CESSNA 206

UPWARD UTILITY

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Remember when you received your private certificate and could not wait until you checked out in a four-place airplane? Only to find out that you could not fill up all the seats *and* the fuel tanks and be able to give all your friends a ride?

The same dilemma faces small air taxi operations, private companies and others who need to move people or cargo the most efficient way possible. The Cessna 206 solves this problem.

The 206 series of airplanes is not glamorous-looking. It has the same configuration—high-wing, strut-braced, fixed gear—as the rest of the Cessna single-engine line. The 206's dimensions are nearly identical to those of the Cessna 182; to an untrained eye, they easily can be mistaken for one another.

However, the Cessna 206 has a number of features that combine to make it one of the most popular of the large Cessna singles. Introduced in the 1964 model year as the "Super Skylane 206," more than 7,000 units of one description or another (they have been called "Stationair 6s" since 1977) have been sold to date.

Ask 206 owners why they were drawn to such an ordinary-looking airplane, and the answer will nearly always center on load-hauling capability. With a useful load of approximately 1,100 pounds, a 206 will carry as much as—or more than—most other heavy singles and many light twins. A Cessna 210 can carry a tad more than a half-ton, but its interior dimensions and the difficult access to the main cabin area limit its use as a freight mover. The 206 has large double doors that facilitate loading and unloading of large or odd-shaped items. The Cessna 182 carries 1,370 pounds, but its cabin is two feet shorter than the 206's and it, too, lacks easy access to the aft cabin.

The 206's traditional competitor—the Piper Cherokee Six/Saratoga/Turbo Saratoga series—matches the Stationair's capabilities almost number for number. Useful loads within a few pounds of each other, engines of similar displacement, double doors, easily removed seats and other businesslike touches make the choice between a Six/Saratoga and a 206/Stationair a difficult one for many purchasers.

Those who choose the Pipers say they are better because their takeoff and landing distances are slightly shorter, or because the cabin has a more rectangular floor plan. The Pipers also have a nose baggage compartment capable of carrying 100 pounds. The 206's cabin tapers to the rear of the fuselage, and it has no nose baggage area. The Pipers' engines also have an edge in time between overhaul (TBO) over the Cessnas' Continental engines.

Those loyal to the 206 series point out that the Piper Six/Saratoga does not have a flat floor and that the hump just aft of the pilots seats—caused by the main spar carry-through member—also robs you of space. Where the Piper option really falls down, though, is in the used-airplane market. The Six/Saratoga line, on the market since 1965, did not have any turbocharged

models until 1980 (Cessna offered a turbocharged 206 beginning with the 1966 model year). Since most operators looking for a single-engine pick-up truck demand the advantages of turbocharging, those wanting a reasonably priced single-engine utility airplane must concede to only one choice.

In a 206, you really *can* fill up all six seats with six FAA-style 170-pounders *and* fill up the tanks (the standard, 65-gallon tanks, that is; the long-range, 88-gallon tanks will require partial fueling to handle this job). Or you can pack in half a ton of machinery, car parts, home computers or air mail.

This versatility does not go unnoticed by the criminal element. The Cessna 206, along with the 210, ranks high on the International Aviation Theft Bureau's most-stolen list. This is primarily because you can tote a lot of baled contraband in them, the turbo models have very good short-field capability and those double-doors make loading and drop-offs a snap.

Like eating spinach, okra and other unpleasant vegetables, the mathematics associated with working weight and balance problems often are avoided, but they are good for you. Let us work a few for the 206, to show you how versatile the airplane's loading envelope is. The examples are applicable to just about all the 206s because their specifications are nearly identical.

With average equipment, the empty weight is about 2,100 pounds; gross weight, 3,600 pounds. That is a useful load of 1,500 pounds or so, and your center of gravity envelope is a generous seven inches wide at maximum gross weight.

Example one: A five-person family is going on a skiing vacation. The old man weighs 200 pounds, his wife 120, their two sons 150 pounds each, and their daughter, 100 pounds. Since they will be gone for a week, they have 100 pounds of baggage. Dad and one of the sons sit up front, then Mom and the daughter in the center seats, followed by the other son in the rear of the cabin. That is a payload of 820 pounds. Now fill up the 88-gallon tanks (80-gallon tanks for pre-1980 models); you are up to 1,348 pounds—well within weight limits.

You really can fill up all six seats with six FAA-style 170 pounders and still fill up the tanks

The empty airplane moment is about 74 inches aft of datum, plus the 84 inches or so contributed by the load. So, it will be 3,448 pounds gross weight, and a loaded airplane moment of about 158 inches—you are in the envelope.

Want to do another one? How about a lone pilot flying a 206 in the utility (one seat) configuration, with an empty weight of 2,000 pounds. He is hauling two BMW R100S motorcycles, which weigh a total of 880 pounds. The pilot weighs 230 pounds. That comes out to 1,638 pounds' worth of load and an overgross condition at 3,638 pounds. Better partially fuel it to the bottom of the filler neck (65 gallons usable fuel with the long-range tanks) to lower the useful load to the 1,500-pound figure.

With the motorcycles fastened to the seat-rail tie-down kits, the D-rings and the lap-belt attach points, one bike is slid up next to the pilot, and the other

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is centered midway between cargo areas "B" and "C." The wheels have been removed and tied down in cargo area "D," at the rear. They weigh a total of 90 pounds. Without their wheels, the motorcycles weigh about 390 pounds apiece.

At gross weight, and a loaded airplane moment of 164 inch pounds, the airplane is right at the top of the envelope, but the flight can be made.

For certain special applications there are kits available, either from Cessna or from aftermarket suppliers. There is a skydiving package (an air dam, signal lights and a step), a photogrammetry package (a hole in the airplane's belly, viewing ports at the pilot's feet and an extended exhaust pipe) and air ambulance and mortuary installations. There is even an underbelly cargo pod—capacity 300 pounds—for when extra carrying space is needed.

The airplane is basically a stretched-interior Cessna 182 with wide-span flaps, a higher tail and a Cesna 210 engine. The 285-hp Continental IO-520 was offered in several variations in the 206 line. The engine was offered with turbocharging beginning in the 1966 model year, and beginning in 1968, the normally aspirated IO-520s were given a boost in their takeoff power rating from 285 to 300 hp. In 1977, the turbo models likewise were boosted, from 285 to 310 hp. Recommended TBO is 1,400 hours for the turbocharged models, 1,700 hours for normally aspirated engines.

You have to baby these engines. Although maximum takeoff power is permitted for a period of no more than five minutes, it is best to pull the power back until the manifold pressure, propeller rpm and fuel flow readings are at the top of the green arcs during sustained climbs. While descending, keep the cowl flaps closed and leave the power in. The object is to avoid sudden temperature extremes that can play havoc with a large engine's valve train.

The Continental IO-520 has been the subject of several expensive airworthiness directives (ADs). AD 71-9-7 requires the inspection—and repair, if necessary—of the exhaust manifold heat exchanger at 50-hour intervals. AD 77-13-22 requires a 100-hour inspection of the engine's crankcase for

cracks. This AD can be dealt with by replacing the older 206's crankcase with a heavier, sturdier one, or by buying a post-1977 model with the IO-520-L or TSIO-520-M engines, which already have the heavier cases.

Serious airframe ADs are few and far between. One recurrent AD (72-7-9) requires a 1,000-hour inspection interval for the ventral fin spar attach bolts. Another (AD 71-24-4) calls for a 100-hour inspection of the fuel lines for leakage, unless the original hose assemblies have been replaced.

The 200-series fuel system has been the subject of several ADs. One AD (77-16-5) required that the fuel-selector valve be inspected. Another AD (79-15-1) was simply a placard, giving instructions on the recognition of fuel system vapor blockage and operating procedures to restore fuel flow.

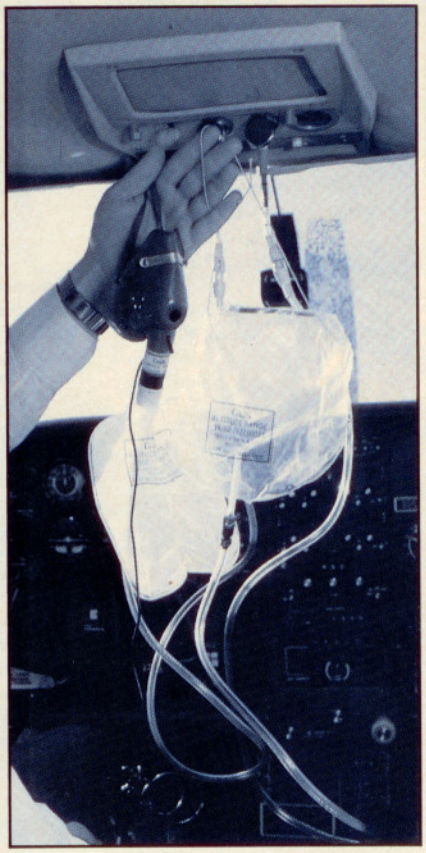
Cessna 206s, like their predecessors the 205s and the 210s, have fuel systems with a main tank in each wing. Fuel can be drawn from one tank or the other, but not both. Fuel from the main tanks runs down four fuel lines (two for each tank) to two small reservoir tanks beneath the floor, in the area near the rudder pedals. From these tanks, fuel is fed to the engine.

Many critics argued that under certain conditions (such as high temperature or high altitude), the system cannot purge vapor from the reservoir tanks adequately. A pattern of mysterious engine stoppages suggested that the fuel lines running from the main tanks to the reservoir tanks were too small in diameter, and the radius of their bends was too sharp. This, the argument goes, causes the reservoir tanks to fill with fuel vapor, which in turn is sent to the engine, causing a stoppage. (For a more detailed discussion of this problem, see "Safety Corner," January 1982 *Pilot*, p. 88).

With the 1981 models, Cessna changed the fuel system's plumbing and fuel selector linkage for a better design (it now has more positive detents and a more direct linkage).

As for accidents, the 206 series appears to have one of the safest records of all single-engine aircraft. A study of National Transportation Safety Board statistics showed that from 1975 to 1980 there was a total of 303 accidents involving 206s. Of this number, 47 caused fatalities.

The accidents revealed that most often the pilot held a commercial certificate and had more than 500 hours total time. Twenty of the fatal accidents occurred in IFR weather. Five were attributed to airframe ice. One fatal accident was blamed on a fuel line disconnection, three on unexplained engine failures, two on fuel starvation and two on botched landings in 206s weighed down with marijuana, landing at night in remote locations.



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Nosebags, anyone? You'll need them to take full advantage of the Turbo Stationair's 27,000-foot ceiling

Among the nonfatal accidents, there were quite a few bent landing gear and broken nosewheels as pilots flared too soon—or too late—during touchdown. With full flaps and any significant weight in the airplane, the 206 will develop a very high sink rate on final approach, especially with power off.

In case of an emergency evacuation, the rear doors cannot be opened fully if the flaps are extended. Leave the flaps up if possible during forced landings, or you may deny yourself and your passengers a way out.

Several nonfatal engine-failure accidents were traced to broken connecting rod cap bolts. But most of the nonfatal accidents were of the bad crosswind landing at a boondocks airport out west variety, involving few injuries.

Flying the Cessna 206 is quite similar to flying a 182 or a 210. Not surprisingly, the elevators have a heavy feel, but the ailerons are light and more responsive than what one would expect from a heavier airplane.

The 206 can act like two different airplanes, depending on the load. With just two people up front, the airplane will leap off the ground on takeoff (up to 20 degrees of flaps are permitted), will be quick to respond to control inputs and will be difficult to flare properly. Considerable aft-stick force will be required to hold the nosewheel off the runway while speed dissipates.

Loaded, the 206 behaves more in character—like the truck it is supposed to be. Slower to accelerate and climb, and leaden in the descent, a full-house 206 will keep you working. If you do not have electric elevator trim, you will wish you did. Flaring will be easy, though, with weight in the rear of the aircraft's cabin.

Instrument approaches are a relatively simple matter in a 206. Exceptionally stable, they ride turbulence well and come down the glideslope most comfortably at one of two power settings: 14 inches of manifold pressure at light loads, 17 or 18 inches when heavy. Either way, the airspeed will indicate approximately 100 knots.

You will not exactly burn up the sky in a 206, but performance is not all that bad, either. In exchange for 15 to 16 gallons per hour, a Turbo Stationair 6, for example, will yield true airspeeds near 145 knots at lower altitudes, and 165 knots up high. This represents a 75-percent power setting. For 65 percent, you can use a ballpark setting of 27 inches manifold pressure, 2,300 rpm and 13 gph and expect true airspeeds in the neighborhood of 130 knots. Normally aspirated models will deliver comparable speeds for the same power settings, but they cannot maintain those settings at higher altitudes.

The Turbo Stationair 6 we recently flew was equipped with the optional

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six-port oxygen system, a necessity if you want to use a turbocharged airplane to its full capabilities. Other nice-to-have options available for the past two model years include propeller anti-icing and the Bendix RDR-160 color weather radar.

Once the 206's popularity was firmly established in the 1960s, Cessna decided that it would offer a stretched version of the 206 with a seven-seat capability. Called the 207 then the Stationair, deliveries were never very strong and dropped to 66 airplanes in 1979. It was discontinued in 1980.

That same year, the Stationair 8—an eight seater—was introduced. So far, sales are less than 200 units. Cessna may have fallen into the "bigger is better" trap, failing to realize that the Stationair 6 may represent what best fills most utility-airplane purchasers' needs.

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The 206 can act like two different airplanes, depending on the load.

At $116,000 per copy for a new, well-equipped Stationair 6, most of the 206 series' customers look to the used market. There, prices for the airplane run from an average of $17,000 or so for a 1964 model to $28,000 for a 1975, normally aspirated model. Turbocharged 206s and Stationairs generally are worth $4,000 more than a standard model, at least from the 1968 to 1975 model years.

Perhaps the best value is a 1980 Stationair. New, it sold for about $74,400 (normally aspirated) or $81,800 (turbocharged). Now one is worth an average of $34,500 and $49,700, respectively. Modifications, of course, will drive up the market value of any airplane, and the 206 is no exception. Some of the most popular options are the Robertson STOL conversion and the Flint Aero wing-tip tanks, which add 30 gallons usable fuel.

Whether you are interested in a new or used model, the airplane's virtues are the same. They are honest, hard-working airplanes that demand relatively little and give much in return. And remember, if in doubt, you usually *can* take it with you. □

1978 Cessna Stationair 6 II		1982 Cessna Turbo Stationair 6 II
$56,990	**Base price**	$99,400
$32,000–$35,000	**Current market value**	—
AOPA Pilot Operations/Equipment Category*: IFR		
SPECIFICATIONS		
Teledyne Continental IO-520-F, 300 bhp @ 2,850 rpm (takeoff), 285 bhp @ 2,700 rpm (max continuous power)	**Powerplant**	Teledyne Continental TSIO-520-M, 310 bph @ 2,700 rpm (takeoff), 285 bph @ 2,600 rpm (max continuous power)
1,700 hr	**Recommended TBO**	1,400 hr
McCauley, 3 blade, constant speed, 80 in dia.	**Propeller**	McCauley, 3 blade, constant speed, 80 in dia
28 ft 3 in	**Length**	28 ft 3 in
9 ft 7.5 in	**Height**	9 ft 3.5 in
36 ft	**Wingspan**	36 ft
174 sq ft	**Wing area**	174 sq ft
20.7 lb/sq ft	**Wing loading**	20.7 lb/sq ft
12 lb/hp	**Power loading**	11.6 lb/hp
6	**Seats**	6
12 ft	**Cabin length**	12 ft
3 ft 8 in	**Cabin width**	3 ft 8 in
4 ft 1.5 in	**Cabin height**	4 ft 1.5 in
1,977 lb	**Empty weight**	2,081 lb
3,612 lb	**Max ramp weight**	3,616 lb
1,635 lb	**Useful load**	1,535 lb
1,281 lb (1,107 lb)	**Payload w/full fuel, std (opt)**	1,007 lb
3,600 lb	**Max takeoff weight**	3,600 lb
3,600 lb	**Max landing weight**	3,600 lb
366 lb (354 lb usable)	**Fuel capacity, std**	552 lb (528 lb usable)
61 gal (59 gal usable)		92 gal (88 gal usable)
552 lb (528 lb usable)	**opt**	N/A
92 gal (88 gal usable)		
12 qt	**Oil capacity**	12 qt
180 lb	**Baggage capacity**	180 lb
PERFORMANCE		
900 ft	**Takeoff distance,** ground roll	835 ft
1,780 ft	over 50-ft obst	1,640 ft
920 fpm	**Rate of climb,** sea level	1,010 fpm
156 kt	**Max level speed,** sea level	N/O
—	17,000 ft	174 kt
Cruise speed/Range w/45-min rsv, std fuel (fuel consumption)		
146 kt/450 nm (94.8 pph/15.8 gph)	@ 75% power, 6000 ft	—
—	@ 75% power, 10,000 ft	148 kt/640 nm (99 pph/16.5 gph)
—	20,000 ft	163 kt/670 nm (100.2 pph/16.7 gph)
137 kt/475 nm (82.2 pph/13.7 gph)	@ 65% power, 6,000 ft	—
—	10,000 ft	138 kt/700 nm (85.2 pph/14.2 gph)
—	20,000 ft	150 kt/720 nm (85.8 pph/14.3 gph)
14,800 ft	**Service ceiling**	27,000 ft
1,395 ft	**Landing distance,** over 50-ft obst	1,395 ft
735 ft	ground roll	735 ft
LIMITING AND RECOMMENDED AIRSPEEDS		
66 KIAS	**Vx** (Best angle of climb)	68 KIAS
84 KIAS	**Vy** (Best rate of climb)	88 KIAS
120 KIAS	**Va** (Design maneuvering)	120 KIAS
140 KIAS	**Vfe** (Max flap extended) To 10°	140 KIAS
100 KIAS	10° to 40°	100 KIAS
149 KIAS	**Vno** (Max structural cruising)	149 KIAS
183 KIAS	**Vne** (Never exceed)	183 KIAS
55 KIAS	**Vs1** (Stall clean)	55 KIAS
	Vso (Stall in landing configuration)	
46 KIAS		46 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, at sea level and gross weight, unless otherwise noted.
**Operations/Equipment Category reflects this aircraft's maximum potential. See June 1982 Pilot, p. 93.*
N/A—not available. N/O—not obtained.