





Cessna SkyCatcher

Fun

at Mach 0.162

You'll be stoked, dude

BY ALTON MARSH

Cessna SkyCatcher 162 test pilots proudly wear a shoulder patch declaring they have "Fun at Mach 0.162" (they also test jets). They could have claimed Mach 0.172 (true airspeeds are between 115 and 118 knots), but then the model number wouldn't match the Mach number. Just wouldn't be as much fun.

PHOTOGRAPHY BY MIKE FIZER

A multifunction display is an option for the G300 system (below on right). Seats were designed to save weight (right). The flap handle is shown in retracted position between the seats. A rigid vertical flight control handle glides back and forth for aileron control, and forward and backward for elevator control. Cessna offers 77.7 pounds of options but owners may select only 60 pounds of add-ons. Owners must be careful in selecting and installing options to maintain a minimum useful load of 430 pounds. That is a requirement under ASTM 2245 consensus standards. Wheel fairings add 10 pounds and will cost between \$2,000 and \$3,000 (the price has not been determined). The heaviest option is the airframe parachute at 35 pounds. Metal construction of the aircraft saved two pounds compared to composite material.

More than 1,000 pilots eagerly await the arrival of the SkyCatcher. They have the two-seater on order. A Continental O-200D producing 100 horsepower allows it to climb at 880 feet per minute thanks to the low maximum gross weight of 1,320 pounds for light sport aircraft (LSA). Its base price is \$112,250, but with options, most will go out the door for \$125,000 to \$135,000.

AOPA Pilot flew what Cessna now calls the first production aircraft (it was used in certification tests) in San Diego, where it was filmed for a Cessna flight-training course by King Schools. The airplane was once a test aircraft but now has modifications to solve a much-publicized spin recovery problem. The modifications to fix that problem include a ventral tail fin,

extension of the rudder to the bottom of the fin, and a reduction of aileron travel. The one I flew had the fuselage of the aircraft that test pilot Dale Bleakney rode down under a BRS airframe parachute, but wings built on the new assembly line in China.

There were two crashes during spin testing. In Bleakney's case, the test program called for intentionally cross-controlled, full-power spins that resulted in a spin rate faster than the roll rate of many aerobatic trainers. (It should be noted the LSA standards require only limited spin testing, but Cessna did a more stringent spin series used for FAA Part 23 standards. In other words, they wrung it out.) The problem has been solved, and test pilots and engineers



are justly proud of the result. The SkyCatcher is not approved for spins, but Bleakney demonstrated the safety of the tail modifications during a flight from French Valley Airport northeast of San Diego. He applied full rudder and opposite aileron during an aerodynamic stall (a perfect setup for a cross-control spin entry), but it would not spin. I was able to repeat the demonstration.

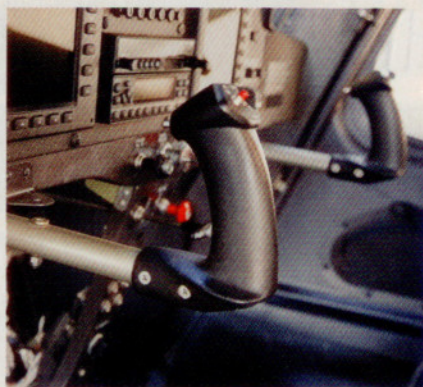
Engineer and program manager Neal Willford had to solve the spin problem while keeping the weight at the industry-agreed-upon 1,320-pound limit for light sport aircraft. To keep the design of the airplane light, unrelated to the spin situation, Cessna reduced the overall size of the aircraft, used a lightweight 12-volt battery, reduced the weight of

the engine, and chose nonadjustable seats. A new composite propeller is in development after an initial composite prop sustained cracks in the spinner bulkhead during testing. All delivered SkyCatchers will be retrofitted with the new composite prop when it is ready.

Sensitive or responsive?

The SkyCatcher is not like heavier aircraft you have flown before. A major difference is control response. One San Diego pilot calls the SkyCatcher's flight controls "sensitive" while another chooses "responsive." I'll go with sensitive. It's easy to over-control at first when transitioning to the SkyCatcher. What follows is a list of the most noticeable differences.

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SPECSHEET

Cessna 162 SkyCatcher

Base price: \$112,250

Price as tested: \$125,000*

Specifications

Powerplant	Continental O-200-D, 100 hp at 2,750 rpm
Recommended TBO	2,000 hr
Propeller...McCaughey 1A162, 67 in, 2-blade	
Length.....	22 ft 1 in
Height	7 ft 4 in
Wingspan	30 ft 5 in
Wing area	120 sq ft
Wing loading	11 lb/sq ft
Power loading	13.2 lb/hp
Seats	2
Cabin length.....	5 ft 9 in
Cabin width	3 ft 8 in
Cabin height	3 ft 11 in
Empty weight	834 lb
Max ramp weight	1,324 lb
Max gross weight	1,320 lb
Useful load	490 lb
Payload w/full fuel.....	346 lb
Max takeoff weight.....	1,320 lb
Max landing weight	1,320 lb

Fuel capacity	25.5 gal (24 gal usable) 152.8 lb (144 lb usable)
Baggage capacity	50 lb (25 lb if BRS option installed)

Performance

Takeoff distance, ground roll	640 ft
Takeoff distance over 50-ft obstacle.....	1,138 ft
Max demonstrated crosswind component.....	12 kt
Rate of climb, sea level	880 fpm
Max level speed, sea level	118 kt
Cruise speed/endurance w/30-min rsv, range (fuel consumption), 6,000 ft @ 69% power, best economy	109 kt**/3.3 hr 360 nm (6.3 gph)
Service ceiling	14,570 to 14,625 ft
Landing distance over 50-ft obstacle	1,369 ft
Landing distance, ground roll	671 ft

Limiting and Recommended Airspeeds

V _X (best angle of climb)	57 KIAS
V _Y (best rate of climb).....	62 KIAS
V _A (design maneuvering)	102 KIAS
V _{FE} (max flap extended)	10 deg at 100/ 25 deg at 85/full at 70 KIAS
V _{NO} (max structural cruising)	124 KIAS
V _{NE} (never exceed)	148 KIAS
V _R (rotation)	50 KIAS
V _{S1} (stall, clean).....	41 KIAS
V _{SO} (stall, in landing configuration)	37 KIAS
Best glide	70 KIAS
Short final	55-65 KIAS

*Approximate. Some options not yet priced.

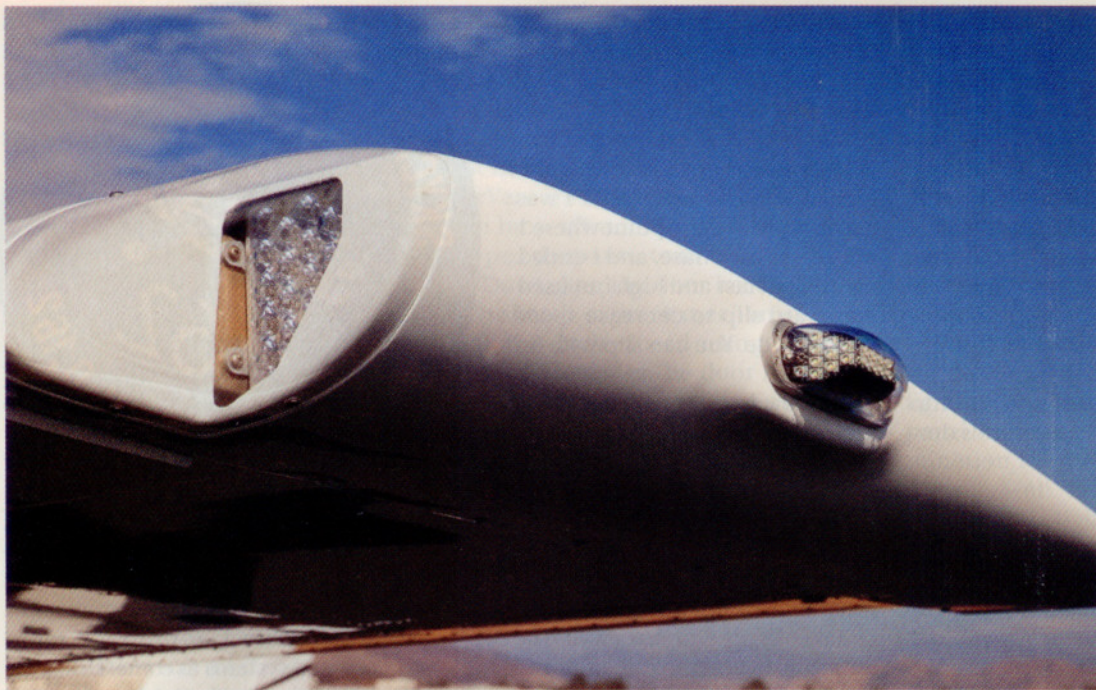
**For aircraft without wheel fairings.

For more information, visit the Web (www.cessna.com/single-engine/skycatcher.html). All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

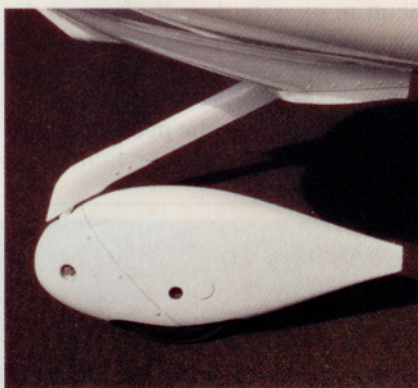


The dual flight controls are newly invented and awaiting a patent. They were developed by the Cessna team based on a concept from Cessna engineer Jeremy Taylor. A rigid stick rides on a moveable arm that extends from beneath the panel. It's a post used to operate the moveable arm. Bleakney calls it a "stoke," because it blends a control stick with a yoke. The flight controls make it easier to get in. For that same reason, the door opens upward toward the wing.

The wing's airfoil was designed just for the SkyCatcher in order to meet the light sport industry standard of a flaps-up 45-knot stall speed. It provides a



Changes to the tail to aid recovery from extremely aggravated spins—testing normally required under Part 23 standards but not under ASTM standards—include a dorsal fin, extended rudder, and reduced sweep of the vertical stabilizer (lower right). Of the 1,044 orders, 439 are retail sales. The rest go to Cessna Pilot Centers and CSTARs (Cessna Sales Team Authorized Representative). There are 639 domestic sales and 405 international sales.



Cessna designed the wing airfoil just for the SkyCatcher.

high lift coefficient, allowing a smaller wing to be used while still meeting the standard.

You lead turns with the rudder, not the ailerons. This has been true of a few aircraft models for many years, but it is unusual for Cessna models. It works well once you have retrained your hands and feet. I told Willford roll forces seemed heavy until I learned that secret. I take it back, Neal.

Flight instructors will love the raised platform on the cabin floor. For Cessna engineers it offers a place to mount a rudder adjustment wheel so the rudder pedals can be moved forward and aft, depending on your needs. For flight

instructors it offers a footrest when the student is flying.

Weight saving is the name of the game. I asked Bleakney what the new interior would be like and was told, "This is the interior." Engineers needed to save weight, so they painted the metal walls. For the same reason, there are also no fuel steps on the nose for checking the fuel tanks. That would mean beefing up the nose structure (adding weight). You don't need a stepladder to check the gas, Cessna officials say. Just assure that the caps are on tight, and use the highly accurate visual sight gauges on each side of the cabin to determine fuel quantity.

Soft-field takeoffs are taught differ-

ently in the SkyCatcher. You will not apply full up elevator prior to the start of the takeoff run. Instead, you will use a "slightly tail-low" attitude during the takeoff run. This will raise the nose only slightly, but at least students won't whack the ventral fin on the runway.

There is an optional 35-pound BRS airframe parachute available (\$5,488). The parachute firing mechanism will blast through the back window to extract the parachute. (A 7.1-pound, \$6,402 two-axis TruTrak Flight Systems autopilot is offered. A second 2.4-pound multifunction display costs \$4,917.)

This is a light airplane, and Cessna "recommends" that the maximum wind

velocity for all airport operations be 22 knots. Here is Cessna's explanation: "If a pilot has the experience, skill set, etc., the 22-plus knots should not be a problem. However, the SkyCatcher, like all LSAs, is lightweight and even very lightweight in comparison to other GA airplanes. As such it is subject to terrain- and building-induced turbulence, especially at low altitudes. When this appears during the low speeds of take-off and landing, it has a much more dramatic effect since the wind velocity is nearly one-half the stall speed. Ditto for taxiing and use of flight controls during the taxi phase."

AOPA test flights

The first flight departed from San Diego's Montgomery Field for French Valley Airport. It was obvious this was a stable airplane, but the "sensitive" and "responsive" controls seemed more like those of an aerobatic aircraft.

There was concern prior to the photo flight as to whether the SkyCatcher could keep up with the Piper Cherokee Six carrying Chief Photographer Mike Fizer. The formation speed was briefed at 100 knots, but the SkyCatcher had at least 10

knots of catch-up speed if needed, so the concern proved unfounded.

After photos were taken, I practiced landings at French Valley Airport. The 162 was slow to decelerate on downwind abeam the touchdown point. Bleakney pointed out that I was gliding beyond the point where I needed to turn base, and I ended up on final fast and high but used a forward slip to decrease speed and altitude. You can slip with full flaps.

Approach speeds are low (55 to 65 knots), and there is plenty of time to determine the sink rate and make corrections during the landing flare. Light stick forces mean the pilot is not fighting the control forces in the flare. Electric elevator trim is controlled by a stick-mounted switch.

Takeoffs are simple as well. The castoring nosewheel took a couple of flights to master and seemed to be more difficult to operate than the one on the Diamond DA20 I had flown. I was accidentally pushing the toe brakes during the early takeoff runs, but later slid my feet halfway down the pedals to avoid activating the brakes.



The Garmin G300 glass cockpit system is just what flight students need: simple. It's a beginner's glass cockpit system, a perfect intro to the more complicated systems to come. Designed specifically for the SkyCatcher, the G300 provides primary flight, engine, and moving map information in a split-screen format. The moving map and engine information can be moved to the multifunction display if that option is installed. Standard equipment includes

a Garmin SL40 com radio, Garmin GTX 327 Mode C transponder, VFR GPS, and a 406 MHz ELT.

Flight two

The flight was devoted to the usual stalls, steep turns, slow flight, and landings, and that meant frequently employing full flaps. (Stalls were so gentle that during one of them Bleakney turned to me and calmly said with mock horror, "Oh, no! You've stalled it.") The manual flap system saves weight over an electric system, but when the flap handle is raised to the 40-degree position, it blocked my arm from reaching the throttle. You can reach either inside of the raised handle, or outside of it. I found it annoying but later asked soon-to-be flight instructor Jason Johnson about it (he drove the fuel truck for Crownair at Montgomery Field). He didn't think it was much of a problem. "I'll probably just reach around it," he said. If you land with half flaps, the flap handle is out of the way. I tried that and found that landing with 25-degree flaps worked well.

Johnson also found, as I did even though I outweighed him by 60

pounds, that it was easy to get in and out. However, on my first entry the rear door latch ripped a belt loop. (I met a pilot at AOPA Aviation Summit who experienced the same thing when he sat in the SkyCatcher mockup at EAA AirVenture.) The second time it tore the loop off and, for good measure, ripped the pants, too.

Don't slam the door because there is no latch capture mechanism. You pull the door closed using a canvas strap (it replaces the door handle to save weight) and then move a latching lever. The back latch (the one I dislike) sometimes failed to engage, so we doublechecked it after each entry. The cabin is roomy, although you won't be shouting to hear your echo. The cabin is 1.5 inches wider than that of a Cessna Stationair. It is 4.25 inches wider than the Cessna 152 cabin.

The SkyCatcher I flew has a useful load of 486 pounds (it will increase to 490 when the new composite prop is ready). Since I weigh 230 pounds, I could fly with full fuel and have 112 pounds of payload available. With half fuel, a flight instructor weighing 184 pounds could come with me, and we could fly

1.6 hours and still have a 30-minute reserve in the tanks after landing.

Photo extravaganza

Our third flight resulted in most of the photos with this article. The weather provided pink skies, a pancake stack of 11 lenticular clouds over a mountain east of French Valley Airport, and a rainbow above Mount Palomar's famous observatory.

We flew until it was nearly dark, which brought up the issue of night lighting. A dome light illuminates the panel, but if you turn it down, the illumination for the engine instruments dims as well. Fizer asked us to turn off the dome light for photos, and we explained via radio that wasn't a good idea. The SkyCatcher is approved for day/night VFR, although sport pilots are limited to daytime.

After landing at Montgomery Field we returned control to King Schools—no more playing around—but I'll happily fly it again when deliveries begin. It's fun, even at scary Mach speeds.

AOPA

E-mail the author at alton.marsh@aopa.org.