THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE

1967

N2600L

Cessna

SALES AND SERVICE

MODEL 172 AND SKYHAWK

OWNER'S MANUAL

WORLD'S LARGEST PRODUCER OF GENERAL AVIATION AIRCRAFT SINCE 1956

PERFORMANCE - SPECIFICATIONS

	MODEL 172	SKYHAWK
Empty weight		1378.6
GROSS WEIGHT	2300 lbs	2300 lbs
SPEED:		
Top Speed at Sea Level	138 mph	139 mph
Cruise, 75% Power at 7000 ft	130 mph	131 mph
RANGE:		
Cruise, 75% Power at 7000 ft	595 miles	600 miles
39 Gal. No Reserve	4.6 hours	4.6 hours
	130 mph	131 mph
Optimum Range at 10,000 ft	720 miles	720 miles
39 Gal. No Reserve	7.1 hours	7.1 hours
	102 mph	102 mph
RATE OF CLIMB AT SEA LEVEL	645 fpm	645 fpm
SERVICE CEILING	13,100 ft	13,100 ft
TAKE-OFF:		
Ground Run	865 ft	865 ft
Total Distance Over 50-Foot Obstacle	1525 ft	1525 ft
LANDING:		
Landing Roll	520 ft	520 ft
Total Distance Over 50-Foot Obstacle	1250 ft	1250 ft
EMPTY WEIGHT (Approximate)	1275 lbs	1340 lbs
BAGGAGE	120 lbs	120 lbs
WING LOADING: Pounds/Sq Foot	13.2	13.2
POWER LOADING: Pounds/HP	15.9	15.9
FUEL CAPACITY: Total	42 gal.	42 gal.
OIL CAPACITY: Total	8 qts	8 qts
PROPELLER: Fixed Pitch (Diameter)	76 inches	76 inches
ENGINE:		
Continental Engine	O-300-C*	O-300-D
145 rated HP at 2700 RPM		

*The Model F172, which is manufactured by Reims Aviation S.A., Reims (Marne) France, is identical to the 172 except that it is powered by an O-300-D engine manufactured under license by Rolls Royce, Crewe, England. All 172 information in this manual pertains to the F172 as well.

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CONGRATULATIONS .....

Welcome to the ranks of Cessna owners! Your Cessna has been designed and constructed to give you the most in performance, economy, and comfort. It is our desire that you will find flying it, either for business or pleasure, a pleasant and profitable experience.

This Owner's Manual has been prepared as a guide to help you get the most pleasure and utility from your Model 172/Skyhawk. It contains information about your Cessna's equipment, operating procedures, and performance; and suggestions for its servicing and care. We urge you to read it from cover to cover, and to refer to it frequently.

Our interest in your flying pleasure has not ceased with your purchase of a Cessna. World-wide, the Cessna Dealer Organization backed by the Cessna Service Department stands ready to serve you. The following services are offered by most Cessna Dealers:

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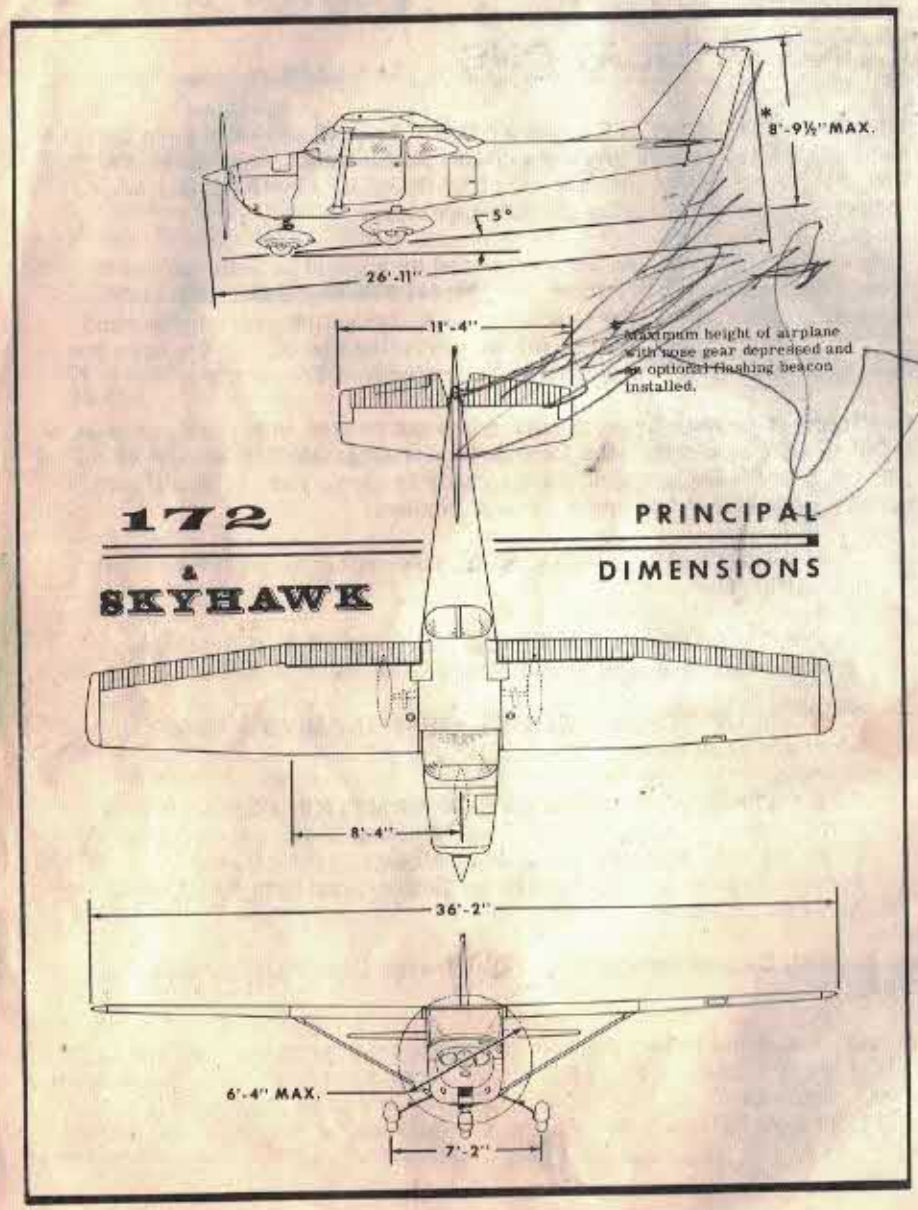
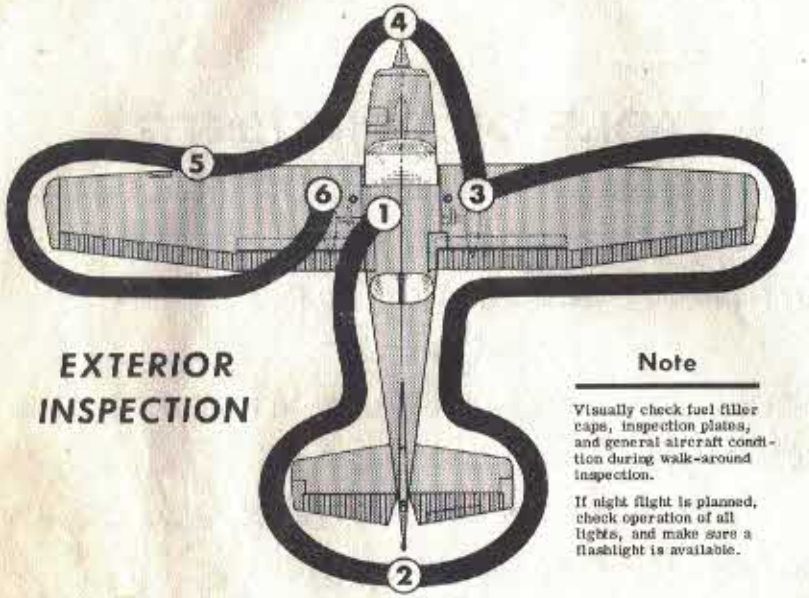


TABLE OF CONTENTS

This manual describes the operation and performance of both the Cessna Model 172 and the Cessna Skyhawk. Equipment described as "Optional" denotes that the subject equipment is optional on the Model 172. Much of this equipment is standard on the Skyhawk model.



(1)
a. Turn on master switch and check fuel quantity indicators, then turn master switch off.
b. Check ignition switch "OFF".
c. Check fuel selector valve handle "BOTH ON."
d. On first flight of day and after each fueling, pull out strainer drain knob for about four seconds, to clear fuel strainer of possible water and sediment.
e. Remove control wheel lock.
f. Check baggage door for security.

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

(3)
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.

(4)
a. Check oil level. Do not operate with less than six quarts. Fill for extended flight.
b. Check propeller and spinner for nicks and security.
c. Check nose wheel strut and tire for proper inflation.
d. Disconnect tie-down rope.
e. Make visual check to insure that fuel strainer drain valve is closed after draining operation.

(5)
a. Remove pitot tube cover, if installed, and check pitot tube opening for stoppage.
b. Check fuel tank vent opening for stoppage.
c. Check stall warning vent opening for stoppage.

(6) Same as (3).

Figure 1-1.

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 function and operation are not obvious are covered in Section II.

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

The flight and operational 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 airspeed 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) Brakes -- Test and set.
(3) Radios and Flashing Beacon -- "OFF."
(4) Fuel Selector -- "BOTH ON."

STARTING THE ENGINE.

(1) Master Switch -- "ON".
(2) Carburetor Heat -- Cold.
(3) Mixture -- Rich.
(4) Primer -- 2-5 strokes (depending on temperature).
(5) Throttle -- Open 1/8".
(6) Propeller Area -- Clear.
(7) Ignition Switch -- "BOTH".
(8) Starter -- Engage.

BEFORE TAKE-OFF.

(1) Flight Controls -- Check.
(2) Trim Tab -- "TAKE-OFF" setting.
(3) Cabin Doors -- Latched and locked.
(4) Throttle Setting -- 1700 RPM.
(5) Engine Instruments -- Check.
(6) Carburetor Heat -- Check operation.
(7) Magnetos -- Check (75 RPM maximum differential between magnetos).
(8) Flight Instruments and Radios -- Set.
(9) Suction Gage -- Check (4.6 to 5.4 inches of mercury).

TAKE-OFF.

NORMAL TAKE-OFF.

(1) Wing Flaps -- 0°
(2) Carburetor Heat -- Cold.
(3) Power -- Full throttle (applied smoothly).
(4) Elevator Control -- Lift nosewheel at 60 MPH.
(5) Climb Speed -- 85 MPH.

MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps -- 0°
(2) Carburetor Heat -- Cold.
(3) Brakes -- Apply.
(4) Power -- Full throttle.

(5) Brakes -- Release.
(6) Elevator Control -- Slightly tail low.
(7) Climb Speed -- 66 MPH (with obstacles ahead).

CLIMB.

NORMAL CLIMB.

(1) Airspeed -- 80 to 90 MPH.
(2) Power -- Full throttle.
(3) Mixture -- Full rich (unless engine is rough).

MAXIMUM PERFORMANCE CLIMB.

(1) Airspeed -- 80 MPH at sea level to 77 MPH at 10,000 feet.
(2) Power -- Full throttle.
(3) Mixture -- Full rich (unless engine is rough).

CRUISING.

(1) Power -- 2200 to 2700 RPM.
(2) Trim Tab -- Adjust.
(3) Mixture -- Lean.

LET-DOWN.

(1) Mixture -- Rich.
(2) Power -- As desired.
(3) Carburetor Heat -- As required to prevent carburetor icing.

BEFORE LANDING.

(1) Mixture -- Rich.
(2) Fuel Selector -- "BOTH ON."
(3) Carburetor Heat -- Apply full heat before closing throttle.
(4) Airspeed -- 70 to 80 MPH (flaps up).

(5) Wing Flaps -- As desired.
(6) Airspeed -- 65 to 75 MPH (flaps down).

NORMAL LANDING.

(1) Touchdown -- Main wheels first.
(2) Landing Roll -- Lower nosewheel gently.
(3) Braking -- Minimum required.

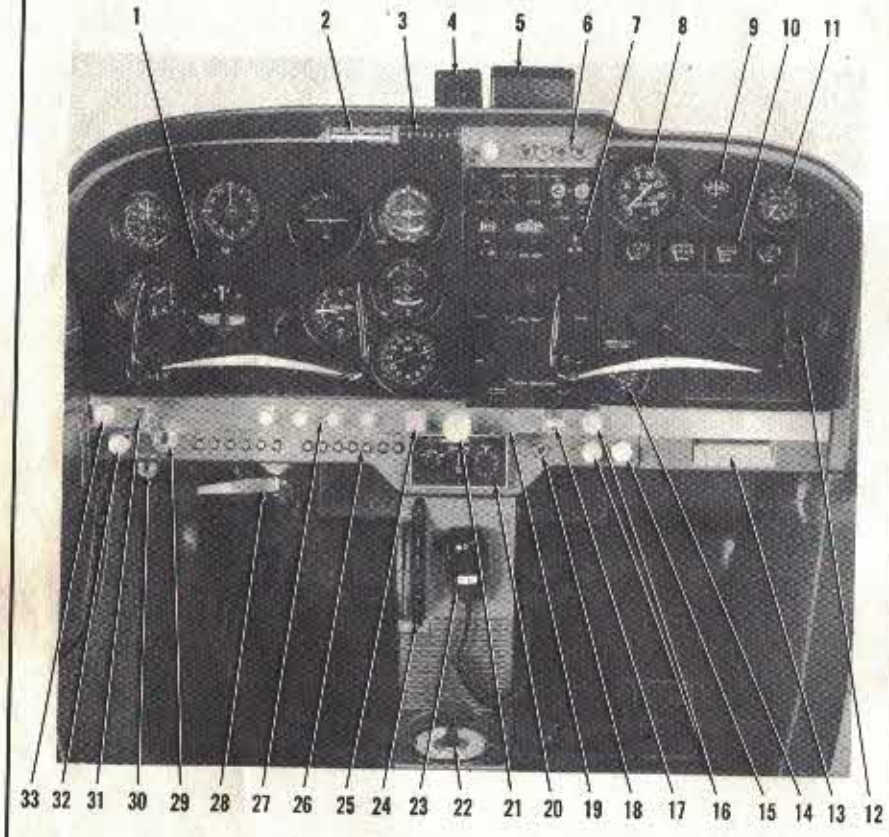
AFTER LANDING.

(1) Wing Flaps -- Up.
(2) Carburetor Heat -- Cold.

SECURE AIRCRAFT.

(1) Mixture -- Full lean.
(2) All Switches -- Off.
(3) Brakes -- Set.
(4) Control Lock -- Installed.

INSTRUMENT PANEL



1. Flight Instrument Group
2. Compass Correction Card
3. Aircraft Registration Number
4. Magnetic Compass
5. Rear View Mirror (Opt.)
6. Radio Selector Switches (Opt.)
7. Radios (Opt.)
8. Tachometer
9. Ammeter
10. Fuel and Oil Gages
11. Suction Gage (Opt.)
12. Optional Instrument Space (Typical)
13. Map Compartment
14. Wing Flap Position Indicator
15. Cigar Lighter
16. Cabin Air and Heat Controls
17. Wing Flap Switch
18. Autopilot - Omni Switch (Opt.)
19. Mixture Control Knob
20. Autopilot Control Unit (Opt.)
21. Throttle
22. Fuel Selector Valve
23. Microphone
24. Elevator Trim Control Wheel
25. Carburetor Air Heat Control
26. Circuit Breakers
27. Electrical Switches
28. Parking Brake Handle
29. Ignition/Starter Switch
30. Phone Jack
31. Master Switch
32. Primer
33. Fuel Strainer Drain Knob

Figure 2-1.

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 Check List form in Section I that require further explanation.

FUEL SYSTEM.

Fuel is supplied to the engine from two aluminum tanks, one in each wing. From these tanks, fuel flows by gravity through a selector valve and a strainer to the carburetor.

Refer to figure 2-2 for fuel quantity data. For fuel system servicing information, refer to Lubrication and Servicing Procedures in Section IV.

FUEL QUANTITY DATA (U.S. GALLONS)

TANKS	NO.	USABLE FUEL ALL FLIGHT CONDITIONS	ADDITIONAL USABLE FUEL (LEVEL FLIGHT)	UNUSABLE FUEL (LEVEL FLIGHT)	TOTAL FUEL VOLUME EACH
LEFT WING	1	18.0 ~~19.5 gal.~~	1.0 gal.	0.5 gal.	21.0 gal.
RIGHT WING	1	~~19.5 gal.~~ 18.0	1.0 gal.	0.5 gal.	21.0 gal.

Figure 2-2.

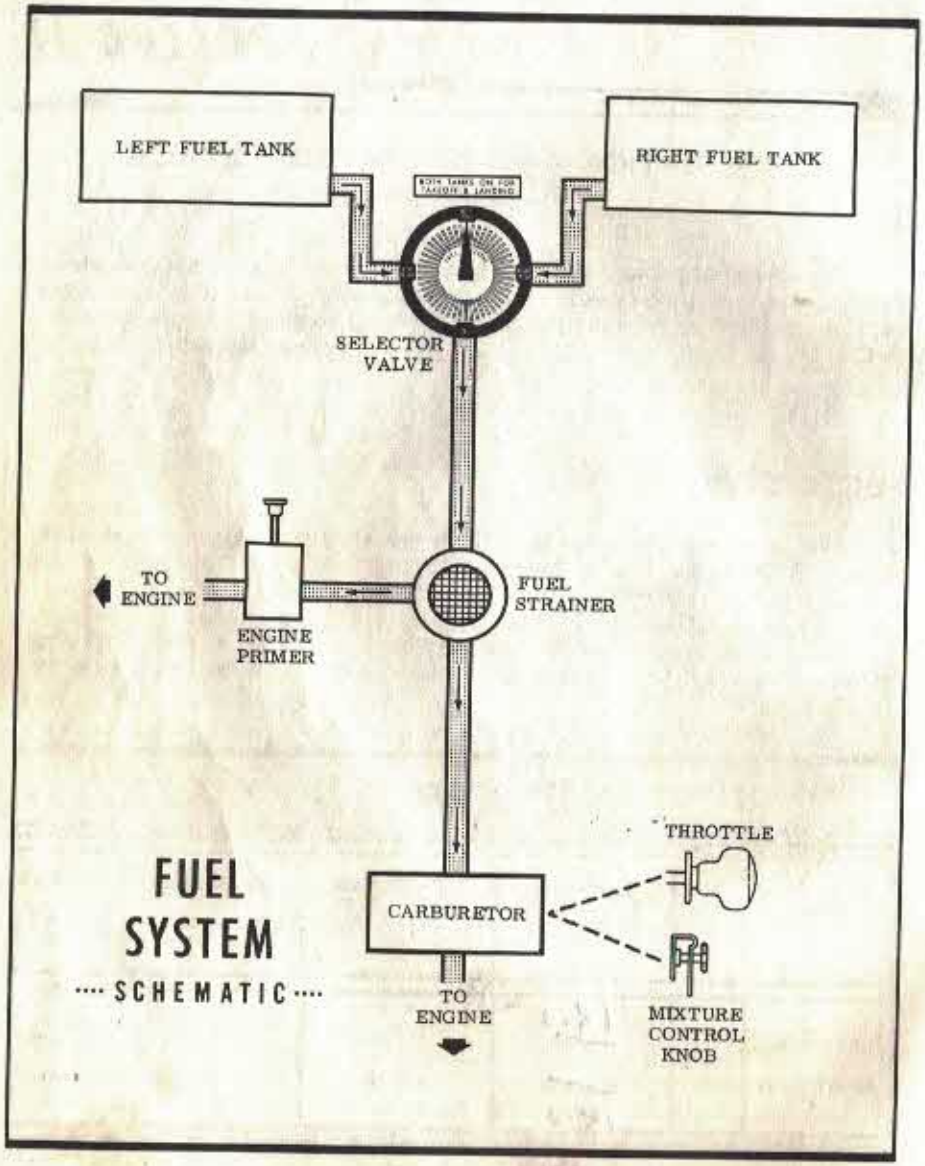


Figure 2-3.

FUEL STRAINER DRAIN KNOB.

Refer to fuel strainer servicing procedures, Section IV.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 14-volt, direct-current system powered by an engine-driven alternator (see figure 2-4). The 12-volt battery is located on the left-hand forward portion of the firewall. On the standard Model 172, power is supplied to all electrical and electronic system circuits from a single bus bar. On Skyhawk models, electrical power is supplied through a split bus bar, one side containing electronic system circuits and the other side having general electrical system circuits. In the split bus system, both sides of the bus are on at all times except when either an external power source is connected or the starter switch is turned on; then a power contactor is automatically activated to open the circuit to the electronic bus. Isolating the electronic circuits in this manner prevents harmful transient voltages from damaging the semiconductors in the electronic equipment. Figure 2-4 illustrates the bus bar arrangement for Skyhawk models; wiring in the standard Model 172 is identical except for the split bus system.

AMMETER.

The ammeter indicates the flow of current, in amperes, from the alternator to the battery or from the battery to the aircraft electrical system. When the engine is operating and the master switch is "ON," the ammeter indicates the charging rate applied to the battery. In the event the alternator is not functioning or the electrical load exceeds the output of the alternator, the ammeter indicates the discharge rate of the battery.

CIRCUIT BREAKERS AND FUSES.

The majority of electrical circuits in the airplane are protected by "push-to-reset" circuit breakers mounted on the instrument panel. Exceptions to this are the clock circuit and battery contactor closing (external power) circuit which have fuses mounted adjacent to the battery. Also, the cigar lighter is protected by a manually reset type circuit breaker mounted directly on the back of the lighter behind the instrument panel.

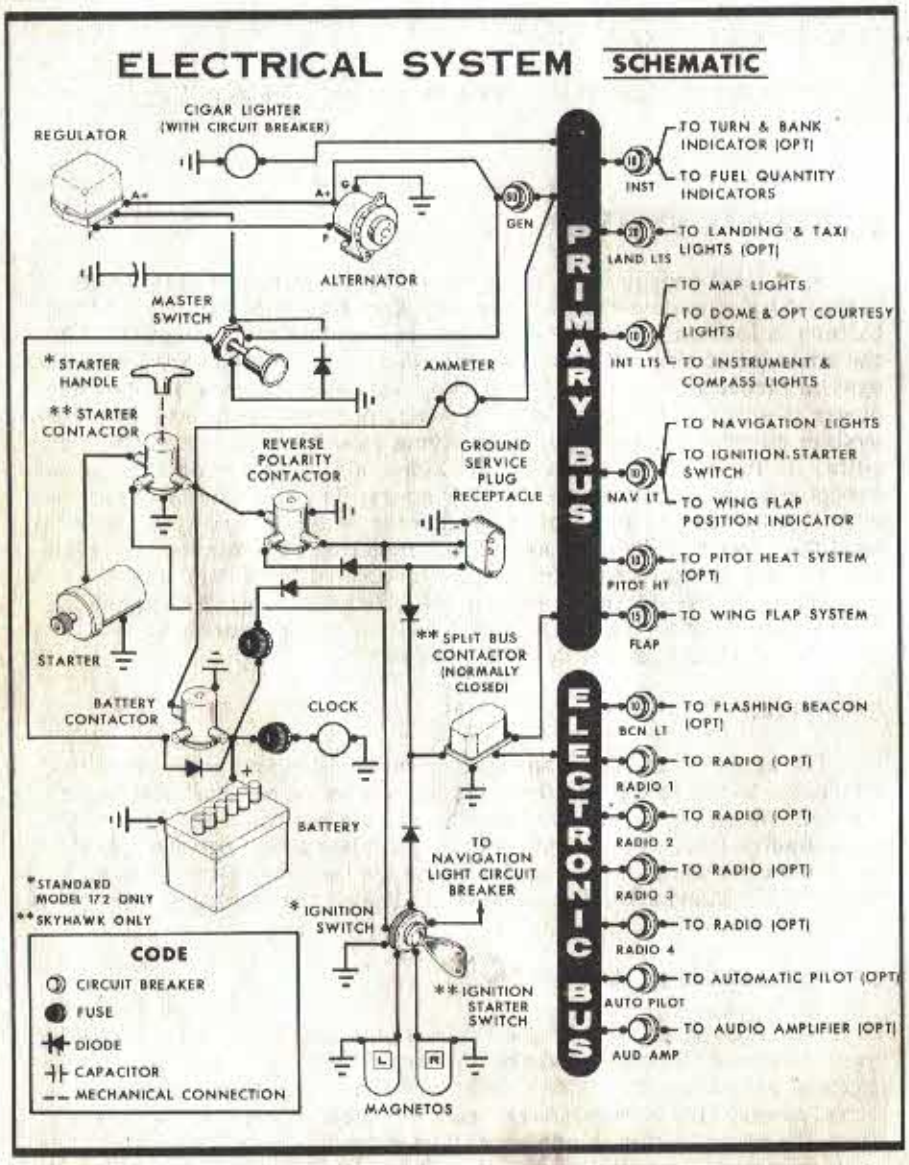


Figure 2-4.

LANDING LIGHTS (OPT).

A three-position, push-pull switch controls the optional landing lights. To turn one lamp on for taxiing, pull the switch out to the first stop. To turn both lamps on for landing, pull the switch out to the second stop.

FLASHING BEACON (OPT).

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

CABIN HEATING AND VENTILATION SYSTEM.

For cabin ventilation, pull the "CABIN AIR" knob out. To raise the air temperature, pull the "CABIN HT" knob out approximately 1/4" to 1/2" for a small amount of cabin heat. Additional heat is available by pulling the knob out farther; maximum heat is available with the "CABIN HT" knob pulled full out and the "CABIN AIR" knob pushed full in. When no heat is desired in the cabin, the "CABIN HT" knob is pushed full in.

Front cabin heat 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 optional ventilators in the rear cabin ceiling supply air to the rear seat passengers.

STARTING ENGINE.

Ordinarily the engine starts easily with one or two strokes of the primer in warm temperatures to six strokes in cold weather, with the throttle open approximately 1/8 inch. In extremely cold temperatures, it may be necessary to continue priming while cranking.

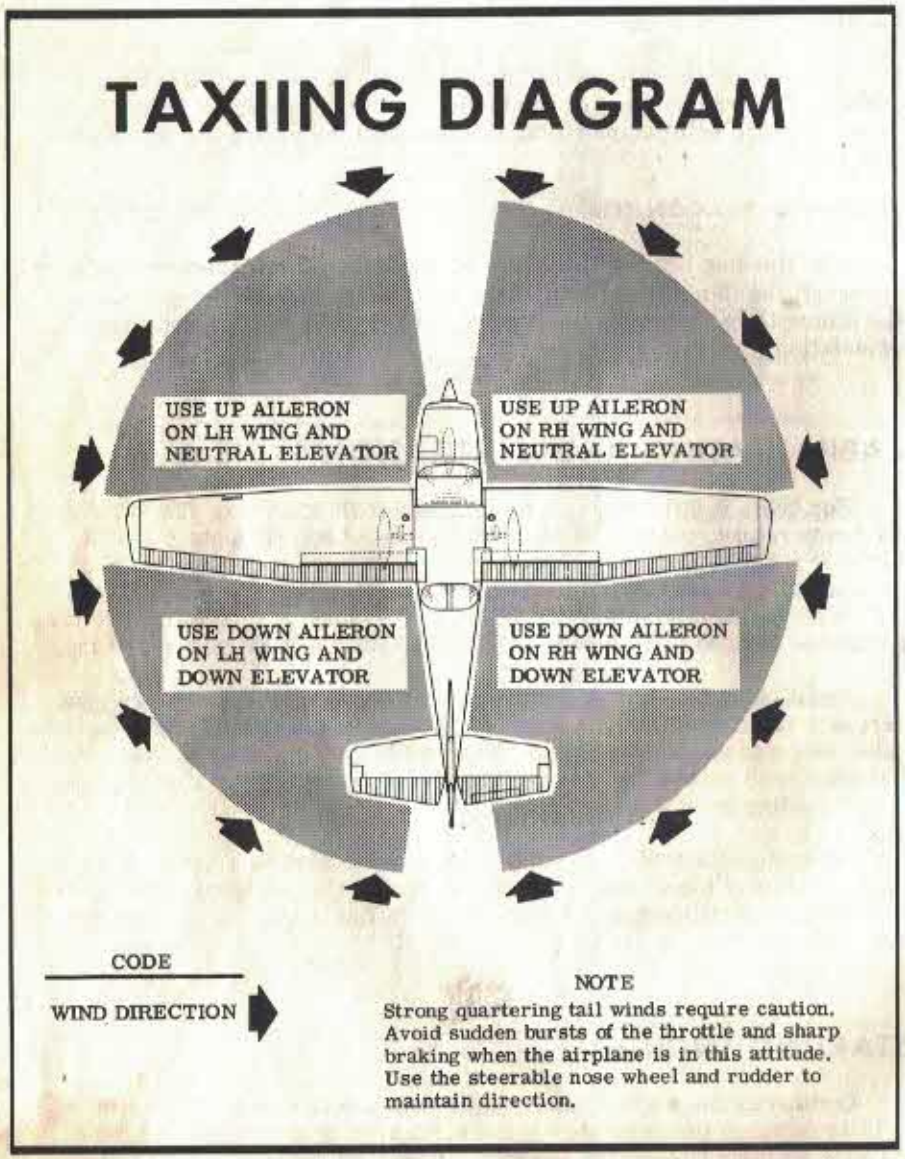


Figure 2-5.

Weak intermittent explosions followed by puffs of black smoke from the exhaust stack indicates overpriming or flooding. Excess fuel can be cleared from the combustion chambers by the following procedure: Set the mixture control full lean and the throttle full open; then crank the engine through 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.

After starting, if the oil gage does not begin to show pressure within 30 seconds in the summertime and about twice that long in very cold weather, stop engine and investigate. Lack of oil pressure can cause serious engine damage. After starting, avoid the use of carburetor heat unless icing conditions prevail.

TAXIING.

When taxiing, it is important that speed and use of brakes be held to a minimum and that all controls be utilized (see taxiing diagram, figure 2-5) to maintain directional control and balance.

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

BEFORE TAKE-OFF.

WARM-UP.

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

MAGNETO CHECK.

The magneto check should be made at 1700 RPM as follows: Move ignition switch first to "R" position, and note RPM. Next move switch back to "BOTH" to clear the other set of plugs. Then move switch to

the "L" position and note RPM. The difference between the two magnetos operated individually should not be more than 75 RPM. If there is a doubt concerning 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.

POWER CHECK.

It is important to check full-throttle engine operation early in the take-off run. Any signs of rough engine operation or sluggish engine acceleration is good cause for discontinuing the take-off. If this occurs, you are justified in making a thorough full-throttle, static runup before another take-off is attempted. The engine should run smoothly and turn approximately 2230-2330 RPM with carburetor heat off.

For improved take-off and climb performance, an optional McCauley 1C172/EM 7651 climb propeller is available. This propeller has a full-throttle static RPM range of 2320-2420 RPM.

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 blown back of the propeller rather than pulled into it. When unavoidable small dents appear in the propeller blades, they should be immediately corrected as described in Section IV under propeller care.

Prior to take-off from fields above 5000 feet elevation, the mixture should be leaned to give maximum RPM in a full-throttle, static runup.

WING FLAP SETTINGS.

Normal and obstacle clearance take-offs are performed with wing flaps up. The use of 10° flaps will shorten the ground run approximately 10%, but this advantage is lost in the climb to a 50-foot obstacle. Therefore, the use of 10° flaps is reserved for minimum ground runs or for take-off from soft or rough fields with no obstacles ahead.

If 10° of flaps are used in ground runs, it is preferable to leave them extended rather than retract them in the climb to the obstacle. The exception to this rule would be in a high altitude take-off in hot weather where climb would be marginal with flaps 10°.

Flap settings of 30° to 40° are not recommended at any time for take-off.

PERFORMANCE CHARTS.

Consult the take-off chart in Section V for take-off distances under various gross weight, altitude, and headwind conditions.

CROSSWIND TAKE-OFFS.

Take-offs into strong crosswinds normally 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 pulled 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.

CLIMB DATA.

For detailed data, refer to the Maximum Rate-Of-Climb Data chart in Section V.

NOTE

If your aircraft is equipped with a 7651 climb propeller, slight improvement in climb performance may be expected over that shown in Section V.

CLIMB SPEEDS.

Normal climbs are performed at 80 to 90 MPH with flaps up and full throttle for best engine cooling. The mixture should be full rich unless the engine is rough due to too rich a mixture. The maximum rate-of-climb speeds range from 80 MPH at sea level to 77 MPH at 10,000 feet. If an obstacle dictates the use of a steep climb angle, the best angle-of-climb speed should be used with flaps up and full throttle. These speeds vary from 66 MPH at sea level to 71 MPH at 10,000 feet.

NOTE

Steep climbs at these low speeds should be of short duration to improve engine cooling.

GO-AROUND CLIMB.

In a balked landing (go-around) climb, the wing flap setting should be reduced to 20° immediately after full power is applied. Upon reaching a safe airspeed, flaps should be slowly retracted to the full up position.

CRUISE.

Normal cruising is done between 65% and 75% power. The power settings required to obtain these powers at various altitudes and outside air temperatures can be determined by using your Cessna Power Computer or the OPERATIONAL DATA, Section V.

NOTE

The Cruise and Range Performance chart on page 5-4 outlines complete cruise figures for the Model 172 equipped with a standard propeller. The table on page 5-5 shows the RPM and speed differentials for a given % BHP to be considered when figuring cruise performance if your airplane is equipped with a 7651 climb propeller.

Cruising can be done most efficiently at high altitudes because of lower air density and therefore lower airplane drag. This is illustrated in the following table which shows performance at 75% power at various altitudes.

OPTIMUM CRUISE PERFORMANCE

ALTITUDE	RPM	TRUE AIRSPEED	RANGE
Sea Level	2450	123	565
5000 ft.	2560	128	585
7000 ft.	Full Throttle	130	595

All figures are based on lean mixture, 39 gallons of fuel (no reserve), zero wind, standard atmospheric conditions, and 2300 pounds gross weight.

Carburetor ice, as evidenced by an unexplained drop in RPM, can be removed by application of full carburetor heat. Upon regaining the original RPM (with heat off), use the minimum amount of heat (by trial and error) to prevent ice from forming. Since heated air causes a richer mixture, readjust the mixture setting when carburetor heat is used continuously in cruising flight.

STALLS.

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

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

LANDING.

Normal landings are made power-off with any flap setting. Slips are prohibited in full flap approaches because of a downward pitch encountered under certain combinations of airspeed and sideslip angle.

SHORT FIELD LANDINGS.

For a short field landing, make a power-off approach at approximately 69 MPH with flaps 40°, and land on the main wheels first. Immediately after touchdown, lower the nose gear to the ground and apply heavy braking as required. Raising the flaps after landing will provide more efficient braking.

CROSSWIND LANDINGS.

When landing in a strong crosswind, use the minimum flap setting required for the field length. Use a wing-low, crab, or a 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.

The maximum allowable crosswind velocity is dependent upon pilot capability rather than airplane limitations. With average pilot technique, direct crosswinds of 15 MPH can be handled with safety.

COLD WEATHER OPERATION.

STARTING.

Prior to starting on a cold morning, 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 (0°F and lower) weather, the use of an external preheater (for both the engine and battery) and an external power source is recommended whenever possible to reduce wear and abuse to the engine and the electrical system. When using an external power source, the position of the master switch is important. Refer to Section VI, paragraph GROUND SERVICE PLUG RECEPTACLE, for operating details.

Cold weather starting procedures are as follows:

With Preheat:

(1) Clear propeller.
(2) Pull master switch "ON."
(3) With ignition switch "OFF" and throttle closed, prime the engine four to eight strokes as the propeller is being turned over by hand.

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 ignition switch to "BOTH."
(5) Open throttle 1/4" and engage starter.

Without Preheat:

(1) Prime the engine six to ten strokes while the propeller is being turned by hand with throttle closed. Leave primer charged and ready for stroke.
(2) Clear propeller.
(3) Pull master switch "ON."
(4) Turn ignition switch to "BOTH."
(5) Pump throttle rapidly to full open twice. Return to 1/4" open position.
(6) Engage starter and continue to prime engine until it is running smoothly, or alternately, pump throttle rapidly over first 1/4 of total travel.
(7) Pull carburetor heat knob full on after engine has started. Leave on until engine is running smoothly.
(8) Lock primer.

NOTE

If the engine does not start during the first few attempts, or if engine firing diminishes in strength, it is probable that the spark plugs have been frosted over. Preheat must be used before another start is attempted.

IMPORTANT

Pumping the throttle may cause raw fuel to accumulate in the intake air duct, creating a fire hazard in the event of a backfire. If this occurs, maintain a cranking action to suck flames into the engine. An outside attendant with a fire extinguisher is advised for cold starts without preheat.

During cold weather operations, no indication will be apparent on the oil temperature gage prior to take-off 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.

FLIGHT OPERATIONS.

Take-off is made normally with carburetor heat off. Avoid excessive leaning in cruise.

Carburetor heat may be used to overcome any occasional engine roughness.

When operating in sub-zero temperature, avoid using partial carburetor heat. Partial heat may increase the carburetor air temperature to the 32° to 70°F range, where icing is critical under certain atmospheric conditions.

Refer to Section VI for cold weather equipment.

HOT WEATHER OPERATION.

The general warm temperature starting information on page 2-5 is appropriate. Avoid prolonged engine operation on the ground.

Section III

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED.

Your Cessna exceeds the requirements for airworthiness as set forth by the United States Government, and is certificated under FAA Type Certificate No. 3A12.

With standard equipment, the airplane is approved for day and night operations under VFR. Additional optional equipment is available to increase its utility and to make it authorized for use 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.

This airplane is certificated in both the normal and utility category. The normal category is applicable to airplanes intended for non-aerobatic operations. These include any maneuvers incidental to normal flying, stalls (except whip stalls) and turns in which the angle of bank is not more than 60°. In connection with the foregoing, the following gross weight and flight load factors apply:

Gross Weight	2300 lbs	
Flight Load Factor *Flaps Up	+3.8	-1.52
Flight 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 check lists in the airplane. If there is any information in this section which contradicts the FAA-approved markings, placards and check lists, it is to be disregarded.

MANEUVERS - UTILITY CATEGORY.

This airplane is not designed for purely aerobatic flight. However, in the acquisition of various certificates such as commercial pilot, instrument pilot and flight instructor, certain maneuvers are required by the FAA. All of these maneuvers are permitted in this airplane when operated in the utility category. In connection with the utility category, the following gross weight and flight load factors apply, with recommended entry speeds for maneuvers as shown:

Gross Weight	2000 lbs
Flight Maneuvering Load Factor, Flaps Up	+4.4 -1.76
Flight Maneuvering Load Factor, Flaps Down	+3.5

No aerobatic maneuvers are approved except those listed below:

MANEUVER	RECOMMENDED ENTRY SPEED
Chandelles	122 mph (106 knots)
Lazy Eights	122 mph (106 knots)
Steep Turns	122 mph (106 knots)
Spins	Slow Deceleration
Stalls (Except Whip Stalls)	Slow Deceleration

The baggage compartment and rear seat must not be occupied.

Aerobatics that may impose high inverted loads should not be attempted. The important thing to bear in mind in flight maneuvers is that the airplane is clean in aerodynamic design and will build up speed quickly with the nose down. Proper speed control is an essential requirement for execution of any maneuver, and care should always be exercised to avoid excessive speed which in turn can impose excessive loads. In the execution of all maneuvers, avoid abrupt use of controls.

AIRSPEED LIMITATIONS.

The following are the certificated calibrated airspeed limits for your Cessna:

Maximum (Glide or dive, smooth air)	174 MPH (red line)
Caution Range	140-174 MPH (yellow arc)
Normal Range	59-140 MPH (green arc)
Flap Operating Range	52-100 MPH (white arc)
Maneuvering Speed*	122 MPH

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

ENGINE OPERATION LIMITATIONS.

Power and Speed:	145 BHP at 2700 RPM

ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE.

Normal Operating Range	Green Arc
Maximum Allowable	240°F (red line)

OIL PRESSURE GAGE.

Minimum Idling	10 psi (red line)
Normal Operating Range	30-60 psi (green arc)
Maximum	100 psi (red line)

FUEL QUANTITY INDICATORS.

Empty (1.50 gallons unusable each tank)	E (red line)

TACHOMETER.

Normal Operating Range:	
At sea level	2200-2500 (inner green arc)
At 5000 feet	2200-2600 (middle green arc)
At 10,000 feet	2200-2700 (outer green arc)
Maximum Allowable	2700 (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:

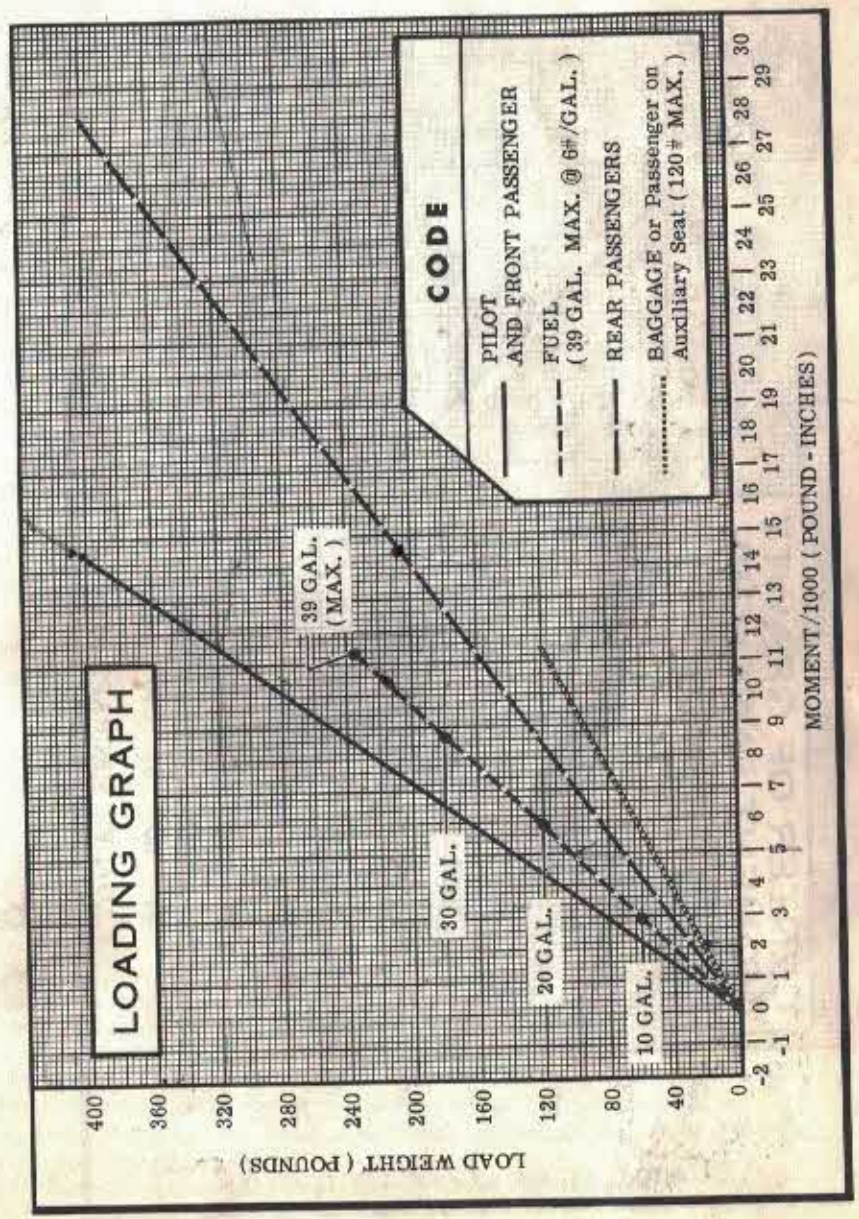
Take the licensed Empty Weight and Moment/1000 from the Weight and Balance Data sheet, plus any changes noted on forms FAA-337, carried in your airplane, and write them down in the proper columns. Using the Loading Graph, determine the moment/1000 of each item to be carried. Total the weights and moments/1000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

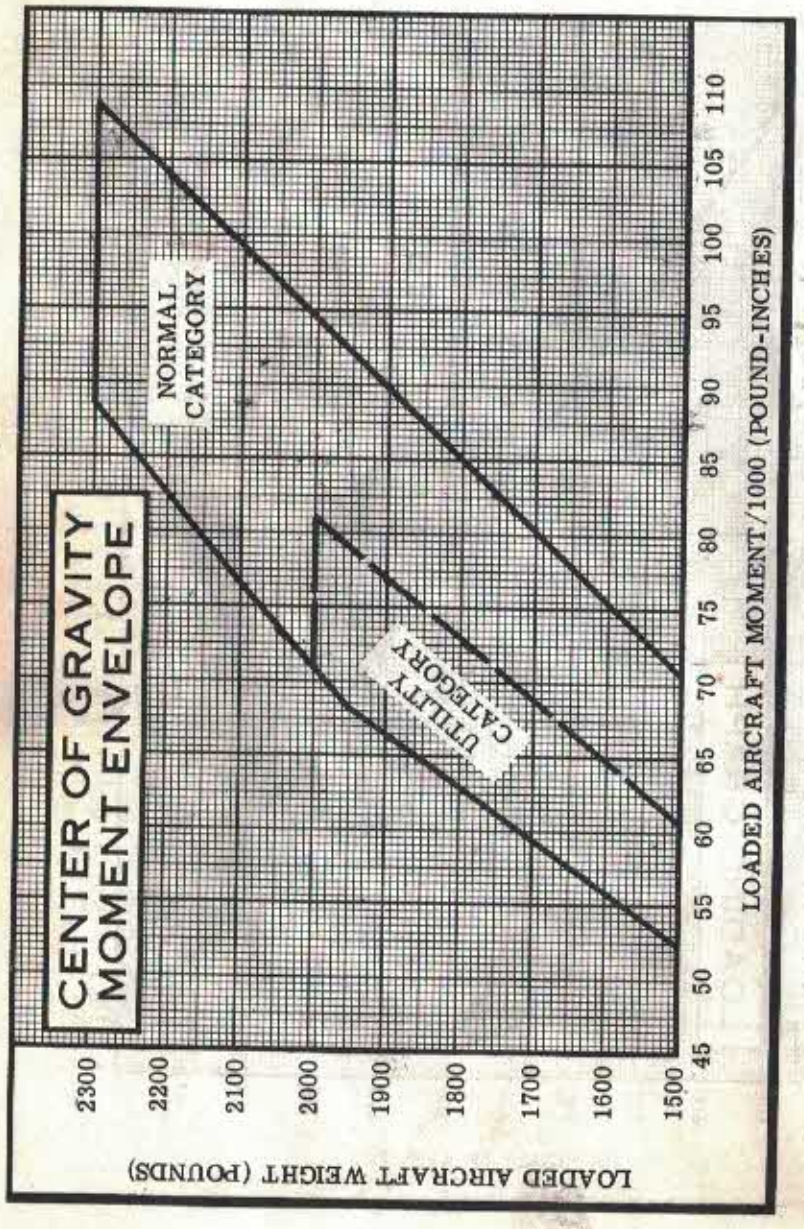
172
SAMPLE LOADING PROBLEM

	Sample Airplane		Your Airplane	
	Weight (lbs)	Moment (lb - ins. /1000)	Weight	Moment
1. Licensed Empty Weight (Sample Airplane) ...	1345	49.3	[illegible]	59.6
2. Oil - 8 Qts.*	15	-0.3	15	-0.3
3. Pilot & Front Passenger	340	12.2	[illegible]	[illegible]
4. Fuel- (39 Gal at 6#/Gal)	234	11.2	216	11
5. Rear Passengers	340	23.8		
6. Baggage (or Passenger on Auxiliary Seat)	26	2.5		
7. Total Aircraft Weight (Loaded)	2300	98.7		

8. Locate this point (2300 at 98.7) on the center of gravity envelope, and since this point 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 and dependability, certain inspection and maintenance requirements must be followed. It is wise to follow a planned schedule of lubrication and preventative maintenance based on 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 other seasonal and periodic services.

GROUND HANDLING.

The airplane is most easily and safely maneuvered by hand with the tow-bar attached to the nosewheel.

NOTE

When using the tow-bar, never exceed the turning angle of 30°, either side of center, or damage to the gear will result.

MOORING YOUR AIRPLANE.

Proper tie-down procedure is your best precaution against damage to your parked airplane by gusty or strong winds. To tie-down your airplane securely, proceed as follows:

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

WINDSHIELD - WINDOWS.

The plastic windshield and windows should be cleaned with an aircraft windshield cleaner. Apply the cleaner sparingly with soft cloths, and rub with moderate pressure until all dirt, oil scum and bug stains are removed. Allow the cleaner to dry, then wipe it off with soft flannel cloths.

If a windshield cleaner is not available, the plastic can be cleaned with soft cloths moistened with Stoddard solvent to remove oil and grease.

NOTE

Never use gasoline, benzine, alcohol, acetone, carbon tetrachloride, fire extinguisher or anti-ice fluid, lacquer thinner or glass cleaner to clean the plastic. These materials will attack the plastic and may cause it to craze.

Follow by carefully washing with a mild detergent and plenty of water. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the plastic with a dry cloth since this builds up an electrostatic charge which attracts dust. Waxing with a good commercial wax will finish the cleaning job. A thin, even coat of wax, polished out by hand with clean soft flannel cloths, will fill in minor scratches and help prevent further scratching.

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

PAINTED SURFACES.

The painted exterior surfaces of your new Cessna have a durable, long lasting finish and, under normal conditions, require no polishing or buffing. Approximately 15 days are required for the paint to cure completely; in most cases, the curing period will have been completed prior to delivery of the airplane. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by someone experienced in handling uncured paint. Any Cessna Dealer can accomplish this work.

Generally, the painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with cloths or a chamois. Harsh or abrasive soaps or detergents which cause corrosion or make scratches should never be used. Remove stubborn oil and grease with a cloth moistened with Stoddard solvent.

Waxing is unnecessary to keep the painted surfaces bright. However; if desired, the airplane may be waxed with a good automotive wax. A heavier coating of wax 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.

ALUMINUM SURFACES.

The clad aluminum surfaces of your Cessna may be washed with clear water to remove dirt; oil and grease may be removed with gasoline, naptha, 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 wax 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.

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 propeller, 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 grease and dirt with carbon tetrachloride or Stoddard solvent.

INTERIOR CARE.

To remove dust and loose dirt from the upholstery 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, 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, headliner, 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 and 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 delivery 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 180 days, whichever 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 Aviation Regulations require that all airplanes have a periodic (annual) inspection as prescribed by the administrator, and performed by 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 with factory-approved procedures provides the highest type of service possible at lower cost.

AIRCRAFT FILE.

There are miscellaneous data, information and licenses that are a part of the aircraft file. The following is a check list for that file. In addition, a periodic check should be made of the latest Federal Aviation Regulations to insure that all data requirements are met.

A. To be displayed in the aircraft at all times:

(1) Aircraft Airworthiness Certificate (Form FAA-1362B).
(2) Aircraft Registration Certificate (Form FAA-500A).
(3) Aircraft Radio Station License (Form FCC-404, if transmitter installed).

B. To be carried in the aircraft at all times:

(1) Weight and Balance, and associated papers (latest copy of the Repair and Alteration Form, Form FAA-337, if applicable).
(2) Aircraft Equipment List.

C. To be made available upon request:

(1) Aircraft Log Book.
(2) 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 aircraft 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 aircraft 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 Servicing Intervals Check List is included to inform the pilot when to have other items checked and serviced.

DAILY

FUEL TANK FILLERS:
Service after each flight with 80/87 minimum grade fuel. The capacity of each wing tank is 21 gallons. 18

FUEL STRAINER:
On the first flight of the day and after each refueling, pull out fuel strainer drain knob for about four seconds, to clear fuel strainer of possible water and sediment. Release drain knob, then check that strainer drain is closed after draining.

OIL FILLER:
When preflight check shows low oil level, service with aviation grade engine oil; SAE 50 above 40°F and SAE 10W30 or SAE 30 below 40°F. (Multi-viscosity oil with a range of SAE 10W30 is recommended for improved starting in cold weather.) Detergent or dispersant oil, conforming to Continental Motors Specification MHS-24, must be used. The aircraft is delivered from the factory with detergent oil. Your Cessna Dealer can supply approved brands of detergent oil.

OIL DIPSTICK:
Check oil level before each flight. Do not operate on less than 6 quarts. To minimize loss of oil through breather, fill to 7 quart level for normal flights of less than 3 hours. For extended flight, fill to 8 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.

SERVICING INTERVALS CHECK LIST

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, change oil and clean screen every 25 hours. Change engine oil at least every four months even though less than 50 hours have been accumulated. Reduce periods for prolonged operation in dusty areas, 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

BRAKE MASTER CYLINDERS -- Check and fill.
SHIMMY DAMPENER -- Check and fill.
FUEL STRAINER -- Disassemble and clean.
FUEL TANK SUMP DRAINS -- Drain water and sediment.
FUEL LINE DRAIN PLUG -- Drain water and sediment.
VACUUM SYSTEM OIL SEPARATOR (OPT) -- Clean.
SUCTION RELIEF VALVE INLET SCREEN (OPT) -- Clean.

EACH 500 HOURS

VACUUM SYSTEM AIR FILTER (OPT) -- Replace filter element. Replace sooner if suction gage reading drops to 4.6 in. Hg.
WHEEL BEARINGS -- Lubricate at first 100 hours and at 500 hours thereafter. Reduce lubrication interval to 100 hours when operating in dusty or seacoast areas, during periods of extensive taxiing, or when numerous take-offs and landings are made.

AS REQUIRED

NOSE GEAR SHOCK STRUT -- Keep filled with fluid and inflated to 45 psi.

OWNER FOLLOW-UP SYSTEM

Your Cessna Dealer has an owner follow-up system to notify you when he receives information that applies to your Cessna. In addition, if you wish, you may choose to receive similar notification directly from the Cessna Service Department. A subscription card is supplied in your aircraft file for your use, should you choose to request this service. Your Cessna Dealer will be glad to supply you with details concerning these follow-up programs, and stands ready through his Service Department to supply you with fast, efficient, low cost service.

PUBLICATIONS

Included in your aircraft file are various manuals which describe the operation of the equipment in your aircraft. These manuals, plus many other supplies that are applicable to your aircraft, are available from your Cessna Dealer, and, for your convenience, are listed below.

- OWNER'S MANUALS FOR YOUR
  - AIRCRAFT
  - ELECTRONICS - 300 SERIES
  - AUTOPILOT - NAV-O-MATIC 300 AND 400
- SERVICE MANUALS AND PARTS CATALOGS FOR YOUR
  - AIRCRAFT
  - ENGINE AND ACCESSORIES
  - ELECTRONICS - 300 SERIES
  - AUTOPILOT - NAV-O-MATIC 300 AND 400
- COMPUTERS
- SALES AND SERVICE DEALER DIRECTORY
- DO'S AND DON'TS ENGINE BOOKLET

Your Cessna Dealer has a current catalog of all Customer Services Supplies that are available, many of which he keeps on hand. Supplies which are not in stock, he will be happy to order for you.

Section V

OPERATIONAL DATA

The operational data shown on the following pages are compiled from actual tests with airplane and engine in good condition and using average piloting technique and best power mixture. You will find this data a valuable aid when planning your flights.

A power setting selected from the range charts usually will be more efficient than a random setting, since it will permit you to estimate your fuel consumption more accurately. You will find that using the charts and your Power Computer will pay dividends in overall efficiency.

Range and endurance figures shown in the chart on page 5-4 are based on flight test using a McCauley 1C172/EM 7653 propeller (standard). Information to be considered when the aircraft is equipped with a McCauley 1C172/EM 7651 climb propeller may be found on page 5-5. Other conditions of the tests are shown in the chart headings. Allowances for fuel reserve, headwinds, take-offs, and climb, and variations in mixture leaning technique should be made and are in addition to those shown on the charts. Other indeterminate variables such as carburetor metering characteristics, engine and propeller conditions, and turbulence of atmosphere may account for variations of 10% or more in maximum range.

Remember that the charts contained herein are based on standard day conditions. For 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

	IAS	40	50	60	70	80	90	100	110	120	130	140
FLAPS UP	CAS	48	55	63	71	80	89	98	108	117	128	138
FLAPS DOWN	CAS	48	56	64	72	81	90	99	•	•	•	•

Figure 5-1.

POWER OFF STALLING SPEEDS MPH - CAS

CONDITION		ANGLE OF BANK 0°	20°	40°	60°
2300 LBS. GROSS WEIGHT	FLAPS UP	57	59	65	81
	FLAPS 10°	52	54	59	74
	FLAPS 40°	49	51	56	69

Figure 5-2.

TAKE-OFF DATA

TAKE-OFF DISTANCE FROM HARD SURFACE RUNWAY, FLAPS UP

GROSS WEIGHT LBS.	IAS AT 50 FT. MPH	HEAD WIND KNOTS	@ S.L. & 59° F GROUND RUN	@ S.L. & 59° F TOTAL TO CLEAR 50' OBS.	@ 2500 ft. & 50° F GROUND RUN	@ 2500 ft. & 50° F TOTAL TO CLEAR 50' OBS.	@ 5000 ft. & 41° F GROUND RUN	@ 5000 ft. & 41° F TOTAL TO CLEAR 50' OBS.	@ 7500 ft. & 32° F GROUND RUN	@ 7500 ft. & 32° F TOTAL TO CLEAR 50' OBS.
2300	70	0	865	1525	1040	1910	1255	2480	1565	3655
		10	615	1170	750	1485	920	1955	1160	3110
		20	405	850	505	1100	630	1480	810	2425
2000	65	0	630	1095	755	1325	905	1625	1120	2155
		10	435	820	530	1005	645	1250	810	1685
		20	275	580	340	720	425	910	595	1255
1700	60	0	435	780	520	920	625	1095	765	1370
		10	290	570	355	680	430	820	535	1040
		20	175	385	215	470	270	575	345	745

Note: Increase distance 10% for each 25°F above standard temperature for particular altitude.

MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT LBS.	@ S.L. & 59° F IAS MPH	@ S.L. & 59° F RATE OF CLIMB FT/MIN.	@ S.L. & 59° F GALS OF FUEL USED	@ 5000 ft. & 41°F IAS MPH	@ 5000 ft. & 41°F RATE OF CLIMB FT/MIN.	@ 5000 ft. & 41°F FROM S.L. FUEL USED	@ 10,000 ft. & 23° F IAS MPH	@ 10,000 ft. & 23° F RATE OF CLIMB FT/MIN.	@ 10,000 ft. & 23° F FROM S.L. FUEL USED	@ 15,000 ft. & 5° F IAS MPH	@ 15,000 ft. & 5° F RATE OF CLIMB FT/MIN.	@ 15,000 ft. & 5° F FROM S.L. FUEL USED
2300	80	645	1.0	78	435	2.6	77	230	4.8	76	22	11.5
2000	77	840	1.0	76	610	2.2	74	380	3.6	73	155	6.3
1700	75	1085	1.0	73	825	1.9	71	570	2.9	70	315	4.4

Note: Flaps up, full throttle and mixture leaned for smooth operation above 5000 ft.
Fuel used includes warm-up and take-off allowance.

Figure 5-3.

172 SKYHAWK
CRUISE & RANGE PERFORMANCE

Gross Weight- 2300 Lbs. • Standard Conditions • Zero Wind • Lean Mixture • 39 Gal. of Fuel (No Reserve)

NOTE: Maximum cruise is normally limited to 75% power. For standard 172 performance, subtract 1 MPH from the higher cruise speeds shown.

ALT.	RPM	% BHP	TAS MPH	GAL./ HOUR	ENDR. HOURS	RANGE MILES
2500	2700	93	138	10.5	3.7	510
	2600	84	131	9.5	4.1	540
	2500	75	125	8.5	4.6	575
	2400	67	119	7.6	5.1	610
	2300	59	113	6.8	5.7	645
	2200	52	106	6.2	6.3	675
	2100	46	100	5.7	6.9	690
5000	2700	87	136	9.8	4.0	540
	2600	78	130	8.8	4.4	575
	2550	74	127	8.4	4.7	590
	2500	70	124	7.9	4.9	610
	2400	62	118	7.1	5.5	645
	2300	55	111	6.4	6.1	675
	2200	49	105	5.9	6.6	695
	2100	44	98	5.5	7.1	700
7500	2650	77	132	8.7	4.5	595
	2600	73	129	8.2	4.7	610
	2500	65	123	7.4	5.3	645
	2400	58	116	6.7	5.8	675
	2300	52	110	6.1	6.4	700
	2200	47	103	5.7	6.9	710
	2100	42	97	5.3	7.3	710
10,000	2600	68	128	7.7	5.1	650
	2500	61	121	7.0	5.6	680
	2400	55	115	6.4	6.1	705
	2300	49	108	5.9	6.6	715
	2200	45	102	5.5	7.1	720
	2100	41	96	5.2	7.4	715
12,500	2600	63	126	7.2	5.4	685
	2500	57	120	6.6	5.9	710
	2400	52	113	6.1	6.4	725
	2300	47	107	5.7	6.8	730
	2200	43	101	5.4	7.2	725

The performance figures above apply to aircraft equipped with a standard McCauley 1C172/EM 7653 propeller. Refer to figure 5-5 for information concerning aircraft with an optional McCauley 1C172/EM 7651 climb propeller.

Figure 5-4.

CRUISE AND RANGE PERFORMANCE
With McCauley 1C172/EM 7651 Propeller

To obtain same % BHP as shown in adjoining figure and on Cessna Power Computer, increase RPM as follows:

For % BHP	Increase RPM
75	+20 RPM
70	+10 RPM
65 (and lower)	0 RPM

The faster turning climb propeller gives a slight loss in cruise speed at a given % BHP as shown below:

At % BHP	Speed Loss Differential
70 - 75	0 MPH
65 - 70	-1.0 MPH
60 - 65	-1.5 MPH
55 - 60	-2.0 MPH
50 - 55	-3.0 MPH

NOTE: When your aircraft is equipped with a McCauley 1C172/EM 7651 climb propeller, the above factors should be used in conjunction with the Cruise and Range Performance on the adjoining page.

Figure 5-5.

LANDING DATA

LANDING DISTANCE ON HARD SURFACE RUNWAY
NO WIND – 40° FLAPS – POWER OFF

GROSS WEIGHT LBS.	APPROACH IAS MPH	@ S.L. & 59° F		@ 2500 ft. & 50° F		@ 5000 ft. & 41° F		@ 7500 ft. & 32° F	
		GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.
2300	69	520	1250	560	1310	605	1385	650	1455

Note: Reduce landing distance 10% for each 5 knot headwind.

Figure 5-6.

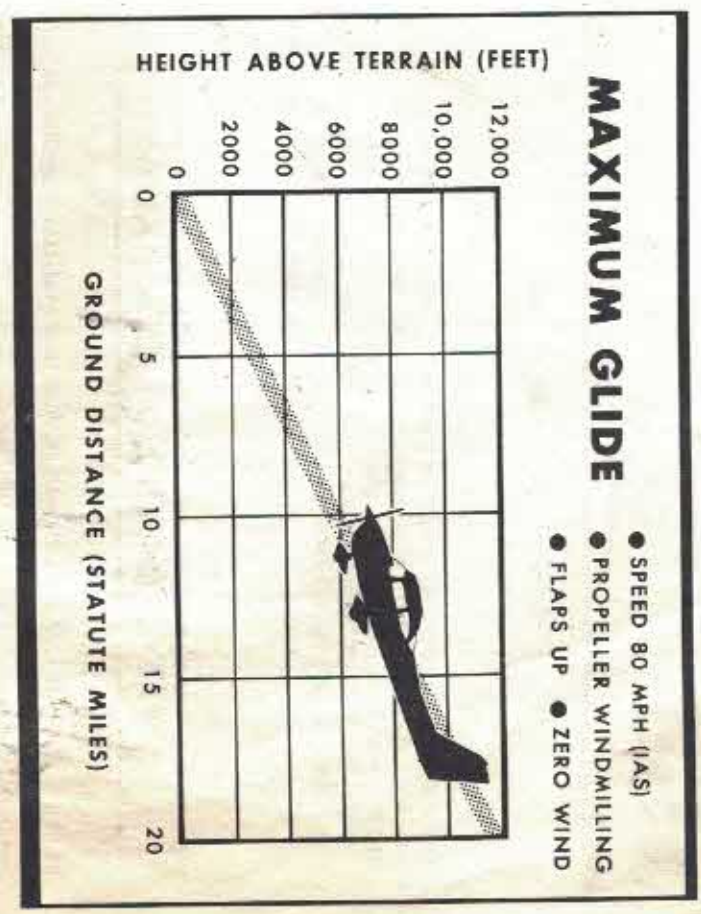


Figure 5-7.

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.

AUXILIARY FUEL TANK SYSTEM

An optional auxiliary fuel tank system (figure 6-1) is available to increase the airplane operating range. System components include an 18 gallon fuel tank (17.55 gallons usable) installed on the baggage compartment floor, an electric fuel transfer pump behind the tank, an electrically-operated fuel quantity indicator and fuel transfer pump switch on the instrument panel, a fuel tank filler provision on the right side of the fuselage, a fuel tank sump drain valve at the front of the tank on the bottom of the fuselage, and the necessary plumbing.

The auxiliary fuel system is connected to the right main fuel tank plumbing above the right cabin door.

AUXILIARY FUEL SYSTEM OPERATION.

To operate the auxiliary fuel system, proceed as follows:

PRE-FLIGHT CHECK:

(1) Turn on master switch and check fuel quantity indicator for reading.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT.

For continuous operation in temperatures consistently below 20°F, the Cessna winterization kit, available from your Cessna Dealer, should be installed to improve engine operation.

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.

NOTE

On the standard Model 172, both electrical and electronic system checks may be made using an external power source for electrical power. On the Skyhawk, electrical power for the airplane electrical circuits is provided through a split bus bar having all electronic circuits on one side of the bus and other electrical circuits on the other side of the bus. When an external power source is connected, a contactor automatically opens the circuit to the electronic portion of the split bus bar as a protection against damage to the semi-conductors in the electronic equipment by transient voltages from the power source. Therefore, the external power source can not be used as a source of power when checking electronic components.

Before connecting a generator type external power source, the master switch should be turned on. This is especially important on the Model 172 since it will enable the battery to absorb transient voltages which otherwise might damage the semi-conductors in the electronic equipment. The Skyhawk utilizes the split bus system to prevent damage to electronic equipment by transient voltages. When using a battery type external power source, the master switch should be turned off to prevent an unnecessary power drain from the power source batteries to the airplane's battery. After starting, and before disconnecting external power, the master switch should be turned "ON" to allow the airplane battery to be charged by the alternator.

The ground service plug receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the airplane's electrical system, thereby preventing any damage to electrical equipment.

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to close it for charging a completely "dead" battery. A special fused circuit in the external power system supplies the needed "jumper" across the contacts so that with a "dead" battery and an external power source applied, turning the master switch "ON" will close the battery contactor. When the airplane battery is nearly "dead", and an external power source has been used to start the engine, make sure the master switch is "ON" before disconnecting the external power source. This will close the battery contactor so that the battery will supply field current to the alternator, and at the same time, will be charged by the alternator.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

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

If erroneous instrument readings 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 15 feet, respectively.

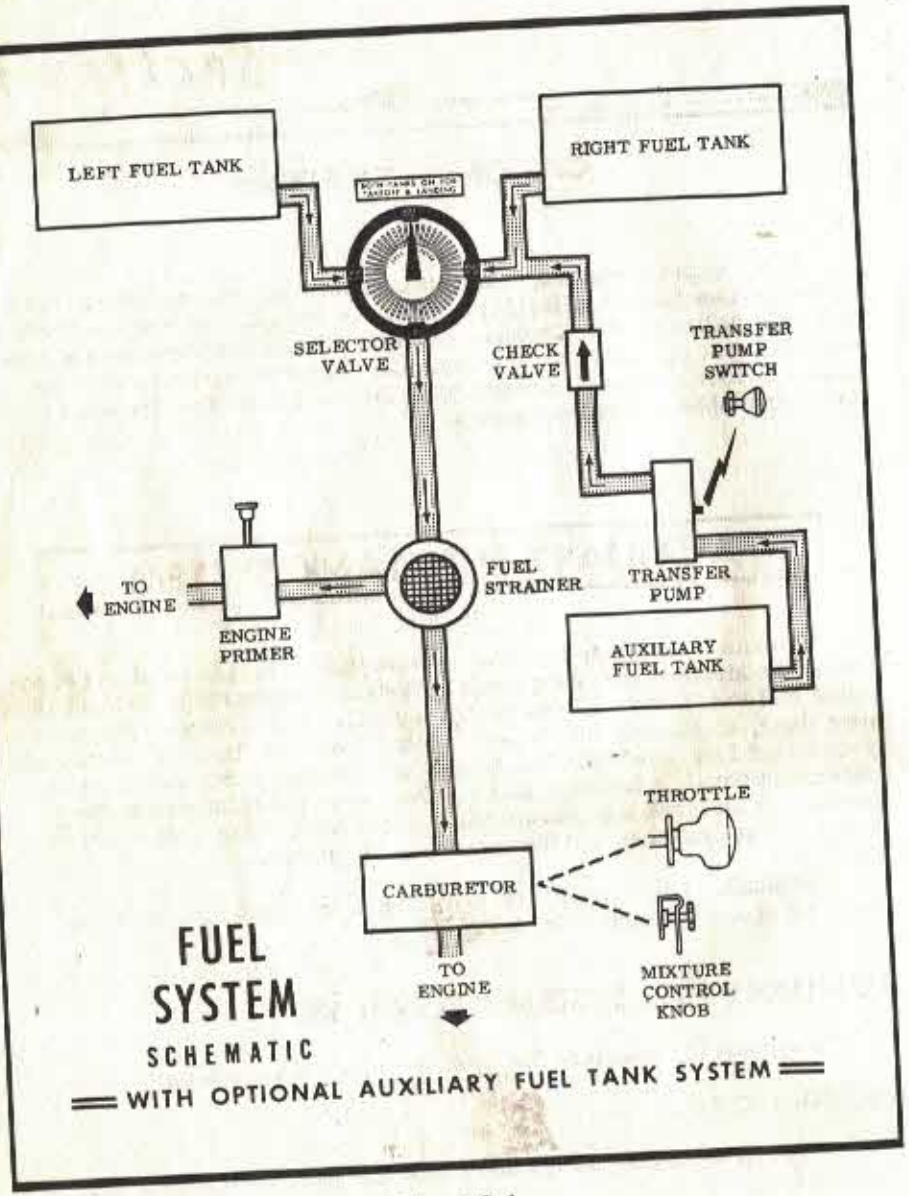


Figure 6-1.

(2) Momentarily pull on transfer pump switch and listen for pump operation. Turn off master switch.
(3) Check quantity of fuel in tank for agreement with fuel quantity indicator. Fill tank for anticipated requirements.
(4) Drain small amount of fuel from fuel tank drain valve to check for possible water and sediment.

DURING FLIGHT:

(1) Take-off, climb and land with fuel selector valve handle set on "BOTH" for maximum safety.
(2) After leveling off at cruise altitude, switch to "RIGHT" and operate from this tank until the fuel supply is exhausted.
(3) Switch to "LEFT" for operation, then pull on transfer pump switch and refill right main fuel tank from auxiliary tank. Push transfer pump switch off when fuel transfer is completed.

NOTE

Transfer of total fuel from the auxiliary tank will take from 45 minutes to 1 hour.

(4) Return fuel selector valve handle to "BOTH" position after refilling right tank, or if desired switch again to right main tank.

IMPORTANT

Do not operate the transfer pump with the fuel selector turned to either "BOTH" or "RIGHT" positions. Total or partial engine stoppage will result from air being pumped into fuel lines after fuel transfer has been completed. If the pump should accidentally be turned on with the fuel selector in either of these positions, and engine stoppage occurs, the engine will restart in from 3 to 5 seconds after turning off the transfer pump as the air in the fuel line will be evacuated rapidly.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT.

For continuous operation in temperatures consistently below 20°F, the Cessna winterization kit, available from your Cessna Dealer, should be installed to improve engine operation.

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.

NOTE

On the standard Model 172, both electrical and electronic system checks may be made using an external power source for electrical power. On the Skyhawk, electrical power for the airplane electrical circuits is provided through a split bus bar having all electronic circuits on one side of the bus and other electrical circuits on the other side of the bus. When an external power source is connected, a contactor automatically opens the circuit to the electronic portion of the split bus bar as a protection against damage to the semi-conductors in the electronic equipment by transient voltages from the power source. Therefore, the external power source can not be used as a source of power when checking electronic components.

Before connecting a generator type external power source, the master switch should be turned on. This is especially important on the Model 172 since it will enable the battery to absorb transient voltages which otherwise might damage the semi-conductors in the electronic equipment. The Skyhawk utilizes the split bus system to prevent damage to electronic equipment by transient voltages. When using a battery type external power source, the master switch should be turned off to prevent an unnecessary power drain from the power source batteries to the airplane's battery. After starting, and before disconnecting external power, the master switch should be turned "ON" to allow the airplane battery to be charged by the alternator.

The ground service plug receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the airplane's electrical system, thereby preventing any damage to electrical equipment.

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to close it for charging a completely "dead" battery. A special fused circuit in the external power system supplies the needed "jumper" across the contacts so that with a "dead" battery and an external power source applied, turning the master switch "ON" will close the battery contactor. When the airplane battery is nearly "dead", and an external power source has been used to start the engine, make sure the master switch is "ON" before disconnecting the external power source. This will close the battery contactor so that the battery will supply field current to the alternator, and at the same time, will be charged by the alternator.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

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

If erroneous instrument readings 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 15 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 system is necessary. The operation of this switching system is described below.

TRANSMITTER SELECTOR SWITCH.

The transmitter selector switch (figure 6-2) is labeled "TRANS," and 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 (figure 6-2) determine whether the output of the receiver in 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.

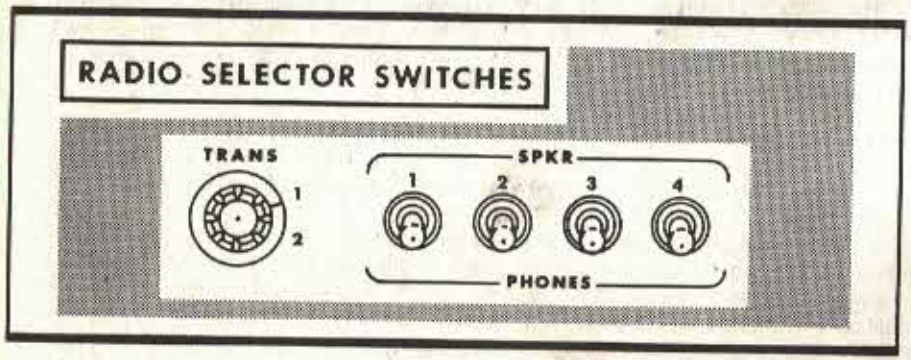


Figure 6-2.

AUTOPILOT-OMNI SWITCH.

When a Nav-O-Matic autopilot is installed with two compatible omni receivers, an autopilot-omni switch is utilized. This switch selects the omni receiver to be used for the omni course sensing function of the autopilot. The switch is mounted just to the right of the autopilot control unit at the bottom of the instrument panel. The switch positions, labeled "OMNI 1" and "OMNI 2", correspond to the omni receivers in the radio panel stack.

TRUE AIRSPEED INDICATOR

A true airspeed indicator is available to replace the standard airspeed indicator in your airplane. The true airspeed indicator has 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 with outside air 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.

ALPHABETICAL INDEX

A

B

C

D

E

F

G

H

I

L

M