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## THE CESSNA 182

(Specifically N97533)

The 182 is a big cat, with a lot of power and weight. A no-fooling airplane, it really wants to fly, even with wheels and antennas sticking out all over it. It can get in and out of anything called an airport, even places for which the term is a gross euphemism.

Getting the most out of the airplane takes some skill, but it is well worth the effort. It is a superb touring aircraft, a real Royal Barge, extremely comfortable, yet tough. There are good reasons why one sees a lot of 182's and 180's in Africa and other remote places.

## FLIGHT PLANNING

The enormous range (and its famous stability) makes it a good IFR machine. It can theoretically get a third of the way across the country, but with full fuel it is only a 3 - PERSON AIRPLANE and has LESS PAYLOAD THAN THE 172! With partial tanks, it can still do all right, and carry an unbelievable amount of stuff, but CHECK YOUR LOADING AGAINST THE BOOK. Don't push the weight and balance limits. Note the segmented baggage area weight allowances. the need to stay in the CG envelope, etc.

Try to keep the interior nice. Use blankets to keep dirty objects, ice-cream cones, or hairy beasts off the seat upholstery. Wipe your feet. (We will try to find some approved floor mats to keep winter's mud and ice from grubbing up the cabin floor.)

If you intend to haul anything unusual, note the floor weight limits, requirements for cargo restraints, also the need to keep sharp or lumpy objects out from under seats with passengers in them, etc. Some cargo items might void the insurance. If there are any questions, check with Operations.

Never load it to where it has less than 300fpm climb capability, especially in the mountains.

Don't crowd fuel. Generally speaking, with 2 hours fuel left, you should be thinking of landing; one hour left and you're losing

options rapidly. Always be able to make it to good WX.

Don't neglect ear protection for yourself and your passengers on a long trip. The engine is smooth, but noise levels are still high, enough to affect hearing after prolonged exposure.

#### PREFLIGHT

When opening it up, stow the heat screens carefully. They are easily blown out of the airplane through the big doors.

Roll the tires to see all 360 degrees of tread. We have had incidents with the Mooney on this one; no need to repeat them here.

When scraping snow, be careful of the cotter pin heads at the aileron hinges; don't skin the paint off the ridges of the corrugations. Don't hammer on the aluminum: it will deform. Ice is best removed by thawing, in a hangar, or by facing the wing surfaces into the sun, if that's possible.

Frozen tank drains **GROUND THE AIRPLANE**. We have had incidents in the past. Get a mechanic to check. Also, make sure that what comes out of the tank and sump drains is gas, not water. (Water will initially bead up on pavement.)

Optimum oil is 10 qt. **DO NOT OPERATE WITH LESS THAN 9!** The book says to fill to 12 for extended flights, but don't fill much beyond optimum for short flights. The excess just gets blown overboard.

The markings on the dipstick are notoriously hard to read, especially at night by flashlight. Don't guess. If there's any question, take it to a good light and really look at the level.

Don't forget the oil filler cap. Line boys have been known to leave them loose, and a rustproofed 182 is not a pretty sight.

After a thaw and re-freeze, watch out for ice stuck in the aileron and flap gaps. It often persists here long after it has melted off the rest of the airplane. Always check the flap tracks and operating hardware for buckling or bending, and for freedom of movement.

In the winter, check the oil cooler for strips of tape which may have been applied as a jury rig to keep the oil from congealing in sub-zero WX. (Symptom: excessively high oil temperature in flight on an extremely cold day). Remove the tape for normal winter operations.

In cold WX, if the starter is stuck, warm the pinion. Do not let ignorant line boys or Sunday mechanics hammer on it. (After the flight, re-engage the starter by momentarily turning the ignition key to the start position.)

Frozen moisture in jacks and panel switches can be a problem. If the lights or radios don't come on, start the engine and let the cabin heat up. It's OK to leave the lights on at shutdown to come on with the master, but don't ever do this with the avionics.

#### STARTING AND TAXIING

Don't over-prime. Symptoms are colored stains on the firewall, dripping or smell of gas. Likewise don't pump the throttle too much. More than one or two strokes risks a fire. The engine starts very easily when properly set up to fire. Avoid flooding it.

The engine when stone cold in the wintertime is one humongous chunk of shrunk-up aluminum, pinched rings and bearings, and thick, congealed oil. It will be tough as the devil to crank. Give the starter motor and the cold-enfeebled battery a fighting chance: limber the oil by pulling the prop through a few times. In cold weather, use a good cold-start procedure to get the engine set up to fire instantly, within one or two blades of the prop. In really cold WX, use preheat.

Sometimes the starter slips, or can't make it past a compression stroke. Back off, rock the prop against compression a few times with the key. If it still won't go, put the key in your pocket, tie down, put somebody on the brakes, go out front, and pull it through any particularly tough compression strokes. (Don't screw up: a prop accident could ruin your day and ours too!)

If it gets flooded, crank or prop it with the throttle open and the mixture cut off, or go have a cup of coffee and wait for the flooding to clear. (See winter material for full precautions on propping!)

Once it starts, the starter will disengage. Starters have been known to stick, however, causing the overdriven starter motor to feed power back into the electrical system. Wonky meter readings and ominous ring gear noise indicate that this has happened. Shut down instantly and investigate.

Violent wash-machine action up front means that ice has collected in the spinner. Shut down and investigate.

Winter flying sure is fun, isn't it?

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Don't ever try to pull yourself out of a hole with the prop. There's enough power to raise really big rocks off the ground and whack them with the prop, or send them through the propeller and into the struts and elevator leading edges.

Taxi with the mixture leaned to where smooth operation is obtained.

Avoid driving the nosewheel up over the edge of pavement, or letting it clunk into potholes. The wheel rims are tender, and besides, you endanger the prop. A good idea is to always taxi with the yoke pulled back to take the load off the nosewheel.

In taxiing, don't steer the airplane with the brakes alone. Push the rudder pedals, then touch the brakes to initiate the turn. Riding the brakes or steering with them causes unnecessary wear.

Taxiing on ice can be hairy. Use Cessna's taxiing control-surface position recommendations to "fly" the airplane on the ground; use the engine to keep yourself straight.

The airplane can be flown and landed in winds too strong to taxi in. If you feel the machine skittering under you, head into the wind. If it's bad, get help to walk the wings (and ask yourself what you were doing out there in the first place!)

Don't taxi across the drains at Hanscom or elsewhere.

Check the operation of the T&B as you taxi out. The one in N97533 seems particularly sensitive.

Avoid run-ups over loose sand and gravel. Content yourself with a rolling mag check at 1400 rpm. Likewise, not over 1400 rpm when starting a takeoff roll on sand or gravel: get some speed before firewalling it!

When cycling the prop, check that it returns to the original rpm.

Don't forget to set mixture rich (or as required) before takeoff.

#### TAKOFF AND CRUISE

Full length is always a good idea.

Always re-check mixture, carb heat, cowl flaps, prop, and fuel valve as you leave the runup area. It's possible to ruin the engine in short order if these are set wrong or handled

incorrectly. Also, don't forget these items on go-around or missed approach!

In flying 97533, avoid accidentally flipping the autopilot on with your throttle hand at takeoff -- a startling experience the first time it happens. The A/P on/off switch is badly located for those of us with big clumsy hands.

After takeoff, use full power to get a safe altitude, then throttle back to comply with the 23" sustained climb power restriction.

When you need best rate or best angle, hold these speeds EXACTLY. On short field takeoff with 20 degrees of flap, raise the nose at 49 (42 light) kts and fly it out at 57 (52 light). The nose will be at a horrendous angle, but keep it there until obstacles are cleared. Then allow speed to increase before starting to remove the flaps.

Use a normal enroute climb speed for good cooling. Watch the cylinder head temperatures on a hot day, keep the airspeed up. In cruise, open the cowl flaps a few notches if the engine needs it. Use the adjustment capability provided!

The secret of good fuel economy with this bird is not to use a lot of power for cruise. 65% will normally do it; use more when fighting a headwind. With a tailwind, cut power way back and enjoy the free ride. Fly on the upwind side of ridges to get free lift. Lean carefully. Good power control and route planning will save an enormous amount of gas.

In cruise at low altitude, the engine seems to run best at 22", 2200 or 2300 rpm. Some roughness will be noticed at lower m.p. Any of the combinations given in the power tables may be used. Pick one where it runs comfortably.

Caution: when descending from high altitude, watch the manifold pressure, avoid having the engine develop excessive power.

Lean carefully according to the book procedure. (50 degrees F drop on rich side of peak for anything over 65% power). If the plugs foul, lean aggressively to burn them off.

The radios have some peculiarities. Note the "0-5" switch for splitting the 50 kHz channels. Note the ident button on the wheel.

With these radios, it's possible to miss calls as you begin to fly out of a given station's range. The squelch will need to be adjusted for signal strength, or it can be left off entirely -- the radios are quiet even with it off.

There are two map lights: one on the wheel, the other up under the glare shield, controlled by a tiny toggle switch.

Unlike the 172, the 182 is certified only for normal operations. Don't rack it around. When practicing power-on departure stalls, maintain a slight bank so that the aircraft will fall off to one side. When it finally breaks, it can get wild.

Stay out of ice! The airplane can probably carry some, but intentionally flying into ice is illegal, and you certainly don't want to find out the hard way just what the limits are. What generally seems to happen is that the prop ices up first and begins to shake the daylights out of the engine mounts. If for some reason the prop stays clean, then the ice is apt to appear on the wing leading edges. The black tires (with wheel pants off in the winter) make a fine "early warning" background for detecting the beginnings of a buildup.

While an autopilot is very convenient, the airplane flies just fine without it. If a wing goes down, wait. It will come back up again. Trim the airplane to fly hands off. Check fuel trim, nose and rudder trim. Use the weight of the hand-mike for aileron trim if needed. It will steam along in grand style once it is all trimmed out, giving the pilot nothing to do but watch the gauges and the scenery.

#### DESCENT AND LANDING

This is a heavy piece of equipment, and should be flown with full use of the trim. In the pattern, give two pulls of the trim wheel to get it set to fly the right approach speed.

To save gas, reduce power in a holding pattern. On the ILS, get it set up so that it handles like a baby-carriage. In particular, don't tear down the ILS course at cruise speed. Get slowed down and trimmed, and it will fly the approach as nicely as you please.

The 182 is notoriously prone to carburetor ice. Be aware of a carb ice possibility when skirting the base of clouds, where even in the clear air, the r.h. is obviously somewhere near 100%. When idling on a cool raw day, check for carb ice every few minutes, also check m.p. when descending through a layer of stratus or fog. No fun to have the engine cough and stumble with passengers aboard, or when you're busy with the ILS.

Gradual, controlled power reductions are very important to avoid cracked cylinder heads. Be sure the cowl flaps are closed on power reduction and descent. In very cold WX, carry some power all the way down to the ground. Once on the ground, open the cowl

flaps. Lean the mixture for taxi.

Don't get into the habit of just driving the airplane onto the ground. Learn to use the marvelous short field capability. Reduce the approach speed by half the percentage under gross (i.e. by the square root of the gross weight) in addition to the other considerations. Plan to touch down with the elevator control full back or nearly so!. (On the other hand, if you're sitting there with the elevator full back several feet above the ground and it begins to mush down, do something! DONT DROP IT ON THE NOSE! 182's are notoriously prone to damage from buckled or bent firewalls resulting from clumsy nose-first landings -- completely avoidable by landing in a correct attitude, at the proper speed. Beware: heavy control forces are needed: use trim to help. Get to where you can practically land it hands off.

If you bounce, recover with power, and land again, on the mains!

Once down, unless you have a gusty crosswind or a short field requiring heavy braking, keep the elevator back, let the speed bleed off until the nosewheel comes down all by itself. Continue to hold the elevator back while taxiing. The nosewheel is tender and its bearings are subject to wear, causing shimmy. Frank Comerford used to say he could tell if the guy owned the airplane by the way he treated the nosewheel.

Don't neglect slips if you have to shoehorn it in somewhere. Curiously, it won't stall in a slip. (It will come out of the slip, then stall). Observe the warning about uncoordinated maneuvers on less than 1/4 tank of fuel. The old note about avoiding slips with flaps extended seems to have disappeared in the '79 POH.

When descending, do not let the windmilling prop drive the engine (unusual noise, pronounced deceleration). To do so causes floating of the piston rings, with risk of breakage. Carry a little power to prevent this; don't push the prop control in all at once (unless the airplane is slowed down and the throttle is almost closed).

Power will also help straighten out a skid or a tendency to swerve or dig in when landing in mud or loose gravel. When rolling out on a soft field, keep the elevator back and DON'T STOP until you've reached a firm spot, or the nose will dig in like a homesick mole and endanger the prop.

While not so prone to float as the 172, the 182 can indeed float a long way in ground effect. Never mind what people say about giving the controls a "Cessna Shake" -- the right answer is to use the correct approach speed. If you find yourself floating with the end of the runway coming up, do something. Get out of there,

of if there's time, raise the flaps, get the wheels on, and heavily apply the brakes. Next time, use the right speed.

On go around, there's a big problem if you don't promptly get rid of carb heat, reduce flaps to 20 degrees, and overpower the trim forces enough to keep the nose in a proper climb attitude: even with full power at sea level, with 40 degrees flap and carb heat on, the airplane won't climb worth beans. (If flown critically, it may climb a little, but not nearly enough to be safe). In case of a missed or a go-around, get full power, get the flaps back to 20 degrees, develop a good climb rate, and get out of there! Bear in the back of your mind the possible need to reset the flap breaker, should that pop somehow when you put full flaps down (happened to me once a long time ago!). Best not to commit full flaps until you have the airport made.

#### PARKING AND TIEDOWN

When parking, don't push on the spinner. It cracks the spinner bulkhead, an expensive item to replace.

Restrain overly enthusiastic helpers: it's possible to put dents in the stabilizer or the dorsal fin by too ham-handed a grip.

As noted above, in very cold WX, momentarily engage the starter before leaving the plane.

To prevent crossfeed and assure full fuel, leave the tank valve on "Left" or "Right." On "Both" gas will transfer to the lower tank -- and may go completely overboard if the airplane is left parked laterally on a slope!

When installing bird corks, be sure to pass the cord in front of the prop as a precaution against the next person's forgetting to pull them.

Brakes are normally left off with the airplane securely tied down. If setting the brakes, hold them with your feet while carefully pulling out the handle in order to tension the cable. The handbrake pedal harness is very light and is easily snapped by yanking on the handle as one would do with an automobile handbrake.

Check to see that passengers don't inadvertently deplane with the aircraft logbooks, the operating handbook, or other required documents.

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Try to keep the 182 nice. It is a real piece of equipment.

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API Members:

This is a short note to remind everyone of the areas to be careful with when flying the C-182.

1. Remember that the useful load when carrying full fuel is just a few pounds (read approx 15) over 600. Don't forget the equipment, (extra oil, ladder, flight cases (do you know how much yours weighs?), etc. when figuring your load.
2. When taxiing, remember to keep the yoke full aft unless you have a ripping tail wind. It really makes a difference on the strut compression and prop clearance as well as loading on the tender nose wheel. It is imperative that you hold full back pressure when braking. If you don't you will get a rude awakening.
3. Carb Ice The C-182 is notorious for generating copious amounts of ice in the carburetor venturi at partial throttle and or when the humidity is high. It is important to use carb heat when approaching to land and applying it before reducing power or you may find when you get a little low and add power nothing happens. Remember if you have been gliding power off and the engine is just windmilling the carb heat box will be cold and applying carb heat at that time won't buy you much.
4. Landings: The elevator is heavier on the C-182 than on the C-172 and requires greater force on the yoke to hold the nose up. There can be larger trim changes with power and flap setting changes as the engine is considerably more powerful. Keep this in mind if you have to abort an approach. Also when the mains touch down continue holding back pressure otherwise excess loads will be placed on the nose wheel. This is very important when braking.
5. Be careful when advancing the throttle, the autopilot on-off switch is right above it and several people have inadvertently turned the autopilot on while making power changes.

I'm sure there are many more points I have forgot to mention but I will remember after I print this out.

Sincerely yours,

Paul Bauer

ALSO:

6. LEAVE FUEL SELECTOR IN "OFF" POSITION ON SHUT-DOWN. THIS PREVENTS SIPHONING BETWEEN TANKS.

7. OPEN COWL FLAPS AFTER LANDING

Thanks

Wickes