

Cross Country

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ST HILAIRE: FREEDOM TO DREAM

To achieve great things, we must dream as well as do - *Anatole France*



UP TRANGO XC3

The Trango XC2 was one of the standout sports wings of 2013, but is this a worthy successor? Hugh Miller finds out



Call me spoilt, but I wasn't that keen to try the Trango XC3. I'd been enjoying the sublime pleasures of flying CCC wings in between reviewing the GTO2, M6, Triton 2 and Pure 2, and though the XC3 is aimed at D class pilots, it is certified EN C.

So, you'll understand that with this review wing I felt like an addict being fobbed off by his dealer. Having said that, at 6.9, the Trango XC3 is also the highest aspect ratio ever certified in the C rating and, in a sick kind of way, I was rather hoping the Trango XC3 would look and feel like a proper D, because I was used to that kind of a buzz.

One thing really struck me on unwrapping the wing. It feels really light – and it is. At 4.7 kg for the SM size, the XC3 has earned its place in the new club of 'semi-light' paraglider designs. Skytex 27g lightweight cloth is now commonplace on the undersurfaces of CCC gliders, and it's used on the Trango XC3 too – and also on the rear half of the top

surface. "The lighter the weight, the safer the wing," explained UP's Czech designer Franta Pavlousek to me. In fact, incredibly, his latest creation is lighter than UP's 2013 X-Alps wing – but the Trango XC3 is designed foremost as a performance wing, not a lightweight wing. It's just an added bonus.

AirDesign's Pure 2 and Ozone's M6 are in a similar class in terms of aspect ratio, but while these two designs sport full length rods from tip-to-toe across their chords, the Trango XC3 features leading edge rods and long rods at the rear too, to spread the load of the C-lines, improve the tautness of the top surface, and improve stall safety, according to Franta.

After my experience flying the GTO2 (with its even lighter construction, resulting in slightly less rigidity and tension in the canopy) and Pure 2 and M6 (more standard weight, more cohesion and tension), I felt I could second-guess the kind of feel UP's design would give in the air.

▲6.9

Franta Pavlousek's latest creation is a semi-light 6.9 aspect ratio performer. The specs and our subjective experience make it a very likely contender for the best-performing EN-C wing on the market, yet its standout draw remains its handling. Both these characteristics make it a specialist wing, but might put it out of the reach of many of the 'traditional' low-to-mid C class pilots who fly less frequently and appreciate more damped handling and a lower A/R

Photos: Hugh Miller



▲ TIPS IN

Big ears – does anyone use them anymore? When you're gliding under a sucky big cloud, having the option to pull in the outer A-lines and push full bar is very reassuring. The glider stabilises and you can start diving a little while maintaining direction – it's ultimately the most efficient and safe way of riding out of trouble. While some other EN-D/ performance wings have sticky tips that result in irritating cravats, the Trango

XC3's big ears are child's play.

Photos: Hugh Miller

Short, Sweet

But I was wrong! After taking off, my first thought was, "Help, someone's shrunk the brake lines!"

The brakes feel taut and alive from the very first centimetre of pull, and brake travel is very short. Imagine if you normally flew with a wrap – well, with the Trango XC3, you can fly in the brake loops with no wrap and you still won't need to pull as deeply for even the tightest turns. I was a little unnerved by this immediate tension so high in the brake travel, but trim speed seemed good, so I relaxed. Some small, weak climbs were bubbling up, and I found I could snag them easily and turn in tightly. Hook and cook? Hook and bring to book? Surely there must be some snazzy way of conveying this ability. Some gliders have it, a lot don't. The wing gives you precise roll feedback through the risers and lovely little hints through the brake pressure, telling you which side to turn in on, then off you go – the wing turns tightly but flat throughout the 360. It feels positively nippy and nimble compared with the M6 – similar to the GTO2 perhaps, but with a flatter angle of bank, and needing less correction with the outside brake. "It climbs like a spring" wrote reviewer Ziad Bassil, and I'd have to agree – the analogy is just

spot on, there's lots of energy in the glider and it's like a loaded spring that's releasing and pinging skywards.

On my first glide I was getting close to airspace while still pushing out under a juicy cumulus. The great advantage of three-liners is you can pull big ears and push speedbar while two-liners get hauled towards the airliners. I found very light pressure in the outer cells, and it required a very gentle tug on the outer-As to fold the ears in nice and neatly. Simple. Once clear of trouble, I released the tips (flick – they're out – no clearing tip cravats – nice!) and pushed more bar. There's an ever so slightly noticeable 'wriggling' in the canopy as you surf through the bumps, but this seems more cosmetic than anything, as the wing holds solid, and I soon found the confidence to push full bar.

With no handles on the C-risers, I wondered if UP approved of using them while gliding. C-riser trimming might be well known as a technique, but some designers actually would rather we didn't. In an earlier issue this year, GIN's Torsten Siegel, and Nova designer Philipp Medicus warned of the dangers of adversely adjusting the camber on three-liners by pulling on the C-risers, and

stated that it is really a two-line specific technique. I experimented with gliding at half-bar and trimming with the C-risers, and this can cause the glider to bunch up and release a little across the span between the A and B attachments. It's probably best to stick with trimming with the speedbar. Not so trendy, I know, but that's the aerodynamics for you.

Falling...

After an hour of flying on a much stronger day, I felt like bursting out in song... "You're the one that I want, the one that I want, ooo ooo ooo". Don't quite know why the lyrics from Grease popped into my head, but there you go. Actually my head is usually a spiralling vortex of thoughts when I'm flying. Like the air, it either goes up or down. Something like this: "Oh God can't find the climb ... I'm going to land down there ... I'm no good at this..." or "Yes, nailed it ... The 100k out-and-return is definitely on ... can't wait to see their faces when I get back to take-off." It's never anywhere sensibly, or helpfully, in the middle.

Anyhow I digress. Where was I? Oh yes. Flying cross country from Devil's Dyke in the south of England, with a 12-15km/h northerly headwind,

trying to punch hard crosswind on my outward leg of an out-and-return. The climbs were strong and sometimes sharp-edged low down, smoothing out at around 1,000m, then developing into huge kilometre wide sections of super lift in the last 700m up to cloudbase. An ideal day. And I was just loving it so much. I've flown around 15 wings in the last two years, and over 150 in my last 20 years of flying, and most are pleasant enough. Some make you think, "yes, there's something here," and after a few more flights, you click with them, and you love them. Others feel great on the first flight, but down the line, when you're being left for dead by your friends on glide, you're not so sure. And once in a while you fly a wing that, from the off, actually makes you want to go flying even more than usual, not just because flying is so madly fantastic, but because the feel and experience with this particular wing adds a new level of joy. It makes you wake up excited. It means it doesn't matter quite so much how epic the conditions are, because you know you're going to be flying something quite magical and that itself is enough.

The Trango XC3 is such a wing. Of course, the hard part now is explaining why it's such a wing. Well, most of us now realise the most important

Manufacturer's specification

What UP say: "Performance at your fingertips ... a new benchmark in the C Class"

Use: performance and competition

Pilot level: advanced, experienced and current XC pilots

Sizes (m²): 21.7, 23.1, 25.1, 27.1

Take-off weight (kg): 63-85, 78-100, 92-115, 105-130

Cells: 68

Aspect ratio: 6.9

Weight (kg): 4.6-5.4

Certification: EN C

up-paragliders.com

▼ TOP SURFACE

On glide at half to full bar, the lower surface shows some flexing, while the top surface seems to stay as tight as a tin drum





▲ DESIGN FEATURES

68 elliptical cells, split-As, risers sized to suit each wing size, concertina bag included... but no C-handles or balls? No. Get over yourself and learn to use the speedbar properly!

A NOTE ON SPEED

Our tests at just above sea level showed the Trango XC3's top speed is on a par with the GTO2 and Mantra 6. Some would say it is punching above its weight for its class, but whether you call one wing a 'hot C' and another a 'low D', these are all high aspect three-liners and need to be flown with care and attention.

Using commonly-used aviation formulas, a glider will fly around 12-15% faster at 3,000m than it will at sea level. So, for example, in nil-wind, a top speed of 58km/h at 3,000m will drop to 51km/h at sea level, as measured by a GPS. Ram-air style indicators and GPS readouts are greatly influenced by altitude, temperature and barometric pressure, and have made top-speed measurements a controversial area over the years

aspect of a wing is how it handles and climbs – because that's what we spend a lot of each flight doing. Franta used to design Axis wings, and their Mercury was the hotship of 2008. It may not have had any advantage on glide, but it climbed just beautifully, and helped its pilots rise to the top of each gaggle. I think Franta's got a particular talent here. The sail tension (not too tight, not too loose) allows a good level of feel and feedback in the air – the wing moves just enough to tell you what's lifting, where. The brake pressure (tight and precise) lets you feed the wing into just the right place. You can then dig a tip in – like sticking your oar in the side you want to turn when canoeing – allowing you to plant the glider firmly in position, whatever buffeting you're getting from the turbulence. The outside rotating wing turns quickly and flatly enough – without any lag, or diving, to give fantastic control in the 360. And the leading edge is 'nose-up' enough to surf upwards through the bumps, rather than have that tendency to dive, leading to a loss in efficiency as you scabble to dampen down with the outside brake. As you complete each 360 the glider feels nicely locked in yet still offers that crucial feedback through the tugs and shifts to let you sniff out any movement in the core, and allow you to open

up your search pattern to move into stronger lift. Most importantly, the short, precise brake travel makes the handling sensitive and just an utter joy. These are all crucial elements, and they are all absolutely in place in this wing. Chapeau, Franta.

On glide, again, I found some flexing in the wing – more than the M6, but less than the GTO 2, requiring less management. There's a little spanwise movement, and a little chordwise movement too – as if the wing is breathing a little as it punches through the turbulence. I saw this from under the wing, but on a subsequent day, I glided at speed above a friend flying our test wing and the top surface seemed really tight and hardly moved at all.

Speed

I brought my Flymaster TAS speed probe to bear on the GTO2 and Triton 2 earlier this year, and ran another comparative test with the M6 and Trango XC3 late in August. The TAS pitot tube dangles in the clear airflow below the harness, and gives a precise true airspeed readout through a Flymaster SD instrument. Some reviewers use GPS speed to calculate the speed increase from trim to top speed, but this relies on maintaining an exact heading – not easy – and also doesn't



compensate for differences in barometric pressure, altitude and temperature, while the TAS does. I tested the M6 and Trango XC3 while soaring sea cliffs in smooth laminar air. With the wings always in an almost imperceptible slight state of flux in pitch, penduluming back and forth even on a long 200m run, it's hard to give a precise figure, but the XC3 seemed to be consistently 1.5km/h to 2km/h faster at trim speed. At full speed, the M6 pulled ahead ever so slightly, with a 1 to 1.5 km/h gain on the Trango XC3. These speeds put the Trango XC3 up there with the GTO2 and M6 in terms of top speed, and slightly ahead of the Triton 2. While talk abounds of top speeds approaching 60+ km/h, I've yet to fly a three-liner that gets anywhere close to that number, but we're loathe to publish specific top speeds before doing more extensive tests. A broad truth though is there simply isn't as much

MOVING ON UP?

What's the Trango XC like for a mid-C pilot? Lawrie Noctor has flown an Ozone Delta 2 (EN C, A/R 6.0) for two years and is now looking to fly something with a higher aspect ratio.

"Once released from tow, starting to thermal was super simple with minimum of weightshift and small amount of brake. Moving in and out of turbulent cores I could feel the tips wanting to surge and move more than the Delta 2. The whole structure gave a bit more feedback on the surrounding air, but I never felt uncomfortable.

"Although I liked the direct brakes I found myself having to have my hands quite high a lot of the time. I could imagine on longer flights your arms may start to ache. Getting the glider into a spiral was also fairly easy and reaching 10m/s didn't take a lot of brake or weightshift. Past this, I definitely felt more G-force than I did with the Delta 2 when getting to around 12-15m/s.

"Exiting the spirals quickly, the glider needs a little more attention than the Delta 2. It felt like it kept the energy better which meant a bigger, slightly more aggressive dive on recovery and subsequent quick catch on the brakes to stop overshooting.

"Overall I really enjoyed flying the XC3. I had one low save which also showed its great climbing performance, which felt notably better than the Delta 2's."



FRANTA PAVLOUSEK, UP DESIGNER

Franta, your work is a bit of a mystery. Who do you work with, where do you test, and how much time went into developing this wing?

UP has one designer, me, one aeronautical engineer, Matthias Hartman, and two test pilots, Michal Snejberg and Jirka Dlask. Michal has worked with me for 10 years, he has a great feeling for the wing and he can give a lot of feedback, defining very precisely any detail of wing behaviour. These are our core people but we involve a lot of other team pilots during testing.

You've gone for a 'semi-light' construction. Can you explain what led you to this style of construction?

The Skytex 27g cloth is used extensively. We don't expect pilots at this level to be dragging their wing on take-off, so we use it not just on the bottom surface but the rear half of the top surface too. 32g fabric at the leading edge helps maintain more tension. We use two different fabrics for the ribs and diagonals too – Skytex Hard Finish 32g and 27g. There is no cost compromise in this material combination, we were focused only on the best flight behaviour and durability combination.

The tips feel quite lightly pressurised, and big ears are easy to pull. How does this light pressure in the tips affect handling?

All UP's performance designs are built with light pressure in the tips, and high pressure in the centre. The idea is simple: the less pressure in the tips, the more pressure and collapse resistance in the centre. So the wings with slightly floppy tips have safer, stronger centres. Of course, a good balance is necessary because too many tip collapses would decrease the performance. There is another advantage with this philosophy: the tips are twisted to be faster, so the turn agility is better. And as the tips are faster, the brake fan can connect more strongly to the tips, improving the turn agility.

UP's marketing states a lot of effort went into improving performance at speed. How did you measure this?

We make a lot of comparisons to check performance. But we do something totally different from those who make a single comparison flight and then create a lot of noise on forums. To compare two wings seriously, you need two pilots of the same take-off weight with the same harnesses, good conditions and many flights – with the pilots changing wings between the flights. They have to fly tip-to-tip, and so on. This is the most precise way to compare two wings, and we are used to spending a lot of time doing that...

Why the C certification? Some would argue that a D would be a more honest badge – what would you say to them?

I personally preferred the days when a C wing was a C wing, but they've gone! D-certified comp wings ate the D category, and pilots in online contests are pushing for the highest possible performance in the EN-B category. Pilots have to appreciate this change and they have to understand what category of wing they fly. There are new categories like 'low-B, mid-B, high-end B' to help them. They're unofficial as of now, but I hope some new categories will be created, A, A/B, B, B/C, C, C/D and D, for example. The whole category system is based on the DHV certifications, created in paragliding prehistory ... they could do with being updated! On the other hand the safety of wings is improving with performance, so the Trango XC 3 is neither old EN-C nor old EN-D wing. It is a new wing of the 'new age' – it is 'high-end C'. The real challenge was to bring beautiful handling to a wing in this category. The Trango XC3 is for experienced pilots who love precise handling with immediate response – but we still have to fulfil the EN norm requirement for brake travel, 50cm or more for M size.





difference in top speed between a high-end B and a three-line C or D as people currently believe – though the real advantages of the higher aspect wings is their glide at speed and tendency to ‘surf up’ through turbulence.

‘An absolute joy’

The Trango XC3’s short, precise handling makes it an absolute joy. I hope I’ve gone some way to convey how it feels, and what makes it so special. This wing’s X-factor handling, lightness, proven speed, light speedbar and comfortable ride set it apart. Here’s the slight ‘but’, though. The very characteristics that make it such a joy might also make it a more demanding wing to fly than some other top-end Cs and low Ds in stronger, more pumping conditions than I flew it in. That’s just a hunch – I can’t prove it – but when the adrenaline

is surging, muscle movements tend to be more exaggerated, and personally that’s when I start to really appreciate the longer brake travel and softer, more docile handling. But – like I said – that’s a hunch, to be taken with a huge pinch of salt, as I haven’t actually flown the Trango XC3 in strong mountain air.

As you can probably tell, I totally fell for this one in a way I haven’t with any other top-end C or D class wing recently. Yes, I’ve loved some of the other wings I’ve flown in the last couple of years, but they’re either a little too machine-like and industrial in their feel, or they’re just a bit too wriggly for comfort. The Trango XC3 doesn’t just strike the right balance, it offers a kind of piloting pleasure that, in my experience, is rare. ✎

Hugh flew the Trango XC3 SM at 92 and 96 kg

◀ SWEEP BACK TIP

Light pressure in the tips, plus added twist in the tips to make them faster, contribute to the wing’s beautiful handling