

# TL-2000 Sting: Revised and reviewed

by Andrew Underwood

I'm ashamed to have to admit that up until last month I hadn't heard of a company called Sport Aircraft Ltd, nor did I know anything about the TL-2000 Sting aircraft it flies and sells here in New Zealand on behalf of the Czech Republic manufacturer.

This all changed the day I received an email from John O'Hara, one of the four founding partners of Sport Aircraft Ltd, with an invitation to test fly his aeroplane on behalf of *Aviation News*. After a hasty session of online research to reduce potential embarrassment on my behalf, several phone calls were made to organise the flight which turned into a reality on 13 March at Auckland's North Shore Aerodrome, home field of the operation.

ZK-SAL is the company's nominated demonstrator aircraft, first appearing on the New Zealand register fresh from the European factory in June 2014. This particular variant is registered as a class 2 microlight, but thanks to its 600kg maximum takeoff weight limitation, the two-seat Sting S4 also falls into the light sport aircraft (LSA) category and so can be flown by holders of either a sport licence or Part 61 recreational pilot's licence accordingly.

Based in the city of Hradec Králové, the TL-Ultralight manufacturer has been producing gliders and light powered aircraft for over 25 years, with the company founded by Jiří Tlustý in 1989 after the Velvet Revolution opened up new opportunities for his country's private venture sector.

The Sting S4 design traces its roots to the company's first composite production, the TL-96 Star. Sharing many similarities with its 1997 predecessor, the TL-96 featured a similarly shaped, aerodynamically clean fuselage built from a mixture of glass- and carbon-fibre reinforced plastics, low-wing monoplane design, side-by-side seating and a 4cyl Rotax powerplant. The bubble-like canopy hinged upwards as a single unit from the front, and the vertical fin and rudder were swept back to generate a sleek looking profile view.

Next came the TL-2000 StingCarbon in 2002, hosting a series of aerodynamic tweaks and a fuselage now exclusively constructed from carbon-fibre reinforced plastics. This evolved again into the TL-2000 RG in 2003, a retractable variant capable of an impressive 153kt cruise speed.

But the manufacturer was still not one to



Such safety devices are becoming increasingly common on LSAs and GA aeroplanes alike.

be caught resting on its laurels and refined it once more, into the Sting S3 in both fixed gear and retractable options, incorporating a new tapered wing design of longer span and greater surface area, higher aspect ratio and with larger flaps than its forerunner.

However, further consultation between the manufacturer and Sting family owners has led to a final refinement in the form of the 2010 S4, with their recommendations carefully taken into account to create the so-called pedigree model of the breed. Design changes, such as a raised nose to aid pilot reference from the cockpit upon landing, brand new seating, adjustable rudder pedals, a 25kg baggage storage area and inclusion of a ballistic recovery parachute by default are some of the new innovations.

To date, TL Ultralight reports having produced more than 1200 aircraft in total.

I must admit that as the hangar door was rolled up to reveal ZK-SAL, my initial thought was that I was looking at a baby Cirrus. Either that or a mini Tecnam Astore, although in actual fact the Sting is only 550mm shorter than its Italian LSA rival at 6.45m with, at 9.12m, a 470mm greater span.

The S4's airframe is in fact 85 percent carbon fibre, serving its purpose well for both strength and weight saving properties. The large tinted canopy, complete with safety latch and dual canopy lock pins, covers a roomy 1.13m wide cabin and offers unbroken 360deg views.

While user preference dictates many customisations available with the S4, including choices for either the carburetted or fuel injected versions of the popular Rotax 912, the New Zealand demonstrator is fitted with a 100hp four stroke 912iS, attached to the airframe through a six-point vibration damping engine mount. The fuel injection negates the need for a mixture lever, and the Dynon SV-D1000 avionic suite contains an electronic fuel flow meter than can be adjusted with the power lever while setting the manifold pressure on this CSU equipped variant.

ZK-SAL is also fitted with a PowerMax propeller with three carbon-fibre blades and steel alloy roots, in-flight adjustable in pitch, although TL also offers ground adjustable fixed pitch variants.

The 9.12m wing span has an area of 11.1m<sup>2</sup>. Electrically operated split flaps run approximately 80 percent of the length of each trailing edge and generate more drag than lift. Both the internal spar and wing skins are made entirely from carbon fibre and stressed to a +4/-2g limit.

A single 77lt fuel tank is contained underneath the cockpit within the central section of both wings, accessible by a single fill point on the starboard side, adjacent to the fuselage. Wing tanks with a capacity of 40lt come as an optional extra, and it's worth noting that while the Rotax engine runs well on 100LL avgas, it is better suited to the slightly cheaper and certainly more widely available mogas super.

Dual controls are fitted as standard, and



John King

With a width of 1.13m, the S4 cockpit provides excellent visibility and adequate shoulder room for two full-size people, in this case Sport Aircraft directors Phil Southerden (left) and Mark Easson.

both sets of rudder pedals have toe brakes and independent adjustable travel of 220mm fore and aft, easily worked while seated by means of a central pull to lock/unlock tab on the pedals themselves.

The main panel follows a less-is-more philosophy, with a minimal number of switches for master electrics, magnetos and exterior lights grouped together on the far left-hand side.

While traditional analogue gauges come as standard, the more modern twin 10in Dynon SkyView glass cockpit avionic package seen in ZK-SAL is a popular customer choice for the S4. The different arrangement combinations and multitude of functions (EFIS with synthetic terrain vision, EMS, Nav with Dynon GPS charts and integrated Mode S transponder, to but name a few) of this well-regarded two-screen option could almost fill a review of its own, but the demonstrator is intuitively set up with a primary flight display on the left screen and the right screen split between an engine monitor panel and a GPS powered moving map display.

Even with the bright midday sun glaring down during the test flight, the engine parameters were clearly visible without glare, showing up with green markers against a contrasting black background to indicate at a glance that all engine temperatures and pressures were within their normal operating ranges.

Sitting centrally above the screens is the separate ICOM communications panel, easily tuned from either seat, with push-to-talk buttons atop each flight stick.

The central pedestal joining the bottom of the main panel features an aerofoil shaped flap selector with LED lit notches at 0deg, 15deg (takeoff) and 40deg (landing), marked with limiting extension speeds of 75kt and 65kt respectively. A fuel quantity gauge to the right of the flap lever has a single tank percentage

indicator almost idiot-proof in its simplicity, with a large green and red labelled "OPEN/OFF" fuel selector placed directly below.

A pull-on-push-off cabin heat lever at the bottom right of the pedestal I imagine wouldn't see much use with the unshielded canopy above letting in plenty of solar warmth.

Each item mentioned is set against a clean metal grey background, as is the remaining section of the main panel that also features a standby ASI, altimeter and, should you wish to plug in a flash drive and download digitally recorded flight data through the Dynon interface, a USB port on the far right-hand side.

The throttle quadrant itself comprises three levers for this CSU-equipped Sting, with a traditional power lever to set manifold pressure and pitch lever for engine RPM. The third lever is a fore-and-aft sliding elevator trim control fitting neatly into the right hand while flying with the left hand on the stick. The head of each lever is no larger than a dollar coin and requires only single fingertip force to adjust up and down.

All the neat interior arrangements are surrounded by a curved carbon-fibre mesh pattern finish, giving the cockpit environment a subtly futuristic yet tidy appearance.

While the comfortable foam padded seats aren't themselves adjustable, booster pads are available from third-party sources for those with smaller framed bodies. I found the seating position in the Sting, unlike some other LSAs that I've sampled, feeling as natural as in a conventional car, without the need for raised legs in a cramped lower front compartment. Twin shoulder harnesses attach to a horizontal waist belt with a simple automobile-like clip, and dual headset ports neatly positioned behind the headrests keep the cables tucked out the way for the most part.

A baggage compartment behind the rear seats is accessible only from within the cockpit, through the small gap between the top of the rear canopy and the seat backs, yet is



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Switches are well marked and robust.

**DTI**  
190 x 90 mm