Used Aircraft Guide: Cessna 337 Skymaster

One of the most affordable twins, Skymasters are easy to fly and offer good payload/range.

By **estaff** - **Published:** June 25, 2009 **Updated:** October 29, 2019

In the light-twin world, theres Cessnas 337 Skymaster push-me/pull-you design-plus a handful of Adam 500s-and then theres everything else. Eliminating asymmetric thrust from the single-engine handling equation was what Cessna had in mind when it brought the Skymaster to market. It succeeded, since the airplane handles pretty much the same when one or both engines are turning. But some compromises were made along the way, many of which can hike maintenance

Cessna 337 Skymaster

288

costs.

In an engine-out situation, conventional piston twins generally need to be handled with kid gloves lest the airplane get too slow and roll over on its back. Close to the ground, that can be very bad. Which is one reason Cessna aligned the Skymasters two engines with the airframe centerline, offering pilots the safety of a second engine without the penalty of adverse handling. If one quits, identify it, feather it and dont worry about the dead-foot, dead-engine drill. The FAA even granted the 337 its own class rating, limiting pilots to centerline-thrust twins only.

That part of Cessnas plan worked, since theres little question the Skymaster is easier to fly on a single engine than a conventional twin. But, since the VMC rollover accident doesnt happen that often in the real world, the airplanes overall accident record isnt that much better than conventional twins.

A pilot looking to improve redundancy by stepping up from a single to a twin certainly will achieve it with a Skymaster. But in the bargain of gaining redundancy, pilots can be forced to accept a platform with more cabin noise, a set of operating peculiarities all its own and tightly packaged systems presenting more of a challenge to maintenance personnel than if each engine resided on its own wing. All of which might argue in favor of the single. Until the singles engine fails, that is.

Model History

The 337 Skymasters front/rear engine layout and high wing started out as the fixed-gear Model 336 in 1964, powered by Continental IO-360-A engines of 195 HP apiece. Widely acknowledged as a slug, Cessna sold only 195 336s in one year of production; 86 remain on the FAAs registry today. In 1965, the company folded the gear and upgraded powerplants to a pair of Continental IO-360-Cs pumping out 210 HP, resulting in the 337 Skymaster. Cessna sold 239 copies that year. (Not really learning from its 336 experience, Cessna flew a cantilever-winged, lower-powered version, the 327, in late 1967, but it proved too slow and the project was dropped the next year.)

To make the original 336 a retractable, Cessna borrowed the complex and troublesome hydraulic landing gear system from the 210. In 1973, it was upgraded to a simpler and more reliable electro-hydraulic system. While less complex and easier to maintain, the system still isnt as robust as, say, a Barons or Senecas.

Early models also came with multiple fuel tanks, another system proving problematic in the field. It, too, was replaced in 1973 by a superior, less complicated system. A turbocharged version-the T-337B, powered by 210-HP TSIO-360-A or -B engines from Continental-appeared in 1967, but was dropped in 1972 with the addition to the Skymaster line of the almost-revolutionary pressurized 337 version, the T-337 G-P, powered by TSIO-360-C engines up-rated to 225 HP.

The turbo reappeared in 1978, with TSIO-360-H powerplants, but Skymaster sales had begun slipping by then. Cessna pulled the plug following the 1980 model year, after a total production run of 2058, plus 332 pressurized versions. In addition, Cessna built slightly more than 500 Skymasters for the U.S. Air Force, which saw action in Vietnam as the O-2A. It boasts structural beefups, hard points and extra windows. These airplanes frequently appear on the used market and may well be the least expensive warbirds available. Additionally, some civilian models were converted to an O-2B configuration for the military to use in psychological warfare.

Major tweaks were few, but there were many designation changes. Beginning in 1970, some inspection panels were added-making maintenance easier-and the airframe was lightened a bit, increasing useful load. The interior arrangement also changed through the years, with various combinations of seat mounting.

As is not uncommon with any aircraft, the non-pressurized 337s gross weight crept up during its years in production. Early models started at around 4200 pounds; late ones weighed 4630 pounds, with max landing weight limited to 4400 pounds. Meanwhile, the P-337, with its 30 extra horsepower, had a takeoff weight of 4700 pounds and max landing weight of 4465 pounds.

These days, piston-twin prices are as soft as ever, and the 337 is no exception. On the up side, most of the depreciation has been squeezed out of these airframes. The downside? Cessna 337s cant be counted on to increase much in value. But a Skymaster is a lot of airplane for the money. Besides current fuel prices and future uncertainties, other factors depressing prices are that the 337 has a reputation for being a maintenance hog-one largely undeserved as twins go-and they arent all that fast.

Buyers should be aware, however, that buying a cheap twin is not the same as operating a twin cheaply. A hangar queen will eat through a bunch of money if it needs remedial work and, in any case, youll need to find a shop familiar with the breed to do the pre-buy and maintain the airplane going forward. The Skymaster doesnt perform much better than a Cessna 210, and it has two of everything to maintain and replace, driving up ownership costs. But, of course, it has two of everything.

Performance, Handling

Skymasters arent speed-demons, though the turbocharged models do respectably well for pilots willing to take them into the teens. Owners of normally aspirated models can plan on between 155 and 165 true knots, depending on altitude and how much fuel they want to burn. The turbocharged and pressurized models will push 190 to 200 knots at 20,000 feet, their maximum certified altitude. At middle altitudes, 170 to 180 knots is typical for the turbo models, which aint bad.

Since Skymasters have relatively small displacement six-cylinder engines, fuel burn tends to be reasonable, ranging from 15 GPH to 22 GPH total, with 19-20 GPH typical for a 150- to 160-knot cruise. For comparison, a Twin Comanche will do

Cessna 337 Skymaster

288

about the same speed on 100 fewer horsepower and a lot less gas. Efficiency isnt a Skymaster hallmark, except when compared to larger, faster twins.

All-engine rate of climb ranges from a modest 1300 FPM in the old 336 to a lethargic 940 FPM with the last 337H models. Were unaware of any other twin-engine airplane with a book rate of climb below 1000 FPM; even the old 150-HP Apache had a book climb of 1250 FPM with both engines running. On the other hand, lose an engine in a 210 and there is no rate of climb; in a 337, you should at least be able to eke out 2-300 FPM.

Like many Cessnas, runway performance is good. Landing-configuration stall speeds range from 55 to 62 knots, depending on the gross weight of the particular model-about 10 knots below conventional twins like the 310. As a result, a Skymaster will get off the ground in less than 1000 feet at gross weight-a feat very few other twins can manage. Barrier performance is not quite as good, however; the leisurely climb rate brings the Skymasters 50-foot takeoff figures down to the middle of the light-twin pack.

The single-engine climb rates of all the light twins tend to be very similar-200 to 300 FPM-because engine-out climb rate is a certification point around which the airplane is designed. The FAA requires a certain minimum climb, figured by a formula relating to stall speed, and the manufacturers typically bump up the gross weight to the point at which the airplane just barely meets the FAA minimum. Any excess engine-out climb capability is, in effect, wasted payload. And payload numbers sell airplanes.

Whats surprising is the difference between the front and rear engines. Climb on the front engine only is about 50 FPM less than on the rear. Apparently, when the rear propeller is turning, the airflow over the rear fuselage remains attached. But it separates when the rear prop stops, increasing drag.

While leaving the gear down produces a climb penalty of a bit over 100 FPM, raising it carries a temporary 240 FPM hit. This is because of Cessnas complicated gear door arrangement, which adds a lot of drag while the gears in transit. In an after-takeoff engine-out situation, it may be better to leave down the gear, just as it is recommended in some singles to leave it down until obstacles are cleared. In normal flight, the Skymaster has

typical Cessna handling: heavy in pitch, reasonably responsive ailerons. (The P-model has especially light ailerons.) Pilots praise its IFR stability.

The noteworthy aspect of the Skymasters handling-indeed, the whole reason for the airplanes existence-shows up when an engine fails. Instead of the normal yaw-roll-stall-spin scenario too often following engine failure in “conventional” twins, the Skymaster continues to fly straight ahead. An unprepared or rusty pilot can take his time and concentrate on the task of identifying and feathering the prop on the failed engine, without worrying about losing control.

Payload, Range

A Cessna press release from the 1970s describes the Skymaster as “a full six-place airplane with nearly a ton of useful load.” Good luck with that. At best, the two rear seats can accommodate youngsters. And that press release conveniently forgot when the fifth and sixth seats are installed, theres no baggage space, nor is there a baggage door. Consider the Skymaster a roomy four-placer.

Real-world useful loads run around 1500 pounds-not bad at all-which is several hundred pounds more than a Twin Comanche, for example. Standard fuel is 93 gallons, which should leave more than 900 pounds available for payload; plenty for four passengers and their bags. Standard fuel is just adequate, however-unless you throttle back-providing a bit more than three hours with IFR reserves at fast cruise.

Pre-1973 airplanes with long-range tanks had a four-tank fuel system; later ones came with a two-tank system. The long-range tanks-150 gallons in 1975 to 1980 models, 131 gallons in earlier models-solve endurance limitations nicely, at the expense of payload, of course. One owner told us that with long-range tanks full, he has seven-plus hours at 150 knots with 650 pounds of payload (three people and bags). Not a bad compromise.

Oddly, the P-337 is allowed only five people; it was certified under different rules requiring an emergency exit in a six-seat airplane. Rather than put in the exit, Cessna simply limited the seating to five. Early P models had a middle seat hinged up and to the side to get at the back row, but these seats didnt slide fore and aft.

Cessna 337 Skymaster

288

Access to the rear seats in other Skymasters requires an awkward scramble over the center row.

The Skymasters visibility is excellent-about as good as it gets in any light airplane, single or twin. The view down is unlimited, of course, and the wings leading edge is back far enough that it doesnt block upward vision, either, as with most Cessna singles. Good visibility is not only a safety feature; it adds to the feeling of roominess in the cockpit.

The Skymaster is also quite noisy, since the passengers are sandwiched between the engines. Also, sympathetic vibration can be a problem, particularly without prop

synchronizers. Conventional twins are quieter by far.

Maintenance

The Skymaster was the most complex aircraft ever engineered and manufactured by Cessnas Pawnee Division, which otherwise built only Cessna singles. Evidence suggests the division simply wasnt up to the task, particularly in the 1975-to-1980 period when production was growing rapidly and Cessna was plagued by an epidemic of design, engineering and production problems.

For example, the pressurized Skymaster was initially such a disaster that the first years production was recalled to the factory for complete remanufacture and modification. Distinct from other twins, Cessna had to pack everything into the fuselage, not having the luxury of sticking systems out in the wings or into the nose. As a result, access is difficult and it is those systems where most maintenance problems will be found.

The basic airframe is stout, with a rugged strut-braced wing. There are remarkably few ADs on the airplane. And remember that the military version of the Skymaster did plenty of rough duty in Vietnam, often flying home with bullet holes or worse.

Still, a potential Skymaster nightmare is runaway maintenance costs, particularly in the turbo and pressurized models, so the prudent purchaser will closely examine logbooks and service records of any aircraft under consideration. A technician familiar with the type will know to be on the lookout for chronic Skymaster problems like these:

Rear engine oil leaks. Loose rocker box covers, a chronically leaky quick-drain and a sloppy breather tube seem to be the main culprits.

Defective landing gear switches. Inexpensive switches plagued the Skymaster during the mid-1970s. In fact, the entire landing gear system is a challenge to maintain, one almost demanding proactive maintenance and inspection.

Water leaks. Leaks around the windshield were a chronic problem in early models. Check for possible rain damage and condition of windshield sealant.

Hot-running rear engine. Some familiar with the Skymaster swear the “hot rear engine problem” isnt a problem, resulting instead from defective gauge installations. Regardless, additional louvers are available to help. A digital engine monitor should be installed, however, and careful attention paid to the rear engines baffling and cowling.

Defective paint jobs. When Cessna switched to DuPont Imron on Pawnee Division models in 1977, it ignored metal preparation and priming recommendations, using a cheap, quick-wash primer instead of Alodyne and an epoxy primer. The result was an epidemic of filiform corrosion, particularly in warm, humid coastal areas. By now, most of the surviving airplanes will have been painted at least once. But check the logs and inspect the paint carefully.

Mods, Groups

The Riley Rocket was a popular Skymaster mod and included upgrades to 310-HP TSIO-520 engines, intercoolers, three-blade props and air conditioning. Rockets come on the market now and again, at a premium price over stock models. For more, check out www.skymaster.com.

Other mods include vortex generators from Micro Aerodynamics (www.microaero.com), and intercoolers from American Aviation (www.americanaviationinc.com). Both Horton (www.hortonstackdoor.com/stolcraft_description.htm) and Sierra Industries (www.sijet.com) apparently still offer STOL kits and other aerodynamic mods. A wing spoiler kit is available from PowerPac Spoilers (www.powerpacspoilers.com).

Aviation Enterprises (www.aviation-enterprises.us) offers a wide range of major modifications for Skymasters, ranging from air conditioning, airstair doors, extended wingtips, IO-550 engine conversions-for one or both engines-long-range fuel and MT propellers. The company also can provide various parts, including cargo pods. Similarly, RT Aerospace (www.rtaerospace.com) offers several items of interest to the Skymaster owner, including a convertible rear seat for the baggage area.

Cessnas seem generally blessed with good owner organizations, perhaps because the company abandoned the piston market in 1986 and stayed out of it until 1997. The clubs and groups have prov en to be as good as it gets when it comes to support.

Every Cessna owner should join the Cessna Pilots Association (www.cessna.org). The organization offers the usual benefits, including an insurance program, monthly newsletter and fly-ins, and has a wealth of Skymaster-specific information. Two useful if unofficial Skymaster Web sites are the cleverly named Cessna Skymaster Web Site (www.skymaster.org.uk) and SOAP, Skymaster Owners And Pilots (http://www.337skymaster.com/).

Owner Comments

I had the pleasure of owning a 1968 T-337C during four maintenance-filled years. That being said up front, it was still a joy to own and fly, and I feel privileged to have been able to play with it and would do it again…cash and time permitting.

I assisted my A&P for a good portion of the annual and cosmetic stuff, but let him deal with the front engine change, which was a major bear with respect to reinstallation. The biggest memorable headaches aside from the engine swap (which was known before purchase), were front and rear engine starter-access issues, rear engine vacuum pump replacement, faulty Stewart Warner fuel senders, fuel-quantity indicator issues, fuel-pressure indicator failure, quirky manifold pressure indicator issues, rear-engine oil leaks from the cylinder heads, electric cowl flap motor failures and a leaky magnetic compass.

The Cessna 400 autopilot was inoperative and not economically feasible to repair. I wanted to put in an S-Tec, but wasnt STCd for this year/make/model aircraft. I ended up with a Century 2000, which worked great for about half the price of a comparable S-Tec model at the time.

I replaced the factory fuel pressure indicator by crimping down the fuel lines feeding it right behind the instrument panel and put in an excellent Shadin fuel flow system. The electric cowl flap motors are expensive to repair, but can be replaced by a cable and pulley system for about the same price.

Many parts and mods like this can be obtained from Owen Bell (www.aviationenterprises.us) in Nashville, Tennessee. The good news is the landing gear system worked very well and was basically maintenance free.

The beauty of 337s made before 1971 is the pilots side window opens for ventilation, like most Cessna singles. There is no pilot door as that side of the cockpit is awash with circuit breakers. The passenger side door is large and works well for access to the back of the cabin. There is also a nice-sized baggage door for the rear of the aircraft. In an emergency, you can egress through a passengers left side window, as well. The cockpit and cabin are just the right size, which means roomy. The passenger will love the unobstructed view down at the ground almost as well as you do up front. As for noise, youll prefer a headset but wont go

Cessna 337 Skymaster

288

deaf without one. Still, its not as quiet as the Twin Comanche.

The two aft seats are about as useless for adults as those in the six-place Comanche, and are better served for either baggage or small kids. I did have the cargo pod and noted maybe a three-knot penalty at cruise. I flew it with all the back seats removed, installed the dog and the copilot (wife), and put all the baggage in the pod. Very sweet.

Performance wise, the turbo boosts the manifold pressure to 32 inches for takeoff, then you can set 28 inches climb power with the automatic waste-gate system and leave the throttles alone. It is the nicest hand-flying light twin Ive flown, and handles turbulence solidly without yaw issues.

Speed-wise, its really not that fast and the book numbers exaggerate, but fast enough to do mid-continent to the coast in a day. Its on par with the Twin Comanche. The 18,000-foot single-engine service ceiling is a comforting feature, although I wouldnt want to linger up there too long for fear of overheating issues.

Contrary to popular myth, the rear engine does not overheat. It actually ran cooler than the front engine probably due to the extra turbo air inlet in the front cowling. Its really phenomenal in the landing pattern, and has superb crosswind handling. Centerline thrust in this twin is a beautiful reality.

Safety-wise, the big issue is a takeoff with the rear engine flamed out, for those with perception issues who wont recognize it. There is no V1 engine-out, continue-takeoff speed on the 337. Just stop on the runway. To avoid wrecking your plane in this scenario is simple: Start your takeoff roll by bringing up the rear engine to 25 inches, making sure it

responds properly, then bring up the front to match. When satisfied, push the throttles to the firewall and the turbochargers/wastegates bring everything up to 32 inches.

The type/model-related safety issues are more rare, but a rear-engine fire or loss of the aft propeller will likely ruin your day. The U.S. Air Force had fire bottles in their O-2s, but the FAA does not mandate them for civilian models.

Fortunately, I did notice the aft engine fuel control dripping fuel on the single exhaust pipe. That was easily overhauled and is an "old aircraft" issue that should be checked routinely.

A former Air Force mishap investigations officer confided to me there is an 85-percent probability that a separated aft propeller will strike the tail boom with unrecoverable results. Thats pretty easy to check, too.

Speaking of the aft propeller, it is an FOD magnet, and the replacement cost is frightening. For your checkbooks sake, I wouldnt recommend the 337 for grass or gravel runways.

Finally, it is really cool-and safe-to taxi into an FBO with just the rear engine running. The line boys love it when a plane approaches without a spinning meat grinder out front.

Steve Bulwicz,
Via e-mail

Originally a helicopter owner/pilot (to impress girls), my first fixed-wing aircraft was my 1969 T337D, which I bought in 1989, and still own today. My original fixed-wing mission was going back and forth from Washington, D.C., to Boston, where my future wife resided (in other words, women play a major role in my aircraft selection). Now with a family of four, two cats, a dog, three violins, a cello and my wifes hanging baskets, en route between the Outer Banks and home on weekends, and again all summer, on occasion I need all of the 337s payload and cargo space.

From the standpoint of redundancy for overwater and night ops, combined with great range, the Skymaster cant be beat. My favorite Skymaster quote is from a pilot who had an engine failure in IFR over the mountains at night. ATC asked, "Sir, are you declaring an emergency?" The Skymaster pilot replied, "No, Im declaring an inconvenience." The second engine pays for itself within the few minutes you actually need it. In my 1000-plus hours Skythrashering around, Ive had three instances where, had I been in a single, they would have been exhilarating. In the Skymaster, only my bank account has ever been threatened.

Last fall, it was finally time for my rear engine, and so, wallet in hand and tears in my eyes, I went for the same upgrades I put on the front a few years prior: "Heavy" case and larger crankshaft. At the same time, I replaced all engine hoses with Teflon-lined, fire-sleeved "good stuff," plus all the flexible hydraulic lines, and the entire exhaust system, which was getting a bit too thin. Add new seat rails throughout, new rollers and pins, a new rear turbo, and you begin to understand my tears.

Equipped with the original Janitrol heater-basically a fuel-air bomb in continuous ignition-the 24-month removal inspections were becoming harder to get done, and the system was

less likely to pass. I upgraded to a C&D ceramic “no-AD” heater (www.aircraftheater.com) and all its related bits. In other words, for about the price of a shaggy C-182, Ive got a “new” Cessna 337 instead that ought to last just fine for another 20 years.

I occasionally wonder what it would be like to go back to a single. With all the work being done on my Thrasher, I did my recent BFR/ICC in a 182. As nice as the 182 is, flying it made me feel a lot better about the billions I was investing to overhaul my 337.

At $120,000 hull value, my insurance runs about $3000 per year, with 1000-plus hours in make/model. If my annual is only $2500, I thank the gods, but I expect $3-5000. With everything now new again, there should be no more of this and that.

With the new engine and previously installed STOL kit, my last flight produced 198 knots true at 10,500 feet, pouring 26 GPH into both turbocharged engines. My turbocharged, STOL 337 has a single-engine service ceiling of 16,800 feet. If you want to do the full power-on STOL bit it will land and take off in under 500 feet, with a 50-knot V_{SO}. In reality, the STOL kit just gives you lots of control at the low end. I routinely land at around 70 MPH.

Cessna 337 Skymaster

288

The Thrasher also has a 12:1 glide ratio, so for descents you have to plan a bit. You can start hanging the flaps out at 160 MPH and gear at 140 MPH, so youve got lots of things you can drag along to slow down when you want. Some people find the Skymaster funny looking. For me, its odd shape just makes it easy to find on the ramp.

David Wartofsky,
Potomac, Maryland

As one who has owned a Skymaster for four years-and who routinely flies a wide variety of other GA aircraft-I can comment on the 337s pros and cons.

Contrary to popular misconceptions, most systems are surprisingly easy to maintain. One aggravating exception is changing the rear engines oil. When Cessna designed the oil drain, they apparently presumed more people were double-jointed than is the case in the real world and placed the drain plug in a nearly inaccessible location directly over the exhaust manifold. Other maintenance is quite easy, with access to oil fillers, hydraulic sight gauge, electrical panels and fuses just a flap or panel away. The cost of maintenance is consistent with other Cessnas and I found the annual to run about $2000 to $3000 for the basic inspection. Systems generally emulate the 210 or 182 and commonality of parts is a bonus keeping costs in line.

Insurance costs vary as a factor of pilot experience more than aircraft type, and I found annual premiums to be $3250 to $3600 from most companies. Thats for a $1,000,000 general liability and $75,000 hull value.

The Skymaster is an excellent IFR platform, and also provides very stable and predictable handling in the pattern. With widely available STOL modifications, it can get down and

stopped in as little as 700 feet, and then take off in about the same distance. Normal landing consumes about 1200 feet, with takeoff using about the same.

Handling is very crisp in cruise and, while a little sluggish, is quite dependable in the pattern and on approaches. My turbocharged 1971 F model provides excellent altitude performance, but speeds are about 10 to 15 knots below book. I average about 170 knots at 12,000 to 18,000 feet and about 160 knots below 12,000 feet. My 337s average total fuel burn is 18 gallons per hour, but I flight plan for 20 in case of delays or ATC demands to stay lower than planned. At 14,000 to 20,000, I lean it back to about 14 or 15 GPH total, leaving me still a little rich of peak.

The best aspect of the Skymaster is its comfort and utility. It was designed to accommodate six passengers, but doesnt really have any luggage capacity in that configuration. As a six-passenger plane, its great for a $100 burger run, but not a weekend trip. Lose the rear seats and it becomes a terrific four-passenger plane with power to spare, good speed and economy, and lots of luggage room. Passengers enter through the right-side door, and must be agile enough to bend and twist into position. Once there, they have wide-open visibility, very comfortable seats and a great ride.

Noise is a little higher than in a single, but with good insulation and todays ANR headsets is not very disruptive. With a useful load of over 1300 pounds, it can easily carry four adults and moderate luggage on a weekend or longer trip. Range will still exceed most folks “time between FBO” limits.

The Skymaster is a complex airplane and does require a checkout, along with some attention to fuel management, systems and synchronizing the engines, but it is a great plane for transitioning to twins and provides lots of safety when compared to a single.

One last comment: The standard line is that there is very little indication of a rear engine failure. Other than the sputtering sound, the sudden and noticeable pressure on the restraining harness against your chest and the rapid loss of about 15 to 20 knots in airspeed, there arent many clues. If someone cannot feel this and see the drop in fuel flow and cylinder head temperatures, they probably should not be flying anything.

I love the plane when compared to the wide variety of planes I fly over the course of a year, and I can rank it clearly in my top five favorites.

Bill Straw,
Venice, Florida

---

estaff