John Miller, Photography by Steve Allison

SABRE EKOLOT JK-05

THERE'S LITTLE DOUBT THAT buyers of what are loosely termed: 'NTCA' light aircraft, represent a new age aviator. This is a cool individual as evidenced by the plethora of laptop wielding entrepreneurs dressed in Chinos, T-shirts, casual shoes and Oakley sunglasses that appear every other year at Germany's nine-hall Aero Exhibition. Their centre of interest seems to be the swoopy teardrop shapes that are fast emerging as general aviation's answer to Middle East stubborness (read fuel prices), US$45 dollar spark plugs, air-powered instruments and expensive and archaic big-bore aero engines. Throw in an increasingly hungry airport infrastructure, pedantic and fussy paperwork costs and poor service standards, it's unsurprising that traditional owner-flown GA aeroplanes have serious competition from upstart European designers overflowing with ideas and skill – all of it attached to the ubiquitous buzz of a Rotax engine.

Recreational flying is at a very different place than it was 20 years ago. What we do with our light aeroplanes is also changing. In South Africa, the concept of cross-border business flights has all but stopped with cheaper airline fares, prohibitively expensive airport and air traffic fees and wholesale and often misguided embrace of airline standard procedures. 20 years ago a Cessna 172, 182 or 210 buyer would be mindful of an occasional trip to the Okavango or even to Zimbabwe and Namibia – the more daring aircraft owner may have planned flights to the Moçambique islands. Poor service hasn't changed but costs have rocketed. Buyers of NTCA aeroplanes have shifted from a need to transport famillies and business associates to flying for its own sake – their aircraft can be easily manhandled out of a hangar and are safe enough to share the experience with friends. Importantly, when the switches are thrown, everything works, including the airline-standard array of high-technology gadgets that are part of the recreational pilot's enjoyment.

Satisfying the needs of millenium aircraft owners has been an explosion of ultralight aeroplanes – many of them from the fertile technical minds of disciplined designers formerly attached to major aerospace companies. A good number of designs have been born from within areas east of the old

Despite some growing pains, Polish builder Ekolot's JK-O5 is a satisfyingly good all rounder managing respectable performance and handling on a mere 80 horsepower Rotax. This aeroplane deserves to do very well in South Africa.

The JK's panel is simplicity itself, the layout featuring some very sensible ideas.

With one exception, all JK's in South Africa are factory built. The airframe is made using reinforced vinyl-ester resins rather than traditional epoxy resin. Vinl-ester is better suited to hot conditions and can be finished with conventional automotive products paints. New aircraft delivery periods are also shorter.

themselves have had to come to terms with the tragic loss of two of its test development aircraft and crews. According to Jerzy, the aircraft were being flown well beyond their Vne resulting in two in-flight break ups. The aircraft, being flown without flaperon mass balances, experienced flutter. All aircraft imported into South Africa have outboard mass balanced flaperons – later models being built with a slightly shorter wing as well as inboard mass balances.

The JK-O5 is imported into South Africa by Tedderfield (neé Solitude airfield) – based Sabre Aircraft. Sabre is run by Richard Stubbs and Denis Southby, who have established a very smart premises that includes a small hangar and office site adjacent to the single tar runway. Richard and Denis are also agents for the Czech Sabre Master all-metal ultralight, otherwise known as the Kappa in Europe. Five JK-O5s are happily flying in South Africa – all of them imported in kit form and available either for home completion or by Sabre themselves.

Flying the JK-05

The JK follows classic ultralight composite design criteria resulting in the now traditional tadpole shape for these types of aircraft. The aeroplane has a particularly attractive form broken only by the slight upper protrusion of the cowl around the engine reduction gear. The JK's low stance is no hinderance to entering the cockpit via a pair of gullwing doors that open clear of the leading edge. Getting in is simple by sliding in backwards into the wide cockpit and beautifully sculpted seats. I'm not a great fan of centre-stick controls but understand their widespread use in an effort to simplify and lighten an aeroplane's structure. As centre-stick configurations go the JK's is one of the better ones and is positioned much like a sports car's gear lever at just the right distance from the reclined seats. On top of the stick are five buttons, the two on the left commanding trim and the two on the right flaps. A centre button is used for the radio's push-to-talk. The system works well and although it might cause a moments confusion to those new to a JK, I would imagine feeling for the right button would quickly become instinctive. Interestingly, there's no elevator trim surface – adjustments are made to the flaperon itself – a clever way of reducing complexity and weight – and it works very well.

I like the cockpit – it felt comfortable and roomy for this class of aeroplane. The panel is split by a prominent section designed to take any choice of avionics and the primary flight instruments are laid out in front of the pilot with a collection of analogue engine gauges gathered on the right hand side. Easy to see on the centre pedestal is a big battery isolator located next to the fuel selector. The fuel switch handily covers the start button when in the off position. A yellow knob provides welcome cabin heat. Although there is a big fuel tank sight gauge between the two front seat occupants there is a further analogue fuel gauge on the right hand panel. ZU-DTH, Sabre's demonstration aircraft, is perhaps unusual with its low-tech panel. However,

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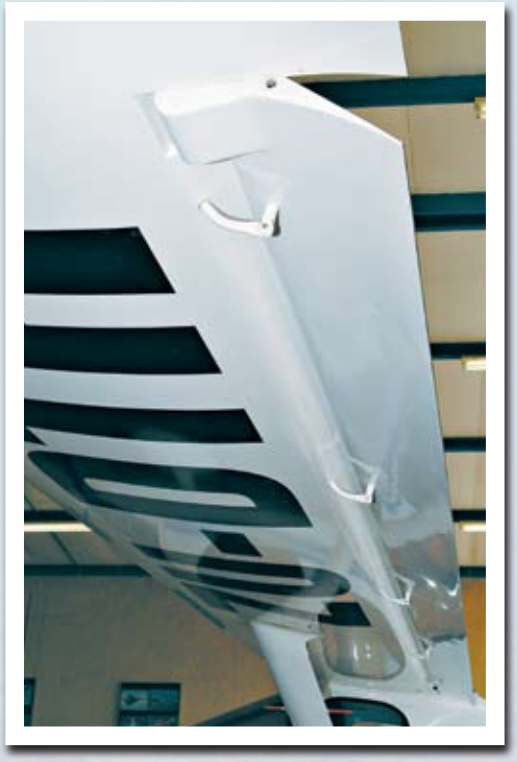
Left: Brake lever position is emminently sensible and should be adopted by other ultralight makers.



Right: Future JK's will benefit from two mass balances in the flaperon control surfaces.

'Iron Curtain', where composite construction methods have been irrigated by a robust gliding community. Their impact has been felt from across the globe, in particular, America, which has been caught on a backfoot by European ultralight regulation. The US has been absorbed in meeting the demand for new technology by designing composite aircraft within the same size bracket as traditional manufacturers. Others in the States have merely re-marketed and tweaked their products to be more attractive to owner-pilots. Cessna is a prime example and spurred by the remarkable success of the Cirrus as well as changes to their light aircraft regulatory framework, is only now embarking on major new-technology aeroplanes.

One small company that joined the ultralight revolution a while back is Polish manufacturer, Ekolot. Based in Krosno in southern Poland, the company is only a short distance from its designer, Jerzy Krawczyk's past employer, PZL Mielec (pronounced 'meal-itz'). Jerzy is a graduate of Warsaw's University of Technology and studied at the Faculty of Power and Aeronautical Engineering. He eventually joined PZL and was heavily involved in developing the ill-conceived but cleverly engineered PZL M-15 jet-powered biplane cropsprayer. The M-15 used engine bleed air to blow out the hopper's contents. After a stint involved in developing the M-18 Dromader's control surfaces, Jerzy left PZL in 1977. During the eighties he designed the PZL Krosno KR-O3a 'Puchatek'– a two place all-metal training glider, the company building over 200 aircraft, some of which were sold overseas.

Ekolot was founded in 1999 with commercial expertise provided by Henryk Slowik. Jerzy had by this time turned his attention to composite technology and the new company launched their JK-O1 Elf motorglider, soon followed by the JK-O3 'Beetle' ultralight, the latter first flying in November 1999. The JK-O5L 'Junior' followed two years later, first flying in August 2001. Six JK-O3s were built and around 60 JK-O5s have been completed to date. The JK-O5 has not been without its growing pains. With legislation mandating weight, ultralight aircraft are just that – very light. In almost all cases, new ultralight aircraft, including the few all-metal models, are designed around limited engine power. There have been cases where aircraft have been damaged having been flown well beyond their book Vne figure. One particular model – a VLA motorglider, can be easily flown through its Vne number in a modest descent and cruises well within its yellow-arc manouevering speed like many ultralights. Ekolot

Sabre Aircraft have got the all important upholstery fit right and the aircraft benefits from extremely comfortable seats. 80hp Rotax is more than adequate.

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there is plenty of space for almost every current avionic and instrument gadget and owners need not worry about fitting a Dynon, Trutrac autopilot or comprehensive GPS/radio suite.

I must confess to being partial to Rotax's 100HP products if for no other reason than being based on the highveld. It was with some concern to me when Denis pointed out the JK is fitted with a standard 80hp unit. I need not have worried. The Rotax characteristically burst into life instantly and chattered away for a few minutes whilst we watched the temperatures come up. I then taxied across the grass to backtrack to Tedderfield's runway 29 threshold. The brakes are operated by a motorcycle-type lever attached to the front of the stick – this arrangement works very well and enables the pilot to keep a hand on the control stick whilst the other hand is on the throttle. The typical floor-mounted lever-type braking system in many ultralights requires the removal of one hand from either of the other two important controls whilst on the move – a poor safety feature. Moreover, the JK's brakes are powerful and progressive. However, any turn on the ground is entirely dependent on the nosewheel travel and the JK, like many aircraft in this class needs a modestly sized area to swing around.

With the run up and pre-takeoff checklist completed we lined up and applied full power. Visibility over the nose is tremendous and in a surprisingly short distance, which immediately quelled any doubts over the 80hp engine, the aircraft was airborne and climbing away strongly towards the west to meet up with Carl Dollenberg and photographer Steve Allison in the SA Flyer Cessna 182.

Closed up in formation with the Cessna, the JK-05 exhibited excellent handling qualities. Although there is some noticeable control friction – unusual in an ultralight with pushrod controls, flaperon, elevator and rudder input are nicely harmonised with quick pitch, yaw and roll response. The JK was easy to fly formation – always a good indication of sound aerodynamics and control system design. Trimmed correctly, the JK is also stable in pitch and neutrally stable in the roll axis. The slightly high control friction discourages any urge to throw the aeroplane around and the aeroplane's stability level makes it a very comfortable aeroplane in which to sit back and watch the world go by. This is an ideal platform with which to cover lengthy distances, especially with such an accommodating cabin. Many ultralights are let down by poorly upholstered seats and I would imagine there would be almost no 'flat-bum' syndrome after two or three hour sectors.

Denis Southby (left) and Richard Stubbs have worked hard to establish the JK-05 in South Africa.

Furthermore, the little 80hp Rotax can be extraordinarily frugal, returning as little as nine or ten litres per hour if throttled back to an economy setting – on mogas too! With a 60-litre capacity, the JK-05 can stay in the air for a long time.

Although the JK will cruise at 200kph (108 knots), this is at the top of the aeroplane's red arc and would probably be uncomfortable for most owners. A more pleasant pace would be at around 160 kph (86 knots). Here the airspeed is unplacarded – anything over this, including the short yellow-arc manoevering speed band up to 180 kph (97 knots) and the handbook warns against using more than a third of the full range of control stick deflection.

Photography complete, Denis and I went through the stall regime in clean configuration and with full flap, carrying a little power into each break. The elevator is happily powerful enough to produce a full stall and on each occasion the aircraft rolled off to the right with little drama. Recoveries with minimal height loss were straightforward following opposite rudder and an application of power.

We returned to the airfield to make an approach to runway 29. Tedderfield's pilots will warn newcomers to the windshear surprises when landing on 29 as we returned there was some uncomfortable turbulence below the level of the high ground to the east and south of the airfield boundaries. These are ideal conditions to scare off ultralight pilots but the JK handled it well, its great control response and good view shrugging off the bumpy conditions. With 15-degrees of flap, we made light of a gentle crosswind condition and easily braked to a stop on the roll out well before Denis' hangar. The aircraft is a delight to land with more than enough elevator authority to flare, hold off and touchdown like any high-wing Cessna.

I must confess to expecting some compromises with the JK, especially with its handling. However, it was very reassuring to see that low-cost does not mean low quality. The JK-05 is amongst the less expensive ultralight aircraft but it comes with many clever but simple ideas. I was very impressed with its high level of comfort and gentle but responsive handling. For those wanting to travel distances at a sedate pace as well as regular local flipping, the aircraft must surely be a prime choice at the lower end of the price scale. I look forward to flying Ekolot's latest cantilever wing JK-05 derivative, the new Topaz – a another handsome tear-drop shape that deserves great success in South Africa.

Ekolot JK-05 Junior

Engine	**80hp Rotax 912UL**
Propeller	**Aero Sail 3-blade composite ground adjustable**
Seats	**2**
Length	**5.95 m**
Wing Span	**10.56 m**
Height	**3.3 m**
Empty Weight	**617.4 lbs (208 kg)**
Max Gross Weight	**1058.4lbs (480 kg)**
G Loading	**+5 / -3**
Fuel Capacity	**60 L**
Range	**700 km**
Maximum Speed	**200 kph**
Cruise Speed	**180 kph (75% pwr)**
Vne	**210 kph**
Agents	**Sabre Aircraft**
Contact	**Denis: 083 329 9312**
email	**richardstubbs@mweb.co.za**
website	**www.aircraftafrica.co.za**
Price	**Eu 42,500 + VAT & shipping**