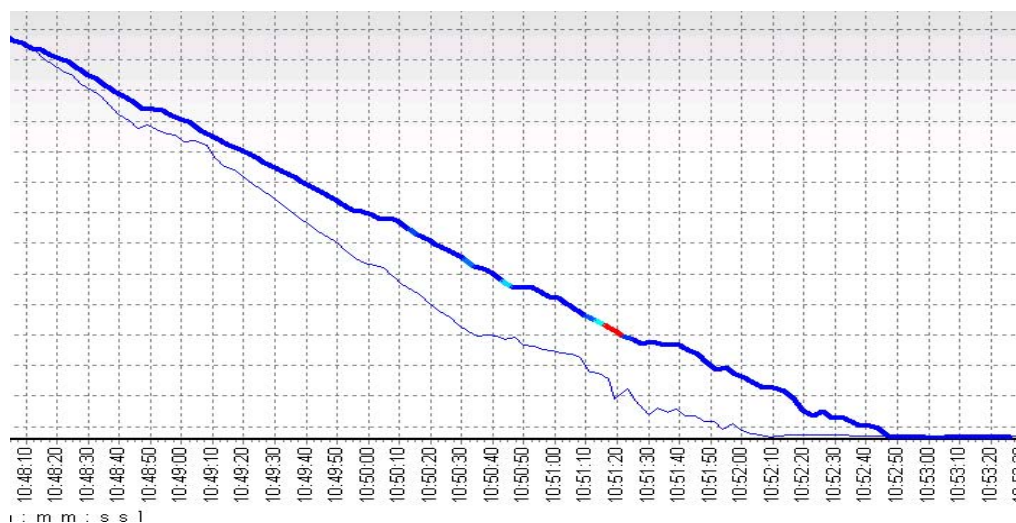
Glide Performance at 1/2 speed and above

At 55km The R10 3 Liner glides better than the R09 by about 1.4 points in glide.

The R10 2 Liner is better still with approximately 1.8 points of a glide better than R09. With 2 line technology you have direct control of your AofA using the B risers making it is easier to maintain higher speeds in turbulent air without the need to constantly work the speed bar. This greatly increases the efficiency of transitions by reducing unnecessary pitching movements and reducing the amount of decelerations/accelerations common with active flying on the bar necessary for conventional 3 line wings.



Actual glide comparison between R09 (thin line) and R10 2 Liner at full speed



Glide perf turbulent air – way in which the wing absorbs turbulence and converts lift

This is where we find the biggest difference in performance between the wings, in such conditions the R09 and other 2009 competition wings are now obsolete; the R10's absorb turbulence and convert lift much more efficiently. It also seems that this is when the reduced drag of the 2 liner shows its benefits, pulling away from the R10 3 liner.

In such conditions the bbHPP still rules; using its less flexible structure to maintain a clean profile shape and charge through turbulence almost unopposed.



Collapse Resistance – Likelihood of collapse assuming correct active piloting

The new structure and new profile of the R10 3 liner has slightly improved the inherent collapse resistance, especially at 1/2 speed.

The R10 2 liner has the advantage of direct AofA control; a further modified profile and the A line attachment points placed further rearward on the profile. At high speed and in turbulent air this gives the sail more resistance to collapse when flown actively with the rear risers.

The bbHPP has proved to be the most collapse resistant XC wing we have ever made.



Top Speed

The V max of the R10, R10 2 liner, bbHPP and R09 are approximately the same, however it is easier to maintain a higher speed with the R10 2liner and bbHPP because of their greater collapse resistance and control methods (B risers) in real air conditions.

Inflation Behaviour – Ease of use.

The new structure of the R10 ensures that the wing inflates superbly, especially in light or no wind conditions and is a significant improvement over conventional competition wings which can be demanding to launch in similar condition.

