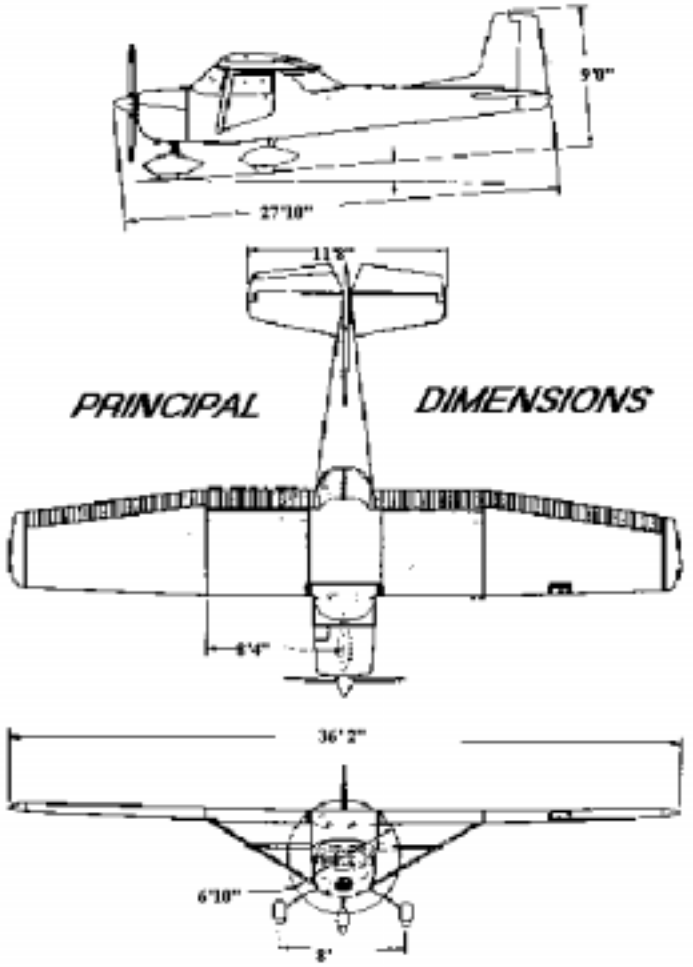
1966 Cessna 182-J Skylane
Performance and Specifications

Gross weight	2,800 lbs.
Speed	
Top Speed at sea level	170 mph
Cruise, 75% power at 6500 ft	162 mph
Range	
Cruise, 75% Power at 6500 ft	695 mi.
79.0 Gallons	5.7 hours
	162 mph
Optimum Range at 10,000 ft	1215 mi.
35.0 Gallons	10.0 hours
	121 mph
Rate of Climb at sea level	980 fpm
Service Ceiling	18,900
Takeoff	
Ground Run	625 ft
Total Distance over 50’ obstacle	1,2055 ft
Landing	
Landing Roll	590 ft
Total Distance over 50’ obstacle	1,350 ft
Empty Weight	1,620 lbs.
Baggage	120 lbs
Wing Loading	16.1 lb./sf.
Power loading	12.1 lb./HP
Fuel Capacity total	84 gal
Oil Capacity	12 US qts
Propeller, Fixed Pitch, metal, dia.	82 in

Power - - Continental O-470-R Engine, 230 HP at 2600 RPM



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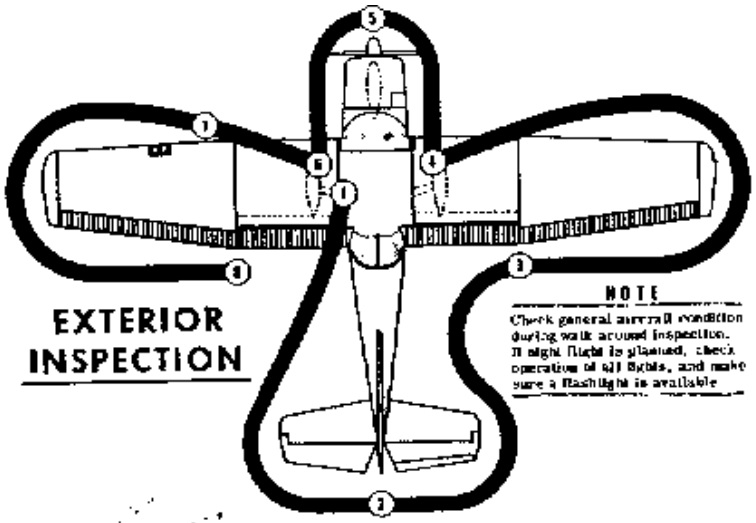


(1) (a) Turn on master switch and check fuel quantity indications, then turn master switch "OFF."
(b) Check ignition switches "OFF."
(c) Check fuel valve handle "ON."
(d) Remove control wheel lock.

(2) (a) Remove gust lock if installed.
(b) Disconnect tail tie-down.

(3) (a) Remove gust lock if installed.

(4) (a) Check main wheel tire for proper inflation.
(b) Inspect airspeed static source hole on side of fuselage for stoppage (left side only).
(c) Disconnect wing tie-down.

(5) (a) Check oil level. Do not operate with less than 4 quarts. Fill for extended flights.
(b) Check propeller and spinner for nicks and security.
(c) Check carburetor air filter for restrictions by dust or other foreign matter.
(d) On first flight of day and after each refueling, drain a two-ounce quantity of fuel from the fuel strainer to check for presence of water and sediment.
(e) Check nosewheel strut for proper inflation.
(f) Check nosewheel tire for proper inflation.
(g) Disconnect nose tie-down.

(6) Same as (4).

(7) (a) Remove pitot tube cover if installed and check pitot tube opening for stoppage.
(b) Check fuel tank vent opening for stoppage.

(8) Same as (1).

Section I

Operating Check List

One of the first steps in obtaining the utmost performance, service, and flying enjoyment from your Cessna is to familiarize yourself with your airplane's equipment, systems, and controls. This can best be done by reviewing this equipment while sitting in the airplane. Those items whose functions and operation are not obvious are covered in Section II

Section I lists, in the Pilot's Check List form, the steps necessary to operate your airplane efficiently and safely. It is not a checklist in its true form as it is considerably longer, but it does cover briefly all of the points that you would want to or should know concerning the information you need for a typical flight.

The flight and operation characteristics of your airplane are normal in all respects. There are no unconventional characteristics or operations that need to be mastered. All controls respond in the normal way within the entire range of operation. All airspeeds mentioned in Sections I and II are indicated airspeeds. Corresponding calibrated airspeeds may be obtained from the Airspeed Correction Table in Section V.

BEFORE ENTERING THE AIRPLANE

1. Make an exterior inspection in accordance with figure 1-1

BEFORE STARTING THE ENGINE

1. Seats and seat belts – Adjust and Lock
2. Flight Controls -- Check
3. Brakes – Test and set

Master Switch – On
4. Cowl Flaps –Open (Move lever out of locking hole to reposition)
5. Elevator and Rudder Trim – Takeoff setting
6. Fuel Selector –On
7. Turn all radio switches OFF

STARTING THE ENGINE

1. Carburetor Heat – Cold
2. Mixture – Rich
3. Propeller – High RPM
4. Throttle –Cracked (one-half inch)
5. Primer – As Required
6. Ignition switch – Start - Hold until engine fires, but not longer than 30 seconds
7. Ignition Switch -- Release to BOTH immediately after engine fires

NOTE

If engine has been overprimed, start with throttle open ¼ to ½ full open. Reduce throttle to idle when engine fires.

NOTE

After starting, check for oil pressure indication within 30 seconds in normal temperatures and 60 seconds in cold temperatures. If no indication appears shut off engine and investigate.

BEFORE TAKE – OFF

1. Throttle Setting – 1700 RPM
2. Engine Instruments – Check
3. Carburetor Heat – Check operation, then set to cold unless icing conditions prevail
4. Ammeter – Check

5. Suction gauge - - Check (4.6 to 5.4 inches of mercury
6. Magnetos – Check (50 RPM maximum differential between magnetos)
7. Propeller – Cycle from high to low RPM; return to high RPM (full in)
8. Flight Controls – Recheck
9. Wing Flaps - - Check operation and set 0° to 20°
10. Cowl Flaps _Full OPEN
11. Elevator and Rudder Tab – Takeoff
12. Cabin doors – Closed and locked
13. Flight Instruments and Radios – Set

TAKE OFF

NORMAL TAKE OFF

1. Wing flaps – Up
2. Carburetor Heat – Cold
3. Throttle – Full "Open" and 2600 RPM
4. Elevator Control – Lift nose wheel at 60 mph
5. Climb Speed – 90 MPH until all obstacles are cleared, then set up climb speed as shown in NORMAL CLIMB paragraph

MAXIMUM PERFORMANCE TAKE OFF

1. Wing Flaps – 20°
2. Carburetor Heat – Cold
3. Brakes – Apply
4. Power – Full throttle and 2600 RPM
5. Brakes – release
6. Elevator Control – Slightly tail low
7. Climb Speed – 60 MPH until all obstacles are cleared, then set up climb speed as shown in MAXIMUM PERFORMANCE CLIMB
8. Wing Flaps – Up after obstacles are cleared

CLIMB

NORMAL CLIMB

1. Air Speed – 100 to 120 MPH
2. Power – 23" and 2450 RPM
3. Mixture – Rich (unless engine is rough)
4. Cowl Flaps – Open as required

MAXIMUM PERFORMANCE CLIMB

1. Air Speed – 88 MPH (sea level) to 84 MPH (10,000)
2. Power – Full throttle and 2600 RPM
3. Mixture – Rich (unless engine is rough)
4. Cowl Flaps – Open as required

CRUISING

1. Power – 15" to 23" manifold pressure and 2200 to 2450 RPM
2. Cowl Flaps – Open as required
3. Elevator and Rudder Trim – Adjust
4. Mixture – Lean

LET DOWN

1. Mixture – Rich
2. Power – As desired
3. Carburetor Heat – Apply (if icing conditions exist)

BEFORE LANDING

1. Fuel Selector Valve –BOTH
2. Mixture – Rich

3. Propeller – High RPM
4. Cowl Flaps – Closed
5. Carburetor Heat – Apply full heat before closing throttle
6. Airspeed – 80 to 90 MPH (flaps retracted)
7. Wing Flaps -- 0° to40° (below 110 MPH
8. Airspeed – 70 to 80 MPH with flaps extended
9. Elevator and Rudder Trim -- Adjust

NORMAL LANDING

1. Landing Technique – Conventional for all flap settings

AFTER LANDING

1. Cowl Flaps – OPEN
2. Wing Flaps – Up
3. Carburetor Heat – Cold

SECURE AIRCRAFT

1. Mixture – Idle Cut-off

NOTE

Do not open throttle as engine stops since this actuates the accelerator pump.

2. All Switches – Off
3. Parking Brake – Set
4. Control Lock – Installed

Section II

Description and Operating Details

The following paragraphs describe the systems and equipment whose function and operation is not obvious when sitting in the airplane. This section also covers in somewhat greater detail some of the items listed in checklist form in Section I

FUEL SYSTEM

Fuel is supplied to the engine from two tanks, one in each wing. The total usable fuel, for all flight conditions, is 79 gallons for optional long-range tanks.

NOTE

Unusable fuel is at a minimum due to the design of the fuel system. However, with ¼ tank or less, prolonged uncoordinated flight, such as slips or skids can uncover the fuel tank outlets, causing fuel starvation and engine stoppage when operating on a single tank. Therefore, to avoid this problem with low fuel reserves, the fuel selector should be set at BOTH position.

Fuel from each wing taken flows by gravity to a selector valve. Depending upon the setting of the selector valve, fuel from the left, right, or both tanks flows through a fuel strainer and carburetor to the engine induction system.

NOTE

Take off with the fuel selector valve handle in the BOTH position to prevent inadvertent take-off on an empty tank. However, when the selector is in the BOTH position, unequal fuel flow from each tank may occur after extended flight if the wings are not maintained exactly level. Resulting wing heaviness can be alleviated gradually by turning the selector valve handle to the tank in the heavy wing. The recommended cruise fuel management for extended flight is to use the left and right tank alternately.

ELECTRICAL SYSTEM

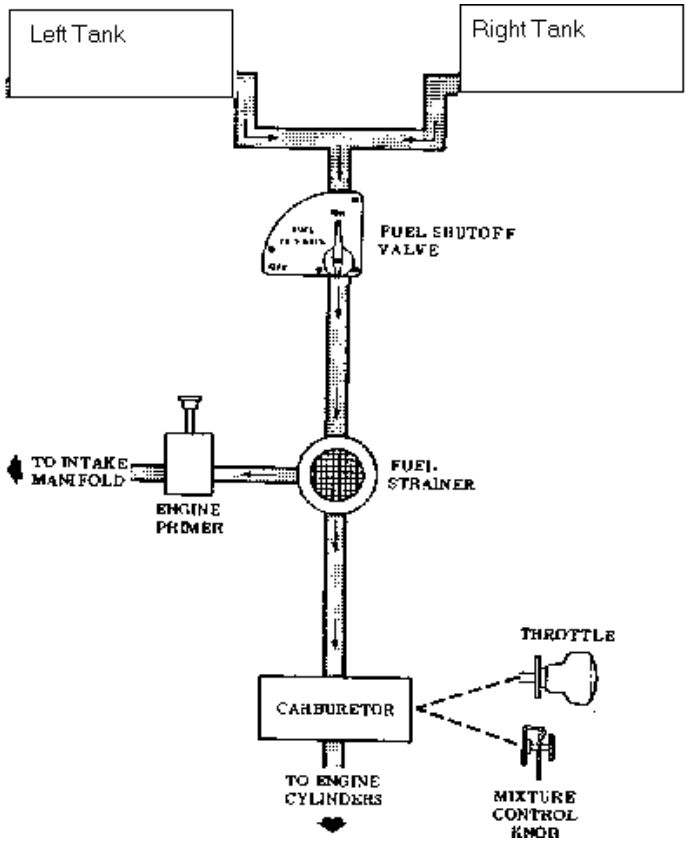
Electrical energy is supplied by a 14-volt, direct-current system, powered by an engine-driven alternator. The 12-volt storage battery is located aft of the rear baggage compartment wall.

CIRCUIT BREAKERS

All electrical circuits in the airplane, except the clock circuit, are protected by circuit breakers. The clock has a separate fuse mounted adjacent to the battery. The stall warning transmitter and horn circuit and the optional turn-and-bank indicator circuits are protected by a single automatically resetting circuit breaker mounted behind the instrument panel. The cigar lighter is protected by a manually reset type circuit breaker mounted directly on the back of the lighter behind the instrument panel The remaining circuits are protected by push-to-reset circuit breakers on the instrument panel.

ROTATING BEACON

The rotating beacon should not be used when flying through clouds or overcast; the moving beams reflected from water droplets or particles in the atmosphere, particularly at night, can produce vertigo and loss of orientation.



CABIN HEATING VENTILATING SYSTEM AND DEFROSTING SYSTEM

The temperature and volume of airflow into the cabin can be regulated to any degree desired by manipulation of the push-pull CABIN HEAT and CABIN AIR knobs. Both control knobs are the double-button type with friction locks to permit intermediate settings.

NOTE

Always pull out the CABIN AIR knob slightly when the CABIN HEAT knob is out. This action increases airflow through the system, increasing efficiency, and blends cool outside air with the exhaust manifold heated air, thus eliminating the possibility of overheating the system ducting.

The rotary type DEFROST know regulates the airflow for windshield defrosting

Front cabin head and ventilating air is supplied by outlet holes spaced across a cabin manifold just forward of the pilot's and copilot's feet. Rear cabin heat and air is supplied by two ducts from the manifold, one extending down each side of the cabin. Windshield defrost air is also supplied by a duct leading from the cabin manifold.

Separate adjustable ventilators supply additional air;; one near each upper corner of the windshield supplies air for the pilot and copilot, and two in the rear cabin ceiling supply air to the rear seat passengers.

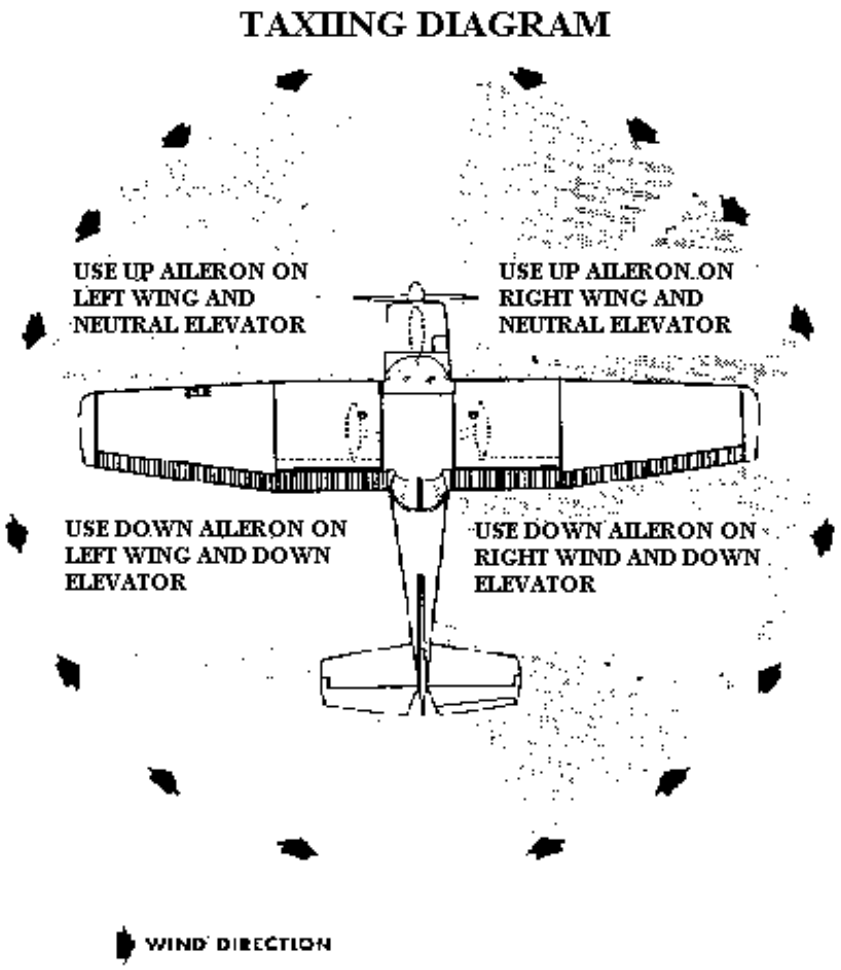


figure 2-2

NOTE:

Strong quartering tailwinds require caution. Avoid sudden bursts of the throttle and sharp braking when the airplane is in this attitude. Use the steerable nose-wheel and rudder to maintain direction

STARTING ENGINE

Ordinarily the engine starts easily with one or two strokes of primer in warm temperatures to six strokes in cold weather, with the throttle open approximately 1/2 inch. In extremely cold temperatures, it may be necessary to continue to priming while cranking. Weak intermittent explosions followed by puffs of black smoke from the exhaust stack indicates overpriming or flooding. Excess fuel can be cleaned from the combustion chambers by the following procedure: Set the mixture control in full lean position, throttle full open, and crank the engine trough several revolutions with the starter. Repeat the starting procedure without any additional priming.

If the engine is underprimed (most likely in cold weather with a cold engine) it will not fire at all, and additional priming will be necessary. As soon as the cylinders begin to fire, open the throttle slightly to keep it running.

If prolonged cranking is necessary, allow the starter motor to cool at frequent intervals, since excessive heat may damage the armature

TAXIING

The carburetor air heat know should be pushed full in during all ground operations unless is absolutely necessary for smooth engine operations. When the know is pulled out to the heat position, air entering the engine is not filtered

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller tips

BEFORE TAKEOFF

Since the engine is closely cowled for efficient in-flight-cooling, precautions should be taken to avoid overheating on the ground.

Full throttle checks on the ground are not recommended unless the pilot has good reason to suspect that the engine is not turning up properly.

The magneto check should be make at 1700 RPM as follows: Move the ignition switch first to "R" position and note RPM. Then move switch back to "BOTH" to clear the other set of plugs. Then move switch to "L" position and note RPM. The difference between the two magnetos operated individually should not be more than 50 RPM. If there is a doubt concerning the operation of the ignition system, RPM checks at higher engine speeds will usually confirm whether a deficiency exists

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

TAKE-OFF

It is important to check full-throttle engine operation early in the takeoff run. Any signs of rough engine operation or sluggish engine acceleration is good cause for discontinuing the take-off.

Full throttle runups over loose gravel are especially harmful to propeller tips. When take-offs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blow back of the propeller rather than pulled into it.

Most engine wear occurs from improper operations before the engine is up to normal operating temperatures, and operating at high power and RPMs. For this reason the use of maximum power for take-off should be limited to that absolutely necessary for safety. Whenever possible, reduce take-off power to normal climb power.

Normal take-offs are accomplished with wing flaps up, cowl flaps open, full throttle, and 2600 RPM. Reduce power to 23" of manifold pressure and 2450 RPM as soon as practical to minimize engine wear.

Using 20º wing flaps reduces the ground run and total distance over the obstacle by approximately 20 per cent. soft field take-offs are performed with 20º flaps by lifting the airplane off the ground as soon as practical in a slightly tail-low attitude. However the airplane should be leveled off immediately to accelerate to a safe climb speed.

If 20º wing flaps are used for take-off, they should be left down until all obstacles are cleared. To clear an obstacle with wing flaps 20º , the best angle-of-climb speed (60 MPH IAS) should be used. If no obstructions are ahead, a best "flaps up" rate-of-climb sped (90MPH IAS) would be most efficient. These speeds vary slightly with altitude, but they are close enough for average field conditions

Flap deflections of 30º to 40º are not recommended at any time for takeoff.

Take-offs into strong crosswinds normal are performed with the minimum flap setting necessary for the field length, to minimize the drift angle immediately after take-off. The airplane is accelerated to a speed slightly higher than normal, then pull off abruptly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

CLIMB

A cruising climb at 23" of manifold pressure, 2450 RPM (approximately 75% power) and 100 to 120 MPH is recommended to save time and fuel for the overall trip. In addition, this type of climb provides better engine cooling, less engine wear, and more passenger comfort due to lower noise level.

If it is necessary to climb rapidly to clear mountains or reach favorable winds at high altitudes, the best rate-of-climb speed should be used with maximum power. This speed is 88 MPH at sea level, decreasing 2 MPH for each 5000 feet above sea level.

CRUISE

Normal cruising is done at 65% to 75% power. The settings required to obtain these powers at various altitudes and outside temperatures can be determined by using your Cessna Power Computer.

OPTIMUM CRUISE PERFORMANCE

% BHP	ALTITUDE	TRUE A/S (mph
75	6,500	162
70	8,000	160
65	10,000	158

figure 2-3

The Optimum Cruise Performance table (figure 2-3), shows that cruising cane done most efficiently at higher altitudes because very nearly the same cruising speed can be maintained at much less power.

For a given throttle setting, select the lowest engine RPM in the green arc range that will give smooth engine operation.

The cowl flaps should be adjusted to maintain the cylinder head temperature near the middle of the normal operating (green arc) range to assure prolonged engine life.

to achieve the range figures shown in Section V, the mixture should be leaned as follows: pull the mixture control out until engine becomes rough; then enrich mixture slightly beyond this point. Any change in altitude, power or carburetor heat will require a change in the lean mixture setting.

Application of full carburetor heat may enrich the mixture to the point of engine roughness. To avoid this, lean the mixture as instructed in the preceding paragraph.

STALLS

The stall characteristics are conventional and aural warning is provided by a stall warning horn which sounds between 5 and 10 PMH above the stall in all configurations.

Power-off stall speeds at maximum gross weight and aft c.g. position are presented in figure 5-2 as calibrated airspeeds since indicated airspeeds are unreliable near the stall.

Spins

Intentional spins are prohibited in this airplane. Should an inadvertent spin occur, standard light plane recovery techniques should be used.

LANDING

Landings are usually made on the main wheels first to reduce the landing speed and the subsequent need for braking in the landing roll. The nosewheel is lowered gently to the runway after the speed has diminished to avoid unnecessary nose gear load. This procedure is especially important in rough field landings.

For short field landings, make a power off approach at 69 MPH, IAS with 40º flaps and land on the main wheels first. Immediately after touchdown, lower the nose gear to the ground and apply heavy braking as required. For maximum brake effectiveness, after all three wheels are on the ground, retract the flaps, hold nose-up elevator and apply maximum brake pressure without sliding the tires

CROSSWIND LANDINGS

When landing is a strong crosswind, use the minimum flap setting required for the field length. Use a wing low, crab, or combination method of drift correction and land in a nearly level attitude. Hold a straight course with the steerable nosewheel and occasional braking if necessary.

COLD WEATHER OPEATION

Prior to starting on clod mornings, it is advisable to pull the propeller through several times by hand to "break loose" or "limber" the oil, thus conserving battery energy. In extremely cold (-20ºF) weather the use of an external preheater is recommended whenever possible to reduce wear and abuse to the engine and electrical system. Cold weather starting procedures are as follows:

With preheat

1. Clear propeller
2. Master Switch -- On
3. With magneto switch "OFF" and throttle closed, prime the engine four to ten strokes as the engine is being turned over

NOTE

Use heavy strokes of primer for best atomization of fuel. After priming, push primer all the way in and turn to locked position to avoid possibility of engine drawing fuel through the primer.

4. Turn magneto switch to "Both"
5. Open throttle to 1/4" and engage starter

Without preheat

1. Prime the engine 8 to 10 heavy strokes while the propeller is being turn by hand.
2. Clear propeller
3. Pull the master switch "On"
4. Turn magneto switch to "Both"
5. Open throttle 1/4"
6. Pull carburetor air heat knob to full on
7. Engage the starter and continue to prime engine until it is running smoothly
8. Keep carburetor heat on until engine has warmed up.

NOTE

If the engine does not start the first time it is probable that the spar plugs have been frosted over. Preheat must be used before another start is attempted.

During cold weather operation, no indication will be apparent on the oil temperature gauge prior to take of if outside air temperatures are very cold. After a suitable warm-up period (2 to 5 minutes at 1000 RPM) accelerate the engine several times to higher engine RPM. If the engine accelerates smoothly and the oil pressure remains normal and steady, the airplane is ready for take-off

When operating sub-zero temperature, avoid using partial carburetor heat. Partial heat may increase the carburetor air temperature to the 32º to 80ºF range, where icing is critical under certain atmospheric conditions.

An optional winterization kit is available for use when operating to temperatures below 20º F.

Section III

OPERATING LIMITATIONS

OPEATIONS AUTHORIZED

Your Cessna 182, with standard equipment as certified under FAA Type Certificate 3A13 is approved for day and night operation under VFR.

Additional optional equipment is available to increase its utility and to make it authorized under IFR day and night. An owner of a properly equipped Cessna is eligible to obtain approval for its operation on single-engine scheduled airline service under VFR. Your Cessna Dealer will be happy to assist you in selecting equipment best suited to your needs.

MANEUVERS - - NORMAL CATEGORY

The airplane exceeds the requirements for airworthiness of the Federal Aviation Regulations, Part 23, set forth by the United States Government. Spins and aerobatic maneuvers are not permitted normal category airplanes in compliance with these regulations. In connection with the foregoing, the following gross weight and flight load factors apply:

Maximum Gross Weight	2800 lbs.
Flight Maneuvering Load factor, *Flaps Up	+3.8 to -1.52
Flight Maneuvering Load Factor, *Flaps Down	+3.5

* The design load factors are 150% of the above and in all cases the structure meets or exceeds design loads.

Your airplane must be operated in accordance with all FAA-approved markings, placards and checklists in the airplane. If there is any information in this section which contradicts the FAA-approved markings, placards and checklists, it is to be disregarded.

AIRSPEED LIMITATIONS

The following are the certificated calibrated airspeed limits for your Cessna

Maximum (Glide or dive, smooth air)	193 MPH (red line)
Caution Range	160 - 193 MPH (yellow arc)
Maximum Structural Cruising Speed (Level flight or climb)	160 MPH
Normal Operation Range	67 - 160 MPH (green arc)
Maximum Speed, Flaps Extended	110 MPH
Flap Operation Range	60 - 110 MPH (white arc)
Maneuvering Speed *	128 MPH

* The maximum speed at which you can use abrupt control travel without exceeding the design load factor

ENGINE OPEATION LIMITAIONS

Power and Speed	100 BHP at 2750 RPM

ENGINE OPERATION LIMITATINS

Power and Speed	230 BHP at 2600 RPM

ENGINE ISNTRUMENT MARKINGS

OIL TEMPERATURE GAUGE

Normal Operating Range	Green Arc
Do Not Exceed	225º (red line)

OIL PRESSURE GUAGE

Minimum Idling	10 psi (red line)
Normal Operating Range	30 - 50 psi
Maximum	100 psi (red line)

MANIFOLD PRESSURE GAUGE

Normal Operating Range	15" to 23" Hg. (green arc)

CYLINDER HEAD TEMPERATURE GAUGE

Normal Operating Range	300º to 460º (green arc)
Do Not Exceed	460º (red line)

TACHOMETER

Normal Operating Range:	2200 -2450 (inner green arch)
Cautionary Range	2450 to 2600 RPM
Do Not Exceed	2600 RPM (red line)

FUEL QUANTITY INDICATORS

Empty	E (red line)

WEIGHT AND BALANCE

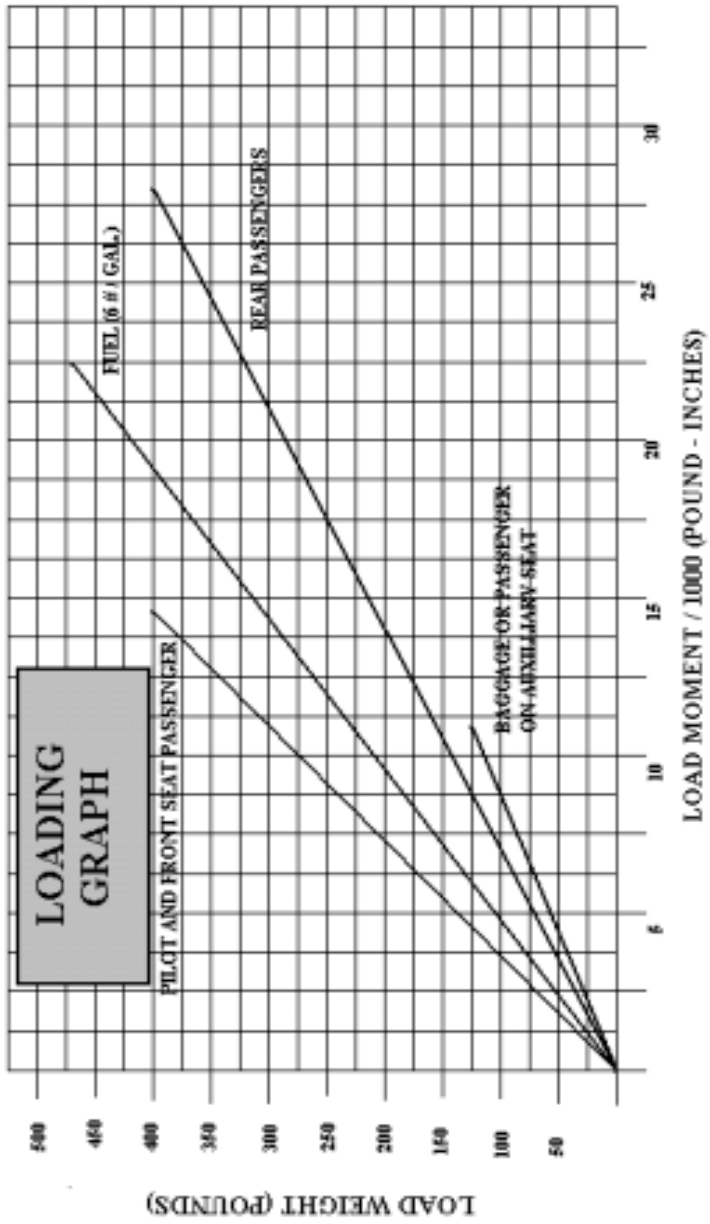
The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure the weight and balance for your particular airplane, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope as follows:

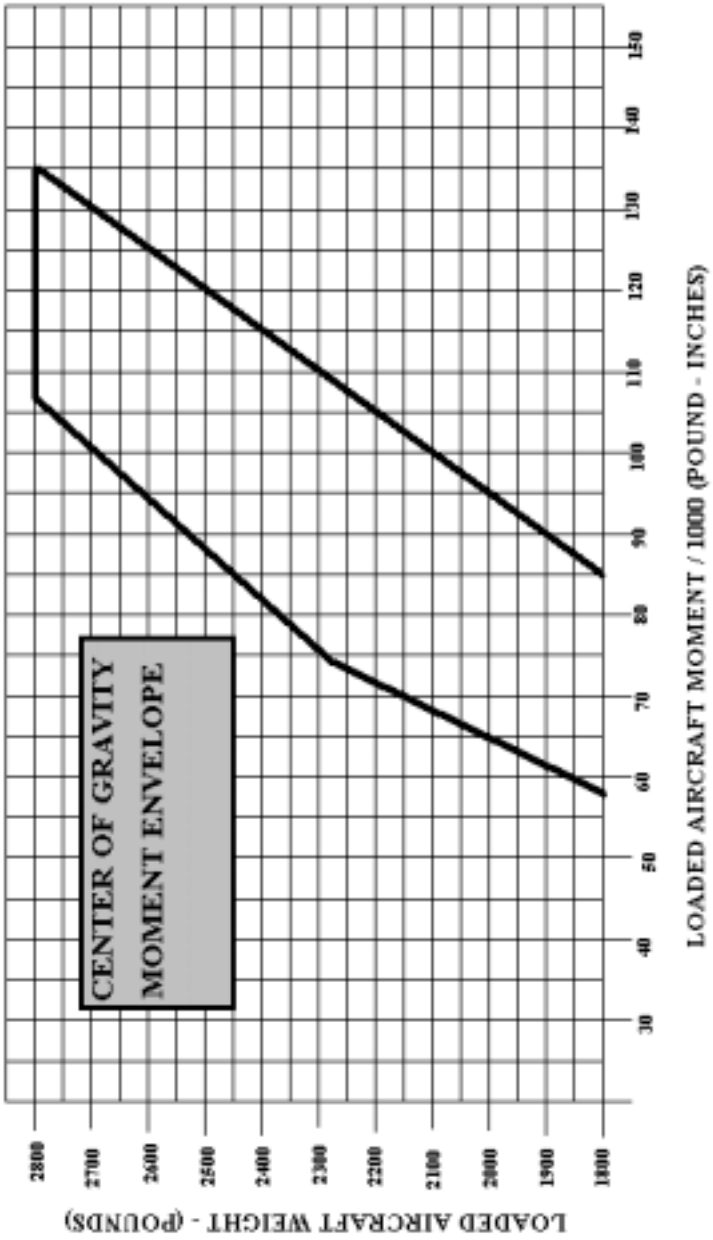
Take the licensed Empty Weight and Moment/1000 from the Weight and Balance Data Sheet, plus any changes noted on forms FAA-337 carried in your airplane, and write them down in the proper columns. Using the Loading Graph, determine the moment/1000 of each item to be carried. Total the weights and moments/1000 and use the Center of Gravity Moment Envelope to determine whether the point falls within the envelope and if the loading is acceptable.

	SAMPLE AIRPLANE			YOUR AIRPLANE	
SAMPLE LOADING PROBLEM	WT (lbs)	Moment (lb-in) / 1000)		WT (lbs)	Moment (lb-in) / 1000)
Licensed Empty Weight (sample airplane)	1660	57.9			
Oil 12 qts **	22	-.03			
Pilot and Passenger	340	12.2			
Fuel (60 Gal at 6 # / gal	360	17.3			
Rear Passengers	340	24.1			
Baggage (or passenger on auxiliary seat	78	7.6			
Total Aircraft Weight	2800	118.8			

Locate this point (2800 at 118.8) on the Center of Gravity envelope chart and since this falls within the envelope, the loading is acceptable.

** NOTE: Normally, full oil may be assumed for all flights





Section IV
CARE OF THE AIRPLANE

If your airplane is to retain that new plane performance, stamina, and dependability, certain inspection and maintenance requirements must be followed. It is always wise to follow a planned schedule of lubrication and maintenance based on the climatic and flying conditions encountered in your locality.

Keep in touch with your Cessna dealer, and take advantage of his knowledge and experience. He knows your airplane and how to maintain it. He will remind you when lubrications and oil changes are necessary and about outer seasonal and periodic services.

GROUND HANDLING

The airplane is most easily and safely maneuvered by hand with a tow-bar attached to the nose wheel

NOTE

When using the tow-bar, never exceed the turning angle of 29º either side of center, or damage to the gear will result.

MOORING YOUR AIRPLANE

Proper tie-down is the best precaution against damage to your parked airplane by gusty or strong winds.

To tied down your airplane securely, proceed as follows:

1. Set parking brake and install control wheel lock
2. Install a surface control lock between each aileron and flap
3. Tie sufficiently strong ropes or chains (700 pounds tensile strength) to wing, and tail tail-down fittings and secure each rope to ramp tie-down
4. Install a pitot tube cover

WINDSHIELD - - WINDOWS

The plastic windshield and windows should be kept clean and waxed at all times. To prevent scratches and crazing, wash them carefully with plenty of soap and water, using the palm of the hand to feel and dislodge dirt and mud. A soft cloth, chamois or sponge may be used, but only to carry water to the surface. Rinse thoroughly, then dry with a clean moist chamois. Rubbing the surface of the plastic with a dry cloth builds up an electrostatic charge so that it attracts dust particles in the air. Wiping with a moist chamois will remove both the dust and this charge

Remove oil and grease with a cloth moistened with kerosene. Never use gasoline, benzine, alcohol, acetone, carbon tetrachloride, fire extinguisher or anti-ice fluid, lacquer thinner or glass cleaner. These materials will soften the plastic and may cause it to craze.

After removing dirt and grease, if the surface is not badly scratched, it should be waxed with a good grade of commercial wax. The wax will fill in minor scratches and help prevent further scratching. Apply a thin even coat of was and bring it to a high polish by rubbing lightly with a clean, dry, soft flannel cloth. Do not use a power buffer; the heat generated by the buffing pad may soften the plastic.

Do not use a canvas cover on the windshield unless freezing rain or sleet is anticipated. Canvas covers may scratch the plastic surface.

ALUMINUM SURFACES

The clad aluminum surfaces of your Cessna require only a minimum of care to keep them bright and clean. The airplane may be washed with clear water to remove dirt; oil and grease may be removed with gasoline, naphtha, carbon tetrachloride or other non-alkaline solvents. Dulled aluminum surfaces may be cleaned effectively with an aircraft aluminum polish.

After cleaning and periodically thereafter, waxing with a good automotive was will preserve the bright appearance and retard corrosion. Regular waxing is especially recommended for airplanes operated in salt-water areas as a protection against corrosion.

PAINTED SURFACES

The painted surfaces of your new Cessna require an initial curing period which may be as long as 90 days after the finish is applied. During this curing period some precautions should be taken to avoid damaging the finish or interfering with the curing process. The finish should be cleaned only by washing with clean water and mild soap, followed by a rinse with water and drying with cloths or a chamois. Do not use polish or wax, which would exclude air from the surface, during this 90-day curing period. Do not rub or buff the finish and avoid flying through rain, sleet or hail.

Once the finish has cured completely, it may be waxed with a good automotive wax. A heavier coating of was on the leading edges of the wings and tail and on the engine nose cap and propeller spinner will help reduce the abrasion encountered in these areas.

PROPELLER CARE

Preflight inspection of propeller blades for nicks, and wiping them occasionally with an oily cloth to clean off grass and bug stains will assure long, trouble-free service. It is vital that small nicks on the propellers, particularly near the tips and on the leading edges, are dressed out as soon as possible since these nicks produce stress concentrations, and if ignored, may result in cracks. Never use an alkaline cleaner on the blades. Remove grass and dirt with carbon tetrachloride or Stoddard solvent.

INTERIOR CARE

To remove dust and loose dirt from the upholstery, headliner, and carpet, clean the interior regularly with a vacuum cleaner.

Blot up any spilled liquid promptly, with cleansing tissue or rags. Don’t pat the spot; press the blotting material firmly and hold it for several seconds. Continue blotting until no more liquid is taken up. Scrape off sticky materials with a dull knife, then spot-clean the area.

Oily spots may be cleaned with household spot removers used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the fabric to be cleaned. Never saturate the fabric with a volatile solvent; it may damage the padding and backing materials.

Soiled upholstery and carpet may be cleaned with foam-type detergent, and used according to the manufacturer's instructions. To minimize wetting the fabric, keep the foam as dry as possible and remove it with a vacuum cleaner,

The plastic trim, instrument panel and control knobs need only be wiped off with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with kerosene. Volatile solvents, such as mentioned in paragraphs on care of the windshield, must never be used since they soften the craze the plastic.

INSPECTION SERVICE AND INSPECTION PERIODS

With your airplane you will receive an Owner's Service Policy. Coupons attached to the policy entitle you to an initial inspection and the first 100-hour inspection at no charge. If you take delivery from your Dealer, he will perform the initial inspection before delivery of the airplane to you. If you pick up the airplane at the factory, plan to take it to your Dealer reasonably soon after you take deliver on it. This will permit him to check it over and to make any minor adjustments that may appear necessary. Also, plan an inspection by your Dealer at 100 hours or 90 days, which ever comes first. This inspection also is performed by your Dealer for you at no charge. While these important inspections will be performed for you by any Cessna Dealer, in most cases you will prefer to have the Dealer from whom you purchased the airplane accomplish this work.

Federal Air Regulations required that all airplanes have a periodic (annual) inspection as prescribed by the administrator, and performed a person designated by the administrator. In addition, 100-hour periodic inspections made by an "appropriately-rated mechanic" are required if the airplane is flown for hire. The Cessna Aircraft Company recommends the 100-hour periodic inspection for your airplane. The procedure for this 100-hour inspection has been carefully worked out by the factory and is followed by the Cessna Dealer Organization. The complete familiarity of the Cessna Dealer Organization with Cessna equipment and factory-approved procedures provides the highest type of service possible at lower cost.

AIRPLANE FILE

There are miscellaneous data, information and licenses that are a part of the airplane file. The following is a checklist for that file. In addition, a periodic check should be made of the latest Civil Air Regulations in insure that all data requirements are met.

1) To be displayed in the airplane at all times:
   a) Aircraft Airworthiness Certificate (Form FAA-1362)
   b) Aircraft Registration Certificate (Form FAA -500A)
   c) Airplane Radio Station License (Form FCC-404, if transmitter installed)
2) To be carried in the airplane at all times
   a) Weight and Balance, and associated papers (latest copy of the Repair and Alteration Form, FAA-337 if applicable)
   b) Airplane Equipment List
3) To be made available upon request:
   a) Airplane Log Book
   b) Engine Log Book

NOTE

Cessna recommends that these items, plus the Owner's Manual and the 'Cessna Flight Guide" (Flight Computer) be carried in the airplane at all times.

Most of the items listed are required by the United States Federal Aviation regulations. Since the regulations of other nations may require other documents and data, owners of exported airplanes should check with their own aviation officials to determine their individual requirements.

LUBRICATION AND SERVICING PROCEDURES

Specific servicing information is provided here for items requiring daily attention. A Service Frequency checklist is included to inform the pilot when to have other items checked and serviced

DAILY

Fuel Tank Filler

Service after each flight with 80/87 minimum grade fuel. The capacity of each wing tank is 42.0 gallons with optional long-range tanks

Fuel Strainer

On the first flight of the day and after each refueling, drain for about four seconds, to clear fuel strainer of possible water and sediment. Turn the drain knob, then check that strainer drain is close after draining.

Oil Dipstick

Check oil level before each flight. Do not operate on less than 9 quarts. To minimize loss of oil through breather, fill to 10-quart level for normal flights of less than 3 hours. For extended flight, fill to 12 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.

Oil Filler

When preflight check shows low oil level, service with aviation grade engine oil: SAE 20 below 40ºF and SAE 40 above 40ºF. Your Cessna was delivered from the factory with straight mineral oil (non-detergent) and should be operated with straight mineral oil for the first 25 hours. The use of mineral oil during the 25-hour break-in period will help seat the piston rings and will result in less oil consumption. After the first 25 hours, either mineral oil or detergent oil may be used. If a detergent oil is used, it must conform to Continental Motors Corporation Specification MHS-24. Your Cessna Dealer can supply an approved brand.

SERVICING INTERVALS CHECKLIST

EACH 50 HOURS

BATTERY- - Check and Service. Check oftener (at least every 30 days) if operating in hot weather)

ENGINE OIL AND OIL FILTER - - Change engine oil and replace filter element. If optional oil filter is not installed changed oil and clan screen every four months even thought less than 50 hours have been accumulated. Reduce periods for prolonged operation in dusty area, cold climates, or when short flights and long idle periods result in sludging conditions.

CARBURETOR AIR FILTER - -Clean or replace. Under extremely dusty conditions, daily maintenance of the filter is recommended

NOSE GEAR TORQUE LINKS - - Lubricate

EACH 100 HOURS

FUEL STRAINER - - Disassemble and clean

FUEL TANK SUMP DRAIN PLUGS - Remove and drain

FUEL LINE DRAIN PLUG - - Remove and drain

BRAKE MASTER CYLENDERS - -Check and Fill

SHIMMY DAMPENER - - Check and Fill

VACUUM SYSTEM OIL SEPARATOR (OPT) - - Clean

SUCTION RELIEF VALVE INLET SCREEN (OPT) - -Clean

EACH 500 HOURS

WHEEL Bearings - -Lubricate. Lubricate at first 100 hours and at 500 hours thereafter

VACUUM SYSTEM AIR FLITER (OPT) - - Replace filter element. Replace sooner if suction gauge reading drops to 4.6" Hg.

AS REQUIRED

NOSE GEAR SHOCK STRUT - - Keep inflated and filled

Gyro instrument air filters (OPT) - - Replace at instrument overhaul

Section V

OPERATIONAL DATA

The operational data shown on the following pages are presented for two purposes: first, so that you may know what to expect from your airplane under various conditions, and second, to enable you to plan your flights in detail and with reasonable accuracy.

The data in the charts has been compiled from actual flight tests with the airplane and engine in good condition and using average piloting techniques. Note also that the range charts make on allowances for wind, navigational error, warm-up, take-off, climb, etc. You must estimate these variables for yourself and make allowances accordingly.

Remember that the charts contained herein are based on standard day conditions. Form more precise power, fuel consumption, and endurance information, consult the Cessna Flight Guide (Power Computer) supplied with your aircraft. With the flight Guide, you can easily take into account temperature variations from standard at any flight altitude..

AIRSPEED CORRECTION TABLE

FLAPS UP	IAS	60	80	100	120	140	160	180	--
	CAS	68	83	100	118	137	156	175	--
FLAPS DOWN 20°-40°	IAS	40	50	60	70	80	90	100	110
	CAS	58	63	68	75	84	92	101	110
Maximum Flap Speed 110 MPH, CAS									

figure 5-1

STALLING SPEEDS

Power off, (mph)

Gross Weight 2800 lbs.	ANGLE OF BANK		
	0º	**30º**	**60º**
Flaps 0º	64	69	91
Flaps 20º	57	61	81
Flaps 40º	55	59	78

figure 5-2

---------- TAKE – OFF DISTANCE ----------

TAKEOFF DISTANCE WITH 20° FLAPS FROM HARD SURFACE RUNWAY

GROSS WT LBS	IAS MPH	HEAD WIND MPH	At Sea Level, 59°F		At 2,500 ft, 50°F	
			GROUND RUN	TO CLEAR 50' OBS.	GROUND RUN	TO CLEAR 50' OBS.
2000	52	0	295	655	350	745
		15	160	425	195	490
		30	65	235	80	280
2400	57	0	440	895	525	1035
		15	255	600	310	705
		30	115	355	150	425
2800	61	0	625	1205	745	1420
		15	380	830	460	990
		30	190	515	240	630

GROSS WT LBS	IAS MPH	HEAD WIND MPH	At 5,000 ft, 41°F		At 7,500 ft, 32°F	
			GROUND RUN	TO CLEAR 50' OBS.	GROUND RUN	TO CLEAR 50' OBS.
2000	52	0	415	855	500	1005
		15	235	570	290	680
		30	105	35	135	405
2400	57	0	630	1210	765	1400
		15	380	835	470	1020
		30	190	515	245	645
2800	61	0	895	1695	1095	2090
		15	565	1200	700	1505
		30	305	780	390	1000
NOTE	Increase distance 10% for each 25° F above standard temperature					

figure 5-3

MAXIMUM RATE OF CLIMB DATA

GROSS WT LBS	At Sea Level, 59°F		
	IAS MPH	RATE OF CLIMB FPM	FUEL USED, GAL
2000	84	1710	1.5
2400	86	1295	1.5
2800	88	980	1.5

GROSS WT LBS	At 5,000 ft, 41°F		
	IAS MPH	RATE OF CLIMB FPM	FUEL USED, GAL
2000	82	1350	2.7
2400	84	1005	3.1
2800	86	745	3.7

GROSS WT LBS	At 10,000 ft, 23°F		
	IAS MPH	RATE OF CLIMB FPM	FUEL USED, GAL
2000	79	995	4.1
2400	82	720	5.0
2800	84	510	6.3

GROSS WT LBS	At 15,000 ft, 23°F		
	IAS MPH	RATE OF CLIMB FPM	FUEL USED, GAL
2000	76	640	5.9
2400	79	435	7.6
2800	82	280	10.2

GROSS WT LBS	At 20,000 ft, 23°F		
	IAS MPH	RATE OF CLIMB FPM	FUEL USED, GAL
2000	74	280	9.2
2400	77	150	12.9
2800	80	50	20.5

NOTE: Flaps up, full throttle and 2600 RPM. M mixture leaned to smooth operation above 5000 ft. Fuel used includes warm-up and takeoff allowance

CRUISE PERFORMANCE

LEAN MIXTURE

Standard Conditions -- Zero Wind – Gross Weight 2800 Pounds

RPM	MP	%BHP	GAL/ HR	TAS MPH	END. (HOURS)	RANGE (MILES)
2500 FEET						
2450	23	76	14.2	158	5.6	885
	22	72	13.4	154	5.9	910
	21	68	12.7	151	6.2	940
	20	63	12.0	148	6.6	995
2300	23	71	13.1	154	6.0	925
	22	67	12.2	149	6.5	970
	21	62	11.5	145	6.9	055
	20	59	11.0	142	7.2	10220
2200	23	67	12.1	149	6.5	980
	22	63	11.4	146	6.9	1010
	21	59	10.8	142	7.3	1040
	20	55	10.2	138	7.7	1045
2000	20	47	8.7	126	9.1	1135
MAXIMUM	19	43	8.2	121	9.6	1170
RANGE	18	39	7.5	113	10.5	1185
SETTINGS	17	35	7.0	105	11.3	1190
5000 FEET						
2450	23	78	14.5	163	5.4	885
	22	73	13.6	159	5.8	925
	21	70	13.0	156	6.1	950
	20	65	12.2	151	6.5	985
2300	23	73	13.4	158	5.9	930
	22	69	12.6	155	6.3	965
	21	64	11.9	151	6.6	1005
	20	60	11.2	146	7.1	1035
2200	23	68	12.4	155	6.4	985
	22	64	11.7	151	6.8	1020
	21	60	11.0	146	7.2	1050
	20	57	10.5	143	7.5	1075
2000	19	45	8.5	126	9.3	1175
MAXIMUM	18	41	7.9	118	10.0	1190
RANGE	17	37	7.3	111	10.8	1200
SETTINGS	16	34	6.8	103	11.6	1190

figure 5.4 (Sheet 1 of 3)

CRUISE PERFORMANCE

LEAN MIXTURE

Standard Conditions -- Zero Wind – Gross Weight 2800 Pounds

RPM	MP	%BHP	GAL/ HR	TAS MPH	END. (HOURS)	RANGE (MILES)
7,500 FEET						
2450	21	71	13.1	161	6.0	960
	20	67	12.4	157	6.4	1005
	19	62	11.7	152	6.8	1025
	18	58	11.0	147	7.2	1055
2300	21	66	12.2	156	6.5	1005
	20	62	11.6	151	6.8	1025
	19	58	11.0	147	7.2	1050
	18	54	10.5	142	7.5	1065
2200	21	62	11.4	152	6.9	1055
	20	58	10.7	148	7.4	1090
	19	54	10.2	143	7.7	1105
	18	51	9.7	138	8.1	1130
2000	19	47	8.7	131	9.1	1185
MAXIMUM	18	43	8.1	123	9.8	1200
RANGE	17	39	7.6	116	10.4	1210
SETTINGS	16	36	7.0	107	11.3	1210
10,000 FEET						
2450	19	63	11.9	156	6.6	1035
	18	60	11.2	152	7.1	1055
	17	55	10.6	146	7.5	1090
	16	51	10.0	141	7.9	1105
2300	19	60	11.1	152	7.1	1080
	18	56	10.5	147	7.5	1105
	17	51	9.8	141	8.1	1130
	16	47	9.2	134	8.6	1145
2200	19	56	10.4	148	7.6	1120
	18	52	9.8	142	8.1	1155
	17	49	9.3	136	8.5	1160
	16	45	8.7	129	9.1	1175
2000	18	44	8.4	128	9.4	1200
MAXIMUM	17	40	7.8	120	10.1	1215
RANGE	16	38	7.4	14	10.7	1215
SETTINGS	15	35	6.9	105	11.4	1200

figure 5.4 (Sheet 2 of 3)

CRUISE PERFORMANCE

LEAN MIXTURE

Standard Conditions -- Zero Wind – Gross Weight 2800 Pounds

RPM	MP	%BHP	GAL/ HR	TAS MPH	END. (HOURS)	RANGE (MILES)
15,000 FEET						
2450	16	54	10.4	150	7.6	1135
	15	50	9.8	142	8.1	1155
	14	46	9.2	135	8.6	1160
2300	16	50	9.6	143	8.2	1170
	15	47	9.1	136	8.7	1185
	14	42	8.5	127	9.3	1185
2200	16	47	9.1	138	8.7	1200
	15	44	8.6	130	9.2	1200
	14	40	8.0	120	9.9	1190
2000 MAXIMUM RANGE SETTINGS	16	40	7.8	122	10.1	1240
	15	37	7.3	112	10.8	1210
	14	34	6.8	101	11.6	1175
20,000 FEET						
2450	13	44	9.0	133	8.8	1175
	12	40	8.3	122	9.5	1155
2300	13	42	8.4	126	9.4	1190
	12	38	7.7	113	10.3	1155
2200	13	39	7.8	118	10.1	1190
	12	35	7.2	103	11.0	1135

figure 5.4 (Sheet 3 of 3)

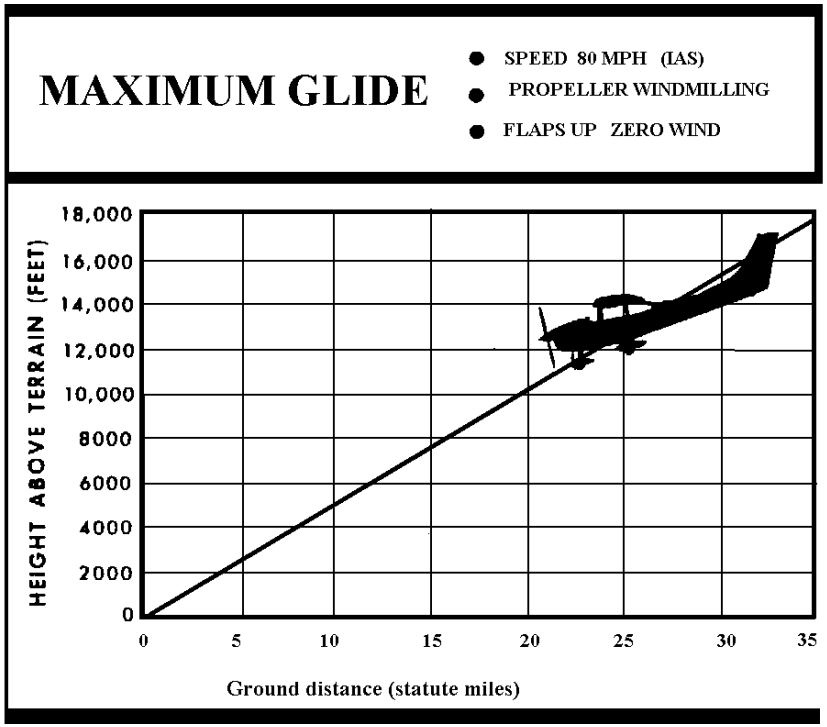
LANDING DISTANCE

Landing Distance with 40° Flaps on hard surface runway

GROSS WT LBS	APPROACH A/S, MPH	At Sea Level, 59°F		At 2,500 ft, 50°F		At 5,000 ft, 41°F		At 7,500 ft, 32°F	
		Ground Roll	To Clear 50' Obstacle	Ground Roll	To Clear 50' Obstacle	Ground Roll	To Clear 50' Obstacle	Ground Roll	To Clear 50' Obstacle
2800	69	590	1350	640	1430	680	1505	740	1595

NOTE

Distances are based on zero wind, power off and heavy braking.
Reduce landing distances 10% for each 6 MPH headwind.



Section VI

OPTIONAL SYSTEMS

This section contains a description, operating procedures, and performance data (when applicable) for some of the optional equipment which may be installed in your Cessna. Owner's Manual Supplements are provided to cover operation of other optional equipment systems when installed in your airplane. Contact your Cessna Dealer for a complete list of available optional equipment.

LONG RANGE FUEL TANKS

Special wings with long-range fuel tanks are available to replace the standard wings and fuel tanks for greater endurance and range. When these tanks are installed, the total usable fuel, for all flight conditions is 79 gallons.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT AND NON-CONGELALING OIL COOLER

(not installed)

GROUND SERVICE PLUG RECEPTACLE

A ground service plug receptacle may be installed to permit the use of an external power source for cold weather starting and during lengthy maintenance work on the electrical system.

Before connecting a generator type external power source, it is important that the master switch be turned on. This will enable the battery to absorb transient voltages which otherwise might damage the semiconductors in the electronic equipment. When using a battery type external power source, the master switch should be turned off to prevent an unnecessary power drain form the power source batteries to the airplane's battery.

IMPORTANT

Be certain that the polarity of any external power source or batteries is correct (positive to positive and negative to negative). A polarity reversal will result in immediate damage to semiconductors in the airplane's electronic equipment.

OIL DILUTION SYSTEM

(not installed)

STATIC PRESSURE ALTERNATE SOURCE

A static pressure alternate source valve may be installed in the static system for use when the external static sources are malfunctioning. This valve also permits draining condensate from the static lines.

If erroneous instrument reading are suspected due to water or ice in the static pressure lines, the static pressure alternate source valve should be opened, thereby supplying static pressure from the cabin. Cabin pressures will vary, however, with open cabin ventilators or windows. The most adverse combinations will result in airspeed and altimeter variations of no more than 2 mph and 20 feet respectively.

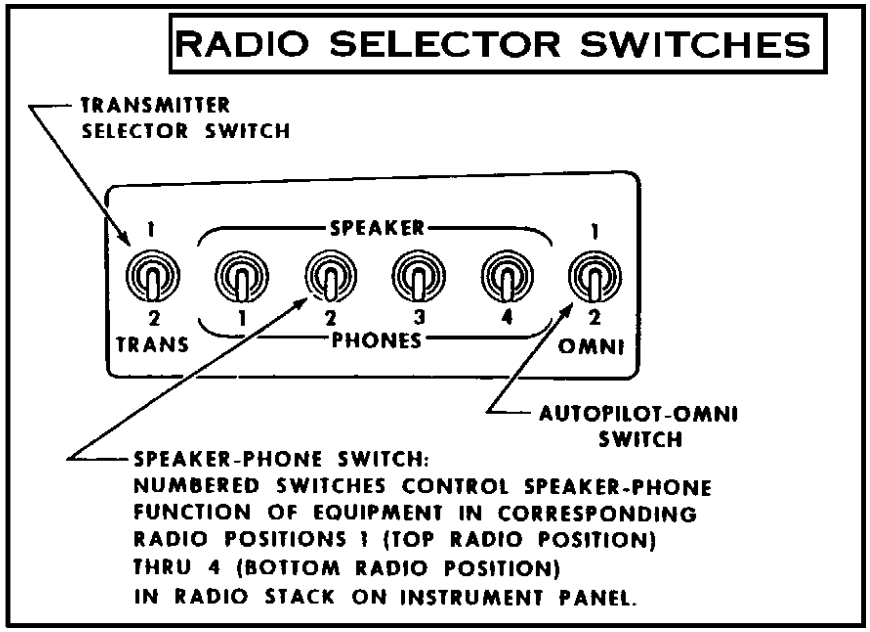
RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION

Operation of the radio equipment is normal as covered in the respective radio manuals. When more than one radio is installed, an audio switching is necessary. The operation of this switching system is described below.

TRANSMITTER SELECTOR SWITCH

The transmitter selector switch has two positions. When two transmitters are installed, it is necessary to switch the microphone to the radio unit the pilot desires to use for transmission. This is accomplished by placing the transmitter selector switch in the position corresponding to the radio unit which is to be used.



SPEAKER-PHONE SWITCHES

The speaker-phone switches determine whether the output of the receiver is use is fed to the headphones or through the audio amplifier to the speaker. Place the switch for the desired receiving system either in the up position for speaker operation or in the down position for headphones

AUTOPILOT –OMNI SWITCH

When a Nav-O-Matic autopilot is installed with two compatible omni receivers, an autopilot-omni switch is utilized. This switch select the omni receiver to be used for the omni course sensing function of the autopilot. The up position selects the upper receiver in the radio panel stack, and the down position selects the lower omni receiver.

OXYGEN SYSTEM – not installed

CESSNA ECONOMY MIXTUERE INDICATOR

The Cessna Economy Mixture Indicator is an exhaust gas temperature sensing device which is used to aid the pilot in selecting the most desirable fuel-air mixture for cruising flight at less than 75% power. Exhaust gas temperature (EGT) varies with the ratio of fuel-to-air mixture entering the engine cylinders.

OPERATING INSTRUCTIONS

1. In take-off and full power climb, use full rich mixture
2. In level flight (or cruising climb at less than 75% power), lean the mixture to peak EGT; then enrichen as desire using the following table as a guide

MIXTURE DESCRIPTION	EGT	TAS LOSS FROM BEST POWER	RANGE INCREASE FROM BEST POWER
BEST POWER (Maximum speed)	Peak minus 125° (enrichen)	0 MPH	0 %
NORMAL LEAN (Owner's Manual & Computer Performance)	Peak minus 75° (enrichen)	1 MPH	10 %
MAXIMUM LEAN	Peak minus 25° (enrichen)	3 MPH	20 %

NOTES

Changes in altitude or power setting require the EGT to be rechecked and the mixture re-set

Operation at peak EGT is not authorized for normal continuous operation, except to establish peak EGT for reference. Operation on the lean side of peak EGT or within 25° of peak EGT is not approved.

3. Use rich mixture (or mixture appropriate for field elevation) in idle descents or landing approaches. Leaning techniques for cruise descents may be with EGT reference method (at least every 5000 feet) or by simply enriching to avoid engine roughness if numerous power reductions are made.

TRUE AIRSPEED INDICATOR

A true airspeed indicator is available to replace the standard airspeed indicator in your airplane. The true airspeed indicator ha a calibrated rotatable ring which works in conjunction with the airspeed indicator dial in a manner similar to the operation of a flight computer.

To obtain True airspeed, rotate ring until pressure altitude is aligned altitude is aligned with outside temperature in degrees Fahrenheit. Then read true airspeed on rotatable ring opposite airspeed needle.

NOTE

Pressure altitude should not be confused with indicated altitude. To obtain pressure altitude, set barometric scale on altimeter to 29.92" and read pressure altitude on altimeter. Be sure to return altimeter barometric scale to original barometric setting after pressure altitude has been obtained.

Altitude	Temp (F)	Temp (C)
Sea Level-	59	15
1,000	55.5	13
2,000	52	11
3,000	48.5	9
4,000	45	7
5,000	41.5	5
6,000	38	3
7,000	34.5	1
8,000	31	-1
9,000	27.5	-3
10,000	24	-5
11,000	20.5	-7
12,000	17	-9
13,000	13.5	-11
14,000	10	-13
15,000	6.5	-15
16,000	3	-17
17,000	-0.5	-19
18,000	-4	-21
19,000	-7.5	-23
20,000	-11	-25

Standard Temperatures

ALPHABETICAL INDEX

G

H

I

L

M

N

O

P

R

S

T

V

W

Servicing Requirements

FUEL

Aviation Grade	80/87 Minimum, grade
Capacity, each	42 gallons

ENGINE OIL

aviation grade	SAE 20 below 40º
	SAE 24 above 40º
Capacity of sump	12 quarts

HYDRAULIC FLUID

MIL - H - 5606 Hydraulic fluid

TIRE PRESSURE

Nose gear	32 psi
Main gear	32 psi (5:00 x 5 tire)