

# CESSNA'S LSA

This could be the aircraft that attracts a lot of additional students who wouldn't otherwise become pilots - but only if it flies right

Words Nick Bloom Pictures Cessna and Nick Bloom



**T**welve hours in Economy (including two waiting for a connecting flight), five hours of snatched sleep and thirty minutes struggling with an inadequate map and a road system that seems designed to confuse, but I'm here. Jetlagged, five minutes late, but I've made it. This is one appointment I really didn't want to be late for.

I'm to fly the Skycatcher.

What makes this little two-seat aircraft so significant that I'd drop everything and dash to Florida just to fly it?

This could be the trainer that gives flying a shot in the arm, just as the Piper Cub did in the 1930s, the Cessna 150 five decades ago and the Robinson R22 in the helicopter world in the Seventies. I'm dying to know: has Cessna produced a marvel or a dud? Because if it's even three-quarter-competitive with the best light sport aircraft, the power of the Cessna brand (1,000 advance orders!) should see its sales outnumbering all the others combined. And that's what aviation needs: economies of scale to really bring down the price of learning to fly. Cessna set out to design an LSA that would be cheaper than any of the established leaders in the LSA market, so its price is already low.

It is conceivable that the noises the FAA and EASA have been making recently about allowing LSAs to be fully certificated rather than Permit aircraft have come about directly because of Cessna's entry. They can see the Skycatcher's potential.

What I've heard so far is certainly promising. Cessna chose the lightweight 100hp version of the old air-cooled, flat-four Continental clunker over the more sophisticated but arguably more delicate Rotax. Personally I think the Continental's deeper note sounds better.

Cessna has chosen to have the Skycatcher manufactured in China, which is an inspired way to keep the price down without sacrificing build quality.

The aircraft comes with all the latest 'must-haves': flatscreen instrumentation (the Garmin G300) and options for a ballistic parachute, emergency locator beacon and two-axis autopilot. It's even fitted out for night flying – the landing light is in the left wingtip.

We knew from the static model at airshows that the cockpit would be big enough for a trainer. The two spin crashes during development I found reassuring, because it shows that Cessna was genuinely looking for dark corners in the flight envelope and wasn't just 'ticking boxes' in order to achieve certification.

But none of this is any good if the Skycatcher doesn't feel right and that's why I'm here. I want to know how it flies and for this I have an agenda. It has to be a good training aircraft that can demonstrate all elements of the training syllabus. It must be forgiving and rugged enough to withstand the rigours of flying school life. Finally, there are some very good LSAs out there already, so if the Skycatcher can't match their handling qualities and performance, we might as well forget it. It's got to have that same feeling they have, that whether in the cruise or in the circuit, you're flying a thoroughbred.

Cessna's senior pilot Kirby Ortega joins

me and we begin with a walk round. This is my first really good look at the Skycatcher. Seeing the static model at airshows was interesting, but a poor substitute for the real thing.

### **SWING, DON'T TWIST**

Some features I find surprising, even daring. Top of the list is the control for pitch and roll. Until now, you could have a yoke or sidestick that you pulled and twisted, or a stick that you swung from side to side and back and forth. Cessna has come up with a novel variant and it truly is something new, at least in my experience. It's a stick, but it comes out of the instrument panel instead of the floor. You pull and push for elevator in the usual way, but you swing it from side to side instead of twisting it for roll control. Close your eyes and it manoeuvres like a floor mounted stick. Look at it, though and you could be confused and waste effort twisting.

This is ingenious, all the advantages of a joystick, but without the squandered space. →



**"SOME FEATURES ARE QUITE DARING, LIKE THE UNUSUAL CONTROL STICK, DIFFERENTIAL AILERONS AND BARE INTERIOR"**

Second surprise is the large flap lever between the seats. I like flap levers because switches are fiddly and can be hard to locate in the heat of a difficult approach, but a lever is going to seem rather dated to some people. The elevator trim control is, however, electric. I'm guessing the reason is weight: a flap motor is heavy, a trim motor light. There isn't a back-up manual trim.

The car-type doors of the 152 and 172 have definitely been bettered by the doors in the Skycatcher, which swing up under the wing. Being on gas struts, they stay there. You can open them to let in the breeze when taxiing, but they have to be closed in flight. Another clever novelty (and why didn't anyone think of this before?) is to have the window area on the right door extend lower to improve the view from the left seat down and to the right.

Cessna has made another brave decision. This is to manage without any carpets or panelling inside the cockpit. Painted matt

black, the interior thus exposed looks functional to the point of seeming military. You can see every rivet, every screw head, every bolt. I ask whether this is because it's a demonstrator, but no, says Kirby, this is how every Skycatcher's interior is going to look. And after a moment's thought, I realise that functional-looking is the way to go. The days when people wanted the reassurance of

Cessna's simple colour scheme is very effective and the Skycatcher can't be faulted on its exterior looks.

Gone too from the 152 and 172 are the sliding seats, which were a bit of a pain, at least once they'd been put through a thousand work cycles in busy flying schools. The Skycatcher's seats hinge forwards so you can put stuff under them, but are otherwise fixed.

## "THE SKYCATCHER'S INTERIOR LOOKS FUNCTIONAL, ALMOST MILITARY, BUT I THINK STUDENTS WILL LIKE THAT"

aeroplanes that felt like cars are behind us. The Skycatcher is a pure flying machine and I think students are going to like that, even find it glamorous.

The interior may look functional, but I think you'll agree from the photographs that

Tall and short people are accommodated instead by having adjustable pedals. Twisting a big knurled knob slides the pedals back and forth, and knob and pedals all look sturdy, which for flying schools they would certainly need to be.



Manual flap lever, fixed seats, upward opening doors and unusual control sticks. Note enlarged window in right door



Sturdy and well-designed nosewheel suspension



Control cable is fixed to this pulley wheel which deflects the aileron



Pedals are strong and easily adjusted with a knurled wheel. Toe brakes have good geometry

My third major surprise in the Skycatcher is the ailerons. Like the manual flap, Cessna has taken what seems like a retrograde step. To my surprise, it's fitted with differential ailerons, which I thought went out with the Tiger Moth. I say to Kirby something about seeing how they work at low airspeeds. Kirby returns a faint, confident smile. The aileron cable runs around a pulley wheel in each wing that deflects the aileron via a pushrod attached to the wheel. That's ingenious, I tell Kirby; never seen that before.

The tail surfaces have indications of some post-prototype modifications. Firstly, there's a ventral fin to give more keel area and secondly what Kirby calls a 'gurney strip', a 'T' on its side stuck on the trailing edge of the elevator trim tab. Evidently the elevator was considered too sensitive and the strip makes it self-centre. And quite strong springs have been fitted to increase rudder forces. Since the rudder has an aerodynamic balance (as does

the elevator) this also suggests a later modification. No matter, as long as it feels right in the air.

The noseleg is free-castoring, which seems sensible to me, because steering links and the complications that follow from fitting them were what gave rise to the 152's other weakness: a tendency to shimmy violently if you braked hard. I lie on my back under the nose to have a look at the noseleg mounting and suspension. It looks tough, steel tube on a rotating arm with rubber biscuits in compression. Strength here is vital in a trainer.

It's time to climb aboard and go flying. The wing struts are mounted behind the doors, which means that you don't have to negotiate round them (as you do in the 152) to get in. The seat is quite a lot nearer the ground than in a 152, so there's no need for a step, just park your rump and pull your legs in after you. Easy access to the cockpit is important in a flying school, where first impressions count.

I reach up to the strap on the door and pull it down. At Kirby's suggestion, I pull toward the back of the strap, which helps the rear door catch to park when I secure the door with its locking lever. The doors work well and seem durable despite their obvious lightness. They are made from fibreglass, as are the engine cowlings and some other minor components, but there's no carbon fibre anywhere and the airframe is stressed-skin aluminium with steel tubing for the engine mount and undercarriage. Even the seats are made of riveted aluminium (have a look when you get a chance, because someone's done a very neat job).

## **BRAKES THAT DON'T DITHER**

Being short-of-leg, I wind the rudder pedals fully aft. The pedals have toe brakes fitted and I really like these, because you have to swivel your feet through a good five degrees to make them work and then their geometry makes it possible to push really hard. So many aircraft have dithery brakes that are too easy to push on when you don't want to and difficult to shove on when you do.

However, I'm not so enthusiastic with the seating position. I would prefer to be nearer the windscreen and not so far back in the cockpit. I also feel that the windscreen could have been extended rather higher. One of the 152's weaknesses was the inability for students to see into turns, and I'm afraid the Skycatcher has that too, though less severely. However, I am only 5ft 8in and possibly a thin cushion under my bottom and another behind my back would correct the problem. Also, I cease to be aware of it once we're in the air, so it's hardly serious.

The side windows are very generous and those rear windows enable me to swivel in my seat and see the tail. Navigation won't be hampered in the Skycatcher by a poor view.

Also generous is the cockpit, which seems (and is) considerably bigger than in a 152 and has a nice, spacious feel to it. As in the 152, there is a large area behind the seats for dumping training paraphernalia such as charts, spare headsets and the instructor's sandwiches (there's also a zipped pocket on each door and a pair of cup holders on the centre console). To save weight, the 'bulkhead' sealing this shelf from the rear fuselage is made from netting. A roof window behind the wing lets in additional light. For cruising, the shelf is big enough for a couple of overnight bags. It has a 50lb weight limit.

British instructors in my experience have rather a fetish about students making a visual check of the fuel contents. In the Skycatcher, the instructors will either have to carry some lightweight steps in the aircraft or accept that the ritual of unscrewing the tank caps before each flight is redundant. The ritual's no longer necessary because, in place of the 152's notoriously unreliable panel gauges, the



Generous luggage bay behind seats. Note lightweight access 'panel' and extra cushion for short occupants



'T' addition to trim tab reduces elevator lightness for smoother landings. Later models might have a neater solution



Good looks count in these image-conscious times and the Skycatcher certainly has a pleasing appearance

Skycatcher has sight tubes in each wing root. These have two sets of markings, one for 'ground' and the other for 'air'. The engine draws from both wing tanks simultaneously, so the fuel tap only has two settings: 'on' and 'off'.

After doing up our three-point harnesses, we're ready to start up. The Continental is gravity fed, so there's no fuel pump to worry about, but it does have a carb heat control. Kirby runs us through the check list, but there really isn't that much to do. This aircraft is fitted with the optional second flatscreen, so the engine information and GPS data is shown on the right... otherwise everything would be on the left screen. One option you can't have is to go back to dials, but the flat screen really is a very compact and accessible way of conveying information. On the demonstrator the right screen shows a map of the airport giving our position on the taxiways, which will be a great help for students, though possibly spoiling them if the next aircraft they fly doesn't have it and they have to resort to a paper map.

I notice that the screen also shows elevator trim position. Not seen that before either.

#### **GREAT IN A TIGHT SPOT**

Taxiing is standard for a free-castoring nosewheel: rudder is fine for keeping straight down taxiways, but you need brake to change direction. Brake hard on one side and you get a turning circle within the aeroplane's own length. I know schools in

the UK with cramped parking areas where this will be a big selling point.

Taxiing provides an opportunity to evaluate the undercarriage suspension and in the Skycatcher it seems firm as regards the nosewheel and rather less firm for the mainwheels. Braking hard once we're moving barely dips the nose, but there is a slight lateral wallowing from the mains. Taxiing visibility is superb, even if I can't see over the nose quite as well as I'd ideally like.

We set first stage flap (ten degrees) for take off. The flaps in this aircraft are big and have

### **"TAKE OFF IS BRISKER THAN A 152 AND PROBABLY UP FOR 600-METRE, MUDDY GRASS RUNWAYS"**

a slot when deflected to improve their lift efficiency at shallow deflection. In the lowest of four detents they droop forty degrees, but that's only used for landing.

In a short time, we are lined up on the runway and cleared to take off. Kirby's briefing is simple: wait until we reach 50kt, then lift the nosewheel and climb away.

With no nosewheel steering I guess there might be crosswinds strong enough to begin a take off with brake, but they'd have to be pretty fierce, because as soon as I open the throttle I feel the rudder coming alive. The aircraft is slightly squirrely, enough so that

you do need to use rudder to keep straight, and the spiral airflow needs some right pedal to counteract it. That's good in training aircraft, where you don't want things to be too easy.

I can feel the centring springs in the rudder circuit and these undoubtedly help to kill any pilot-induced yaw oscillation. The elevator is alive, but not twitchy as we accelerate. The feeling is solid compared to many LSAs that feel frisky on runways.

Acceleration is brisk, brisker than in the 152, but this isn't an aircraft that lifts off as soon as you open the throttle. The run to reach 50kt is probably around 150-200 metres. Easing back on the stick gets the nosewheel off and a further aft movement gives us a clean departure. We climb at, I'd say, well over the 890fpm claimed by Cessna. Recommended climb speed (which doesn't seem particularly critical) is 60kt.

Judging by the way the Skycatcher accelerated and climbed it ought to manage on even 600m muddy grass runways, although it may be prudent to remove those fancy wheel spats in the winter.

Dumping flap produces no noticeable sink, but does alter the trim. At first I find I'm using the trim button quite a lot and tell Kirby it's a feature of the Skycatcher. Perhaps because he makes no comment I then wonder if I've been unfair and make the stall and steep turn tests and some of the touch and goes without using the trim and although the elevator does get a touch heavy at times, it's never a problem.

Once we're clear of the airport, I roll ➔

## Flight test Skycatcher

into some steep turns and control reversals.

Control harmony is as it should be: light ailerons, medium elevator and moderately heavy rudder. The ailerons are powerful despite their being differential, which normally means a feeble roll rate. Surprisingly, in the Skycatcher the roll rate is heading towards the aerobatic class. It's certainly brisker than in the 152 and possibly a touch too light for the aircraft's training role. For some reason lateral stability isn't quite as rock steady as it might be, not that that's a weakness, just a feature of the aeroplane. Yaw stability is good and you can change heading and steer on rudder alone, so there is quite marked roll-yaw coupling.

Stability in pitch is fine, though again not quite rock steady. From a divergence the aeroplane takes a few up-and-down oscillations before eventually settling. Don't get me wrong, though; the Skycatcher has enough stability that you can leave it to fly itself for a few minutes while the student fiddles with his pilot's log or struggles to find his dropped biro.

We are flying through moderate turbulence and the aircraft rides it pretty well. It isn't the least bit skittish, but you can tell that it's at the lighter end of light aircraft.

### LEAD WITH RUDDER

Differential ailerons are supposed to remove adverse yaw, but the Skycatcher's don't, at least not entirely (they don't in the Tiger Moth, either). So you do need rudder in turns and this is one aircraft where you won't keep the slip ball centred when poling around unless you lead slightly with rudder. Trainers should have some adverse yaw so that the instructor can demonstrate the importance of rudder in turns, so this is all to the good.

So far this is shaping up to be an aeroplane that's easy to fly, but a touch challenging to fly really well, and that's exactly what you want in a trainer.

The level stall has a good, clean break with the nose nodding in a marked manner. Height loss is modest. There's no wing drop to speak of, and when I hold the aircraft in the stall to deliberately induce some roll, the dropped wing responds to aileron as well as rudder. This might be why Cessna introduced differential ailerons, because they do tend to work better near the stall. If a panicky student pulls back on the stick in a landing that's going to pieces and a wing drops, he's not going to correct with rudder, no matter how good the training.

The turning stall is not the ultra-docile kind where the aeroplane rolls into level flight, but nor is it the nasty variety where it rolls sharply the other way, dropping its nose and initiating a spin. I am rewarded with a gentle roll the wrong way and some sink, but nothing too alarming. And at this point I have the nose up, the engine burbling away at a



Dorsal fin aids spin recovery. Note how the wing strut doesn't obstruct the door, important in flying schools



Passing instructor says, "I'm too tall," so we get him to model the generous headroom and slightly reclined seating



Massive flaps were one secret of the C150's success and a feature that also appears in the Skycatcher

quarter throttle, the wings at seventy degrees and I'm pulling hard on the stick, conditions a student is unlikely to meet by accident.

Full flap greatly delays the stall and transforms the aeroplane into something like a spotter aircraft, with an ultra-slow loitering speed. It's still pretty manoeuvrable and can turn tightly over a landmark without losing height at sixty per cent power. I fiddle about a bit, trying to find something alarming in the full flap behaviour, though this isn't the time or the place for a proper test. What I'm actually seeking is reassurance that there won't be any surprises in a full flap landing and as far as I can tell, there won't be.

This really is a very pleasant little aeroplane, light, manoeuvrable and with a terrific view, especially down to my left – I can look straight down. Making steep-turn figures-of-eight at speed without flap or at

60kt with flap (but trimmed out) is a joy. Students are going to fall in love with its pure flying qualities. However, some of the manoeuvrability has been tempered out in favour of stability, and that balance does seem to be about right.

The cruise rpm with this engine is 2,600 and at 2,000ft on an average day this brings in a cruise speed of 108kt, burning six US gallons an hour. That's good and fast for a primary trainer, where you don't want to waste too much time just getting there when teaching navigation... just as the Skycatcher's healthy climb rate will be an asset for upper air training.

Incidentally, the aircraft will take two 200lb adults with enough fuel for two-and-a-half hours' flight and has already carried a six-foot-three passenger, who still had plenty of headroom. Flight schools shouldn't have to



The right screen is optional (like the PLB and parachute), but early indications are that most customers will take it. Having two screens gives redundancy should one fail



Upward deflection makes yaw coincide with rudder (not entirely; some rudder needed)



Even with full left stick the downward aileron barely deflects (thus differential ailerons)

turn anyone away just because they're the wrong shape.

We've reached the small airfield that I requested for some touch and goes. It's quiet, with no traffic, which means I can make tight circuits without bothering anyone. Also, it's a

## "STUDENTS WILL LOVE THE GREAT VIEW AND BRISK HANDLING, YET THE COMPROMISE WITH STABILITY SEEMS ABOUT RIGHT"

1,500m runway, about as close as I'm going to get to European conditions out here.

The flap limiting speeds are progressive – quite high for first stage and quite low for full deflection. I make the first approach clean, dumping flap progressively. You can do this without using the trim button on the stick,

but it's easier if you trim for each stage of flap. The view over the nose with flap is fine. I've stopped even thinking about it.


The aircraft is stable during the approach and it's easy to keep it flying steadily, yet despite doing most of my flying in aeroplanes

with low approach speeds, I allow the speed to rise in the Skycatcher. It ought to be 65kt and it's risen to 75kt, which somehow feels more natural. Not wanting to lose a perfectly good approach, I get around this by raising the nose – which puts us too high – then sideslipping to kill the height. The fairly gentle

sideslip I use does the trick nicely. This is with 25 degrees flap, and dumping 40 gets us suitably low and slow for crossing the runway threshold. (There's a busy road to cross, which puts me on my mettle.)

Rounding out is accomplished smoothly, but I'm aware as we skim down the runway of a slight tendency to wander up and down. The elevator isn't too light, it's the aeroplane's lack of weight that makes it a touch over-responsive. This is the best elevator control for teaching landings that I've met in an LSA. Our passage is actually pretty smooth and when the mainwheels touch, it's a gentle contact.

### NO NEED TO HURRY

We roll long enough for the nosewheel to drop, then open the throttle, Kirby raising flap for me to the first position as we accelerate. On this runway (which has trees and )

## SPECIFICATION

### CESSNA 162 SKYCATCHER



#### DIMENSIONS

Wingspan	30ft
Length	22ft 10in
Height	8ft 4in
Cabin width	44in
Wing area	120sq ft

#### WEIGHTS

Empty	830lb
Mauw	1,320lb
Useful load	490lb
Max fuel weight	138lb (39usg)

#### PERFORMANCE

Stall speed clean	44kt
Stall speed with flap	39kt
Initial climb rate	890fpm
Service ceiling	15,500ft
Max speed	118kt
Takeoff over 50ft	1,250ft
Landing over 50ft	1,040ft
Vne	148kt

#### POWER UNIT

Continental O-200D producing 100hp, driving a metal or composite fixed pitch propeller.

#### UK DISTRIBUTOR

Wycombe Air Centre Ltd, Wycombe Air Park, Booker, Marlow, Bucks, SL7 3DR.  
Tel 01494 443737  
[www.wycombeaircentre.co.uk](http://www.wycombeaircentre.co.uk)

#### PRICE

\$111,500 in USA

## "TWO OCCUPANTS SHOULD BE ABLE TO FLY TOUCH AND GOES WITHOUT BACKTRACKING ON ANYTHING OVER 800 METRES"

buildings at its far end) there is loads of room for touch and goes and no sense of hurry. Nor would there be, I imagine, on any hard runway over 1,000m. Students might need to come to a full stop and backtrack on 600m grass runways, but with an instructor aboard they should be able to fly touch and goes safely on anything over 800m, grass or hard.

My next landing is without any flap. I am expecting to use a lot of runway, but actually the Skycatcher doesn't and we slow to the point where the nosewheel comes down and then make a go around without using more than half the available distance.

For my final touch down I make a tight circuit and position deliberately high on final, then dump full flap and make a full-on sideslip. The Skycatcher in this configuration sideslips beautifully and is almost in the Pitts Special class. The view ahead – through my side window now – is amazing. The sink rate is impressive, but by using throttle it's utterly controllable and the aeroplane feels smooth.

I uncross the controls and bring the speed back from 55kt to 50kt for the final stage of this approach. The aircraft remains steady and fully controllable at 50kt with full flap, and there's enough energy to round out at the last moment, though it's only a second later that the wheels touch. The nosewheel comes down a second after that and I brake hard – almost to the point of locking the wheels.

This is where a castoring noseleg comes into its own, because there's no juddering or shimmy and we come to a stop within a very short distance. Braking on one pedal turns us through the aircraft's beautifully tight one-eighty so that I can see how much runway we used, and it can't be much more than 100m,

maybe 150m.

By now I'm completely at home in the Skycatcher. The unusual control stick did take a little getting used to at first, but I've become totally accustomed to it.

So after taking off I hand over to Kirby and relax for the flight back and enjoy the view and the smooth ride.

After we land, a chap comes over to look at the aeroplane. Not too many people have seen a Skycatcher. It turns out that he's an instructor, mostly teaching on Cirrus aircraft. He makes a throwaway remark about the cabin not being suited to tall people like him.

"How tall are you?" I ask and the answer is a touch over six foot. So we get him to sit in the cabin and he has to admit there's more than ample headroom. After a bit he grudgingly says that he's impressed. A short while later, he's asking for a trial flight.

There's no doubt about it, Cessna's done a great job with the Skycatcher. Nothing's perfect in this world and I've a few slight improvements to suggest. I think the windscreen could be a little higher. A handhold in the roof would enable pilots to put a foot on the sill and undo the fuel cap without needing a ladder. I'd maybe add a couple of light stringers to the outboard lower wing panels to stop them flexing.

In time, it might be possible to do away with the gurney strip and reduce the spring bias on the rudder by dispensing with the aerodynamic balance horns on rudder and elevator, which are possibly superfluous in such a light aircraft.

But these are niggles. It's a great aeroplane with several novel ideas... and it's priced right... and it's made by Cessna.

