

# Leader of the pack

David Bremner has a happy reunion with the Skyleader

IN June 2023, I was introduced to the Skyleader range of aircraft being introduced to the UK, and this time, I revisited North Weald airfield in Essex to take a look at the first G-registered example of the Skyleader JA-400.

The UK importer is Ashok Aliseril, and as soon as I turned up, he quite rightly took me to the café for a cuppa. Ashok is not only clever, but clearly has his head screwed on straight.

He's an electrical design engineer for Ford, working on the all-electric Transit van, so he isn't relying on the income from selling aircraft.

His flying experience is with light aircraft, having trained on the good old Cessna 152 and built a four-seat Sling TSi during lock-

down. It was sitting on the tarmac at North Weald, and it's clear he's made a very professional job of it.

Those of us who grew up in the era of hang gliders modified at home with a Valmet 160 may look back on those days with misty-eyed nostalgia and look at the new crop of 600kg machines with a bit of suspicion, but Ashok is right to see them as conventional light aircraft slimmed down to take advantage of the new rules and increasing reliance on digital technology in the glass cockpit, with original build, modifications and repairs carried out by the factory, and maintenance carried out by a competent owner or a professional.

The benefit is that your investment is likely to hold its value better than a home-built machine, but microlighting as a whole may lose the sense of camaraderie that has given it such a powerful cohesive force in the last 50 years.

In the 1980s, microlights were fragile and impractical, but cheap enough to be owned by an individual. We therefore spent a lot of time on the ground fixing, modifying and maintaining them – all of which required conversations in the clubhouse over a cup of coffee and a biscuit.

Light aircraft, by contrast, tended to be syndicate-owned or hired out. All work on the aircraft was carried out by professionals, and those who flew them would turn up, book out, fly and go home, so there was less opportunity for social interaction.

Actual flying, once you've got the hang of it, is a rather lonely business that largely involves

sitting there waiting for something to go wrong, and the ultimate high we get from almost every activity, from nattering over a cuppa to Olympic competition, is to share your experience with others, and that's where microlighting scored.

## The good old days – not

But the journey taken by microlights is inevitable: in the 1980s, we were all striving to achieve the levels of performance and reliability of today's machines, and it would be quite wrong to try and turn back the clock.

Last November, I was lucky enough to be asked to drive the tender vehicle for a 1903 Panhard Levassor in the London to Brighton rally.

It was an unforgettable experience to see 360 cars, all different (including one coal-fired steam wagon), all pre-1905, then making the trip, comparing notes, sharing facilities and so on, and ▶





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It's a design of classic simplicity and elegance

▷ the difference between that and driving a modern car has parallels between microlighting then and now.

Would we wish to return to motoring as it was then, with all its variety and colour and cold and unreliability?

Let's hope that microlighting can retain that sense of social cohesion through fly-ins, fly-outs, rallies and competition.

Here endeth the lesson.

For those with short memories (me in particular) the JA-400 is a derivative of the Kappa Sova, a low-wing tractor monoplane with staggered side-by-side seating and retractable nosewheel undercarriage.

Kappa went through a number of business transformations, and the Sova is still on sale in Europe as the Skyl leader 200, albeit with the fuselage widened to accommodate conventional side by side seating.

The Skyl leader JA-400 is an updated simplified version with the retractable undercarriage replaced by fixed gear, and

the seats, which were in a staggered side by side format moved to conventional side-by-side. The canopy now has gull-wing doors.

It comes in two variants; the Club is the basic version, which comes with ballistic chute, 80hp Rotax 912 and basic VFR instruments. Its empty weight is around 335kg, allowing you to take two 90kg (14st) occupants and full tanks (120lt).

The new demonstrator is the Sport version with the 100hp Rotax 912ULS, carbon fibre seat frames with headrest, centre console-mounted throttle, parking brake and choke, cubby hole with sliding door and leather side-trim inserts with pockets. This pushes the empty weight up to 351kg, meaning that your two 90kg occupants are allowed a maximum fuel

capacity of 95lt.

All load-bearing parts are metal, composite only being used for non-structural fairings.

Have you ever thought how remarkable it is that every method of light aircraft construction ever devised still seems to be competitive; wood and fabric, all wood, steel tube and fabric, aluminium, ragwing (such as the Rans) and composite?

Each has its own pros and cons, and although modern manufacturers are tending towards composite construction, the JA-400's riveted aluminium frame has a number of advantages: it's less likely to gain weight if left outside, the factory requires less capital investment and any damage is likely to become visible before it becomes dangerous.

Corrosion is a potential issue, but plenty of Cessnas from the 1950s are still going strong, proving that it doesn't have to be an issue if the correct treatments are applied, and Skyl leader assures me that's the case for its aircraft. ▷

## TECHNICAL DATA

# Skyleader JA-400

### MANUFACTURER

Air Operation Technologies a.s. (SKYLEADER Aircraft)  
Hruškové Dvory 139, 586 01 Jihlava,  
Czechia

E-mail: market@skyleader.aero  
Phone: +420 734 750 206

### IMPORTER

Inditu Air Services Ltd (trading as Skyleader UK), Hangar 13,  
North Weald airfield, Merin Way, Epping CM16 6HR.  
Proprietor: Ashok Alliseril.

E-mail: skyleaderuk@gmail.com  
Phone: +44 (0)780 961 9564

### EXTERNAL DIMENSIONS AND AREAS

Length overall when rigged 6.39m.  
Height overall 2.36m.  
Wingspan 9.16m.  
Tapered chord, Dihedral 2°.  
Wing surface area 11.2m<sup>2</sup>.  
Mean aerodynamic chord 1.29m.  
Flap area 0.7m<sup>2</sup>.  
Rudder area 1.08m<sup>2</sup>.  
Elevator area 2.28m<sup>2</sup>.  
Ailerons area 0.55m<sup>2</sup>.  
Aspect ratio 7.43/1.  
Wheel track 1.96m.  
Wheelbase 1.74m.  
Mainwheel tyre size 6in.  
Nosewheel tyre size 4in.

### POWERPLANT

Rotax 912/912S engine.  
Max power 80/100hp at 5800rpm.  
E-Props Durandal 100M three-blade ground-adjustable propeller diameter 1.7m.  
Gear reduction, ratio 2.58/1.  
Fuel capacity in wing tanks 40/60+40/60=100/120 litre.

### WEIGHTS AND LOADINGS

Empty weight 340kg.  
Max takeoff weight 600kg with ballistic parachute.  
Payload 260kg.  
Max wing loading 53.19kg/m<sup>2</sup>.  
Max power loading 6kg/hp.  
Maximum load factors +4g, -2g.

### PERFORMANCE\*\*

Max level speed 112 kts.  
Never exceed speed 140kts.  
Economic cruising speed 104kts.  
Power-off stall speed with flap 41kts.  
Power-off stall speed without flap 44kts.  
Max climb rate at sea level 800 ft/min at 60kts.  
Best glide ratio with power off 10/1 at 60kts.  
Takeoff distance to clear 15m obstacle 350m on grass.  
Landing distance to clear 15m obstacle 350m on grass.  
Service ceiling 12,500ft.  
Range at average cruising speed 700 miles.

\*\* Under ISA conditions at sea level and 600kg MTOW

### SUMMARY

Two seat low-wing monoplane with conventional three-axis control. Wings have swept leading and trailing edges. The tail is conventional.

Undercarriage has three wheels in nosewheel formation; robust trailing arm suspension on mainwheels. Nosewheel steering connected to aerodynamic controls. Hydraulic disc brakes on mainwheels.

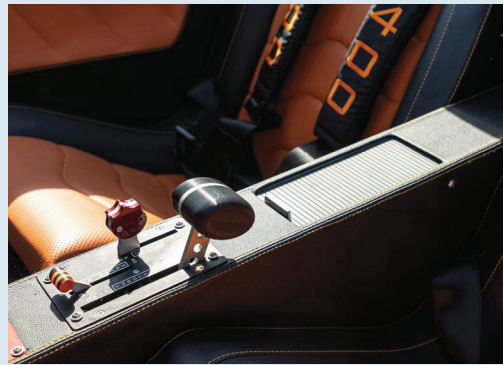
Monocoque airframe built entirely from structural aluminium and steel, all corrosion-proofed prior to assembly.

Ballistic recovery chute mounted rear of engine as standard equipment. Engine mounted on the front, driving tractor propeller.

Available ready to fly including BRS, single-tone paint + VFR avionics.

Cost £120,540 + shipping/ferrying charges.





▷ **Curves cost money**

It's also more difficult to manufacture an aircraft from aluminium sheet with sexy compound curves.

The Spitfire's curves required hours and hours of hand-forming of the skin, which made the manufacture hideously lengthy and expensive; it was an order of magnitude more expensive than the Bf109 with its simple curvature shape, and it was only much later in the war that the UK was able to obtain large presses from America capable of mass-producing the curved panels in quantity.

Forgive me for wandering off the subject, but it's an old man's privilege, I believe. Did you know that Mitchell's original design for the

Spitfire employed single-curvature wing panels similar to the Bf109, but he found that he could only fit three machine guns per side without introducing drag-inducing bulges instead of the four specified by the RAF?

The RAF insisted on four, and he found that he could only maintain the necessary drag figures in a wing of sufficient thickness to accommodate the four guns by using its iconic semi-elliptical shape.

And while I'm wandering, the larger wing area of the Spitfire made it more manoeuvrable than the 109, and the eight machine guns were far better than the fuselage-mounted twin machine guns and single cannon of the 109, as well as being easier to service. Guns slung under the wing of the 109 were tried but caused too much drag.

On such small details are icons created.



Back on the Skyleader, if you're going to use aluminium sheet, you can opt for simplicity of construction at the expense of drag and end up with a utilitarian machine like the Savannah.

The JA-400 eschews compound curves in the skins, but manages to come up with a very sleek outline nonetheless. It's a design of classic simplicity and elegance, and the smooth lines are only interrupted by the regular bumps of pop rivets holding the whole thing together.

And for the cognoscenti, this is the mark of another big advantage of the all-metal construction. Try taxiing a composite aircraft into the hangar door, and the repair bill will be eye-watering. In a JA-400, the same incident will leave a very much smaller dent in your wallet, since the offending panels can simply be removed and replaced.

The tricycle undercarriage looks a little clunky compared to some of the sleek composite or aluminium legs we are used to, but it uses rubber rings in compression – excellent for dampening the rebound if you misjudge the final flare.

The steerable nosewheel is mounted on the firewall with a leg that stretches a long way forward, minimising the risk of a nose over.

The engine cowlings are sleek, with openings reduced to a minimum – critically important in the race to reduce drag.

Under the bonnet the Rotax engine (100hp in the case of this demonstrator, but the 80hp version is also available) is a fairly tight fit, but should be reasonably accessible for routine maintenance – apart

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The undercarriage will absorb most ham-fisted landings

from the bottom plugs, which will likely require removal of the whole cowling.

The large hatches each side are retained by three Camloc fasteners which make for easy daily inspections and access to the oil tank and coolant. Thermostats are fitted to both oil and water circuits, helping to keep the warm-up time to a minimum,

and ensuring minimum temperature variations in the engine as a whole.

The fuselage incorporates stub wings with generous root fillets and the undercarriage is mounted at the outboard ends of the stubs, giving a wide track that should flatter less than perfect landings.

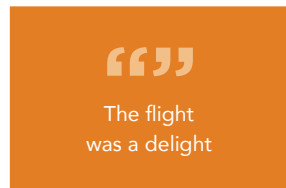
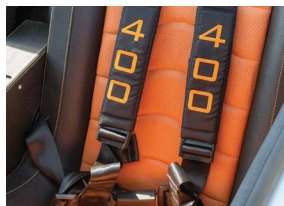
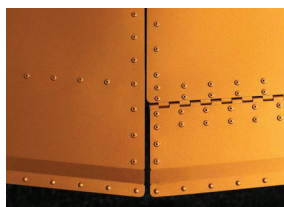
The wings proper have electrically-operated Fowler flaps mounted on hinges that stick a looong way down, giving lots of extra wing area when they are deployed.

Fuel is stored in 60lt tanks in each wing, giving a quoted range of 650nm. They're attached to the fuselage by three bolts, making dismantling for road transport very practical.

Tail surfaces are conventional, with pushrod elevator and cable rudder and an electric trim.

Entering the cockpit through the gull-wing doors is fairly straightforward using the handhold on the panel top. The seats hug you tightly, the pedals are adjustable and with the four-point harness that's easily fastened and adjusted, you're held very securely.

Headroom is adequate, even for giraffes like myself and Ashok, though I suspect that freaks like our esteemed editor might find things a little cramped. (You're sacked until I need you again – Ed.) ▷



▷ The stick and engine controls are all located on the central tunnel, so that they are equally accessible to both occupants. The trim switches are on the stick top now, which is an improvement on the previous arrangement, given the large stick forces that can be generated with trim change.

Behind the seats is a small storage compartment rated at 30kg capacity, which combined with an empty passenger seat, provided Ashok with sufficient space for all his camping equipment at the LAA Rally.

It's not accessible in flight, however, so you have to make do with the side pockets and a little cubbyhole between the seats for anything you're going to need during the flight.

It was a glorious winter day for a flight: high pressure giving cold, clear and calm conditions.

The 912 fired up immediately, and the thermostats brought the temperature above 50°C very smartly.

Taxiing is very straightforward, with an excellent lock, and the brakes are powerful enough to allow a power check.

There's no rearward view, so it would be as well to check rudder and elevator control movement before closing the doors or buckling up.

As before, the takeoff was smooth and uneventful and the flight, as before, was a delight.

I covered the flying characteristics in my previous report in June 2023 *MF*, so I shan't do so again here, but it would be relevant to mention the instrument fit, which has all the bells and whistles.

The flying instruments are Kanardia round dials for airspeed, altitude and vertical speed which contain needles and

numbers so that you can pick whichever you prefer.

There's a very neat EFIS in the middle, also in round form and a compass and the uAvionics AV20, which gives information on angle of attack, G-loads, attitude and slip – all using solid state sensors.

The angle of attack is calculated from pitch, flight path and G-loads. It was a useful addition to the display, and gave a clear warning as we approached the stall.

In the centre is an engine management display, very neat panel radio and transponder, and an autopilot.

Ashok took great pleasure in showing it off, and there's no question that it's very simple to use and very capable. It controls both altitude and course through roll and pitch commands and is capable of following a route input from SkyDemon.

It's a very competent piece of kit, and you can choose from the Dynon, Kanardia or Garmin autopilot options.

As before, the landing was a breeze, and I suspect that the wide-spaced gear and rubber suspension will absorb most ham-fisted landings.

One option not included in the UK demonstrator is the e-Props constant speed unit which should improve climb performance. The first customer machine has recently arrived from Czechia and has this option fitted.

### Conclusion

The Skyleader 400 is a very useful addition to the microlight fleet; there's nothing unusual about its design, construction or performance, and that should give it appeal to those who buy with their heads, not their hearts.

It's the product of a very long line of development, and that shows in the sensible

design route taken, and that should mean a minimum of teething problems with this newest arrival on the UK microlight market

Ashok is keen to encourage interest among instructors who may be looking to replace ageing Eurostars or C42s, and I can see them wanting to look at this new option with interest.

The price is competitive, and repair costs should be relatively light. Its undercarriage should absorb much of the stress imposed by student landings and there are no unex-

pected aspects in the handling.

Perhaps it's unwise of me to put my head above the parapet in judging character after such a very short acquaintance but Ashok's engineering background, calm reasonable manner and a 'proper' job providing his main income mean that he's more interested in providing a good service than to extract as much money from you as possible.

The manufacturer has changed to Air Operation Technologies following a takeover in Summer 2023. This has enabled

an improvement in production capacity, and new aircraft lead times are around six months.

Ashok must be very relieved to have achieved approval of the type, and will be looking forward to actually selling them.

It's always a pleasure to have a new manufacturer in the UK, and I believe the Skyleader JA-400 should do well. □

*All photos for this article by Andrzej Rutkowski.*

