Aeroprakt A22LS Foxbat – Praktically magic

Ukrainian manufacturer Aeroprakt has had its Foxbat on the market for a few years, but they've recently remodeled the aircraft for the LSA category and released it in Australia. ***Steve Hitchen*** *took one for a fly.*

If you placed an Aeroprakt A22L Foxbat and its newer A22LS counterpart alongside each other, it would take a sharp, practised eye to pick the differences. Externally they could be twins, but after 30 minutes of crawling over the A22LS you come away armed with a new perspective. Regardless of what it looks like, this is a new aeroplane.

But lovers of this intriguing, docile yet nippy little aircraft will still find enough of the original character retained to keep them happy. The design changes were made so the Foxbat could be certified to LSA, not because the original was lacking.

The advent of the Light Sport Aircraft category in 2005 had recreational aircraft manufacturers reaching for their slide rules to make sure they had a product to meet the new regulations. Under LSA, recreational pilots could fly up to 600kg take-off weight if the manufacturers so certified it.

Where some builders created completely new aircraft, Ukranian company Aeroprakt beefed-up their Foxbat and recertified it to the new code. The result was introduced to *Australian Flying* by Foxbat Australia's Peter Harlow.

"I expect this will be our biggest seller, at least in Australia where weight-carrying and fuel capacity are often important," he predicts. "Since May 2009 I have taken 18 orders for the A22LS and only one for the A22L. However, the A22L is a lighter, more nimble aircraft, which will appeal to single-operator station owners. In 80hp engine form, the A22L is still the main seller in Europe and the USA."

It is unlikely station owners will shy away from the LSA version either. With superb all-around visibility and an affinity for slow flight, the new Foxbat is expertly tuned for low level operations.

Walking around

The first thing that hits you about the A22LS is the high-camber wing that presents a leading edge like a bull-nose verandah. It doesn't look aerodynamically spectacular but it is critical in the lift characteristics of the aircraft. The high wings are also swept forward, not a common feature in light aircraft. Clever design or serendipity? Harlow explains.

"At the design stage [designer] Yuriy Yakovlev wanted the A22 to have a more streamlined, steeply raked windshield than more traditional designs such as a Cessna 150. This required the wing roots to be further back.

"To keep the centre of gravity (CoG) where it should be, it was decided to sweep the wings forward slightly. The effect of this was to increase the wing chord and give a wider CoG range. By-products of this are the very benign stall characteristics and the unusual look of the aircraft."

Along the trailing edge of the wing Aeroprakt has installed flaperons, or "drooping ailerons", as they are sometimes called. As the name betrays, they are a combination of flap and aileron that run the full length of the wing.

"The flaperons on the A22 are slotted flaps," Harlow points out. "There is a substantial S-shape gap between the flaperon and the trailing edge of the wings, which helps the air stick to the wing better in slow flight when the flaperons are lowered. This reduces the stall speed and gives the wing extra lift.

"Overall, this design of control surface is designed to give good control responses right down to stall speed, making the aircraft safe and easy to handle at slow speeds."

Pop the hood and you will immediately find yourself on familiar ground - the power plant is the everywhere Rotax 912 ULS. With 100hp spinning the prop, the A22LS will cruise at 85-95 knots at 75 per cent, drinking about 18lph. A quick look through the registers shows that nearly three-quarters of LSA models are fitted with this engine, and you don't get a score like that if your product is not up to scratch.

Bolted to the Rotax is a three-blade carbon fibre prop that can be adjusted on the ground, but only through a mind-bending set of instructions that include the use of a protractor. This is the standard unit, but any prop that is suited to the ULS engine can be fitted.

On the construction side, Aeroprakt's engineers have resisted the urge to go sick with composites and have been very selective with what materials they used where.

Forward of the spar the wing is aluminium, which completes the wing torsion box. Aft of the spar the skin is metal on the topside and fabric on the underside. This makes

LEFT TO RIGHT: The bulging windows in the doors are great for visibilty and elbow room, but they hang lower under the wing, which reduces head room for entry and exit.

Aeroprakt chose the ubiquitous Rotax 912ULS to power the Foxbat.

A 'fourth wheel' under the tail helps prevent tail strike on take-off.

Convex doors increase visibility and make for a 128cm wide cockpit.

the wing stronger and gives it better resistance to weathering.

The control surfaces are covered with synthetic fabric, whereas the fuselage is all metal. Composite materials have been used for the engine cowl and the wing tips.

"Aluminium airframe construction has the great advantage of years of reliable data on fatigue and stress," Harlow explains. "It remains the metal of choice for commercial airlines and military aircraft. Many experts feel that aluminium construction will remain the mainstay of light aircraft construction for the foreseeable future.

"However, Aeroprakt has used other materials where appropriate to end up with a structurally rugged aircraft with pleasing design finishes to the cowlings and wing tips which could not be achieved through aluminium alone."

A major difference from the 22L is the beefed-up undercart to cope with the 600kg MTOW. The main gear is of the cantilever spring type and is fitted with disc brakes. Up front, the nose wheel has had an upgrade with a trailing link and an oleo strut and is steered from the pedals via a bell crank on the strut. The L model has only the strut.

the philosophy behind the cockpit design is immediately obvious: to maximise vision in all quarters. The panel does not run the full width of the windscreen, leaving Cirrus-like peering spaces down either side. You will find yourself surrounded by more plexiglass than metal.

Bulging windows enable you to look past the door frames and lend some credence to claims of, "helicopter-like views". The trade-off is reduced headroom during entry and exit; the bulges mean the doors necessarily hang lower under the wing than, for instance, a Gazelle, and that requires some negotiation.

"Having the brakes within easy reach means you don't need the coordination of a street performer to taxi"

An option for the A22LS is a parachute recovery system, either a BRS Softpack or Magnum Highspeed. The unit is attached to the inside right of the airframe and when fired will bring you and your Foxbat floating back to earth beneath a canopy. The final outcome, however, is usually not good for the aeroplane.

Belted in

Pilots well-versed in the graceful art of entering a recreational aircraft bum first will easily adapt their technique to the Foxbat; the tricky throttle location proving the only challenge. The knee-high flying position will also be familiar, with no nasty surprises in cockpit comfort.

Once you are settled into the seat,

The control is a centre-mounted Y-stick with electronic trim, hand-operated brake and push-to-talk mounted in the handle. Having the brakes within easy reach means you don't need the co-ordination of a street performer to taxi; there is no need to let go of the throttle to operate the brake.

It is the throttle location that draws most criticism; it is mounted next to the lower door jamb and forms an obstructive protrusion on entry and exit. In flight, however, it is a better location than on the panel or in between your legs.

If you are keen on twin yoke controls, they can be specified as an

LEFT TO RIGHT: To meet the new MTOW of 600kg, Aeroprakt added muscle to the nose gear.

Claims of "helicopter-like" visibility are not without justification.

Electronic pitch trim, push-to-talk and hand brake lever are all contained on the Y-stick control column.

At max take-off weight, the Foxbat will climb at 800 feet per minute.

option, in which case the throttle and hand brake are relocated to the centre console, with the brake lever hinged on the throttle. Going down this path will, of course, incur a hit on the basic empty weight.

Let's fly

Peter Harlow lined-up Foxbat 7250 on Tyabb's runway 17. Upon applying full power he pulled the stick back to unload the nose wheel. In this toffy-nosed attitude the little plane ripped down the runway and levitated smoothly into the air. The take-off roll had consumed all of 10 seconds and most of the runway was still under the spinner.

"Took a bit longer than I thought it would," he murmured. "There are two of us on board."

In this take-off attitude there is a real danger of a tail strike, so Aeroprakt wisely fitted a fourth wheel mounted on a bearing in the tail. This prevents damage in the event of contact with the runway, but Harlow warns the spinning wheel can set up an evil vibration in the tail. Not serious, just annoying.

After turning east and clearing the CTAF, Harlow trimmed for a 500fpm climb at full power. The airspeed settled at 65 knots and the trip to 2000ft was done hands-off. The ASI needle may as well have been painted on for all the fluctuation in airspeed.

With Westerport Bay sliding under the starboard wing, Harlow lowered the nose and set the Foxbat for cruise: 4800-5000rpm and 90 knots. With the throttle fire-walled

you will squeeze out another 10-15 knots, but the ride is much smoother with the Rotax backed-off a bit.

Naturally for this class of aircraft, controls have low resistance and the Foxbat reacts to changes of pitch, yaw and roll briskly and without complaint.

But when the airspeed starts to drop off and you find yourself at 50 knots you suddenly understand why this plane has been built. At slow speeds it handles like a kite and has a turning circle the diameter of a whiz wheel!

At 50 knots most GA pilots are starting to get cold shivers, and ideas of steep turns at that speed are greeted with bug-eyed terror. For the little Aeroprakt it is money for jam. Suddenly the stick is light as a feather and the aircraft responds like a dream. Rolling from left to right at bank angles exceeding 45° is great fun and there is still plenty of margin above the stall. You get a feeling of complete command over the aeroplane.

If you have a go at stalling on purpose, you will need to wait until the airspeed is at 36 knots with flap before you find out that the stall is indeed benign and – if you're a thrillseeker – completely anti-climactic.

"If you're into glass, Aeroprakt will fit a Dynon D-180 flight deck and Garmin GPS 296"

Back at cruise and the controls seem to gain a bit of weight because of the faster flow of air over the surface, which gives rise to a feeling of 'reluctance' in roll. How quickly we become spoilt!

The trip back to Tyabb gave Harlow the chance to go over the panel.

The standard fit is the usual analogue instruments (the demonstrator did not have an AI fitted) for flight and engine monitoring with a Microair M760 VHF radio and T2000SFL transponder. Customers can, however, specify almost any equipment that can be made compatible.

Alternatively, if you're into glass, Aeroprakt will fit a Dynon D-180 flight deck and Garmin GPS296, giving the little Foxbat an 'airline' feel. A traditional altimeter and ASI are still installed in this case.

Getting down

Flying this machine is so enjoyable that it almost seems disappointing to have to land it, but even that stage of flight hides no nastiness.

Normal speed on final is 55 knots with one stage of flap out, with the second stage being reserved only for short-field landings. As it is, the roll-out is so short that it makes you wonder if a second stage would ever be needed. After all, what sort of runway have you chosen if you need to approach at 49 knots with two stages of flap?

The visibility over the nose is almost panoramic, but like most aircraft it reduces markedly if you come in without flap and an extra five knots on the clock. In any configuration the Foxbat settles meekly onto the runway, even if you get it all a little out of whack. The

LEFT TO RIGHT: The flap lever is located in the centre of the roof and has three staga: nil, 10 and 20 degrees.

The A22LS Foxbat cruises at 90-95 kts.

With a take-off roll of around 10 seconds, you don't need a lot of runway to operate safely.

At speeds as slow as 50 knots, turns over 45 degrees bank angle are easy.

ability to make adjustments to the flight path with very little control input makes holding the ideal profile much easier.

According to the manual, the maximum crosswind allowable for the A22LS is only 14 knots, but you get the feeling that, flown with some skill, it could cope with a bit more if it really had to.

Ask an expert

One acid test of how well an aircraft handles is to fly it in a close, professional formation. To do the photo shoot for this article, Peter Harlow entrusted the A22LS to experienced formation pilot and flying instructor Murray Gerraty. It was the perfect opportunity to get a second opinion on the aeroplane.

"I found the controls very responsive, no doubt due to the large control surfaces," Gerraty commented. "The lightness of the controls can make setting the trim a little tricky, but that would come with time.

"The vision is amongst the best around, with some obstruction only at the two o'clock and 10 o'clock high positions. It climbs magnificently at max weight and 800 feet per minute, and has a large speed range: 50 to 105 knots.

"In landing the round-out and hold-off are easy, and it has a good firm feeling once it is on the ground. The only negative I found is that the seating position is slightly skewed, with the rudder pedals close together in the centre of the frame.

"However, I would rate this one of the best 'ultralights' I have flown so far. It would make an excellent training aircraft."

Training certainly is one task the Foxbat would do well, but it is also certified for glider towing and, if VH-registered, for night visual work. The fate of the demonstrator was to have floats fitted to it and spend its days splashing around Australia's waterways. That immediately gets the benefit of a 650kg MTOW under LSA rules.

The finishing touch

Light sport aircraft are intended to be easy to fly, fun, reliable and safe. You can tick those four boxes for the A22LS straight away. With very few vices and none of any consequence, Peter Harlow and Aeroprakt are probably justified in believing the aircraft will be a success in Australia.

For sure, new aircraft buyers would do themselves a huge disservice by not at least giving it a close look.

Specifications

BEW (standard model)	295kg
MTOW	600kg
Cruise at 75 per cent power	90-95kts
Stall speed (clean)	45kts
Stall speed (with flap)	36kts
Engine	Rotax 912ULS 100hp
Fuel capacity	89 litres usable
Fuel consumption	14-18lph
Estimated range	Approx. 525 nm at 75 per cent
Price	AU$105,000 including GST