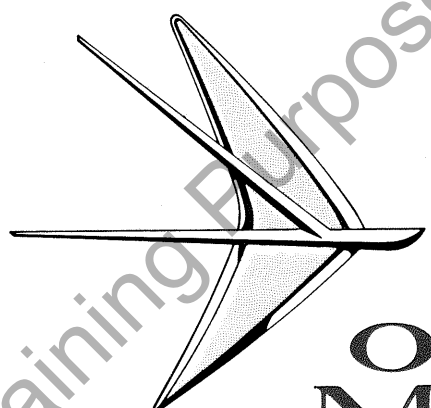
Your '61
CESSNA 150A



Owner's Manual

PERFORMANCE and SPECIFICATIONS

	MODEL 150	PATROLLER VERSION
GROSS WEIGHT	1500 lbs.	1500 lbs.
SPEED:		
Maximum at Sea Level	124 mph	124 mph
Maximum Recommended Cruise 70% Power at 9000 ft.	121 mph	121 mph
RANGE:		
Maximum Recommended Cruise	520 miles	810 miles
70% Power at 9000 ft.	4.3 hours	6.7 hours
22.5 Gallons, No Reserve	121 mph	121 mph
Patroller Version, 35.0 Gallons		
Maximum Range at 10,000 ft,	630 miles	980 miles
22.5 Gallons, No Reserve	6.6 hours	10.3 hours
Patroller Version, 35.0 Gallons	95 mph	95 mph
RATE OF CLIMB AT SEA LEVEL	740 fpm	740 fpm
SERVICE CEILING	15,300 ft.	15,300 ft.
TAKE-OFF:		
Ground Run	680 ft.	680 ft.
Total Distance Over 50-ft. Obstacle	1205 ft.	1205 ft.
LANDING:		
Landing Roll	360 ft.	360 ft.
Total Distance Over 50-ft. Obstacle	1055 ft.	1055 ft.
EMPTY WEIGHT: (Approximate)		
"Standard"	950 lbs.*	955 lbs.*
BAGGAGE	80 lbs.	80 lbs.
WING LOADING: Pounds/square foot	9.4 lbs.	9.4 lbs.
POWER LOADING: Pounds/HP	15 lbs.	15 lbs.
FUEL CAPACITY: Total	26 gals.	38 gals.
OIL CAPACITY: Total	5 U.S. qts.	5 U.S. qts.
POWER:		
Continental O-200-A Engine, 100 rated HP at 2750 RPM		

*EMPTY WEIGHT (Approximate): "Trainer," 970 lbs. (patroller, 980 lbs.); "Inter-City Commuter," 990 lbs. (patroller, 1000 lbs.)

P-220-PRINTING INC.-3000-9/9/60

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. 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 airplane. 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 only by your Cessna Dealer:

1 FACTORY TRAINED MECHANICS to provide you with courteous expert service.
2 FACTORY APPROVED SERVICE EQUIPMENT to provide you with the most efficient and accurate workmanship possible.
3 A STOCK OF GENUINE CESSNA SERVICE PARTS on hand when you need them.
4 THE LATEST AUTHORITATIVE INFORMATION FOR SERVICING CESSNA AIRPLANES, since Cessna Dealers have all of the Service Manuals and Parts Catalogs, kept current by Service Letters and Service News Letters published by Cessna Aircraft Company.

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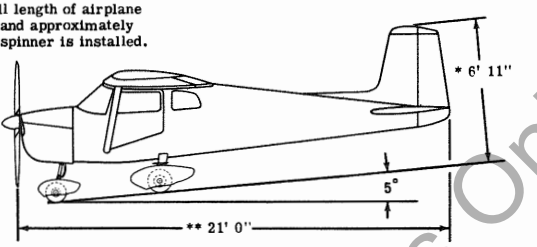
A current Cessna Dealer Directory accompanies your new airplane. The Directory is revised frequently, and a current copy can be obtained from your Cessna Dealer. Make your Directory one of your cross-country flight planning aids; a warm welcome awaits you at every Cessna Dealer.

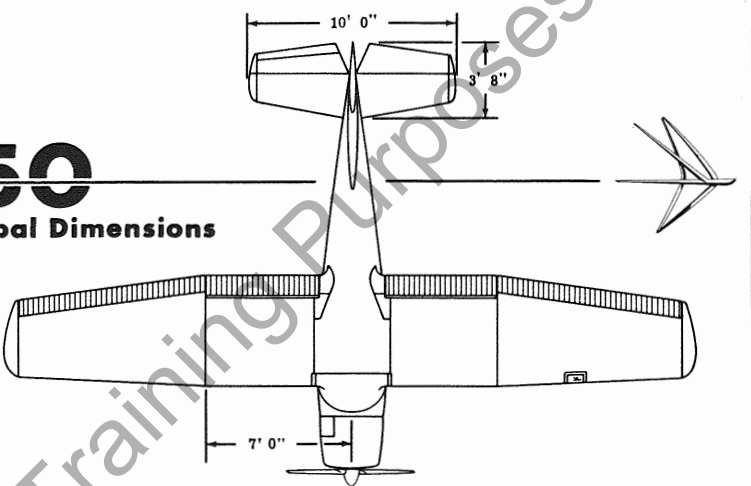
* If rotating beacon is installed on vertical fin, add 2 1/2" to maximum height of airplane.

** Add approximately 3" to overall length of airplane for standard propeller spinner and approximately 9" when optional bullet-shaped spinner is installed.

150

Principal Dimensions





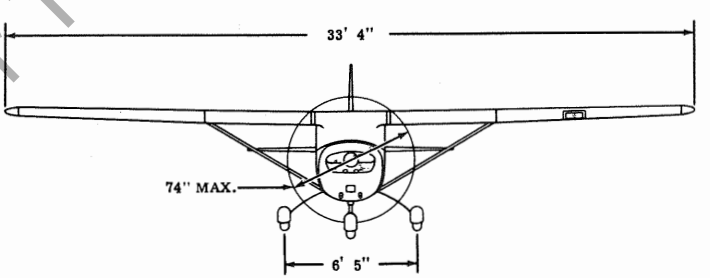
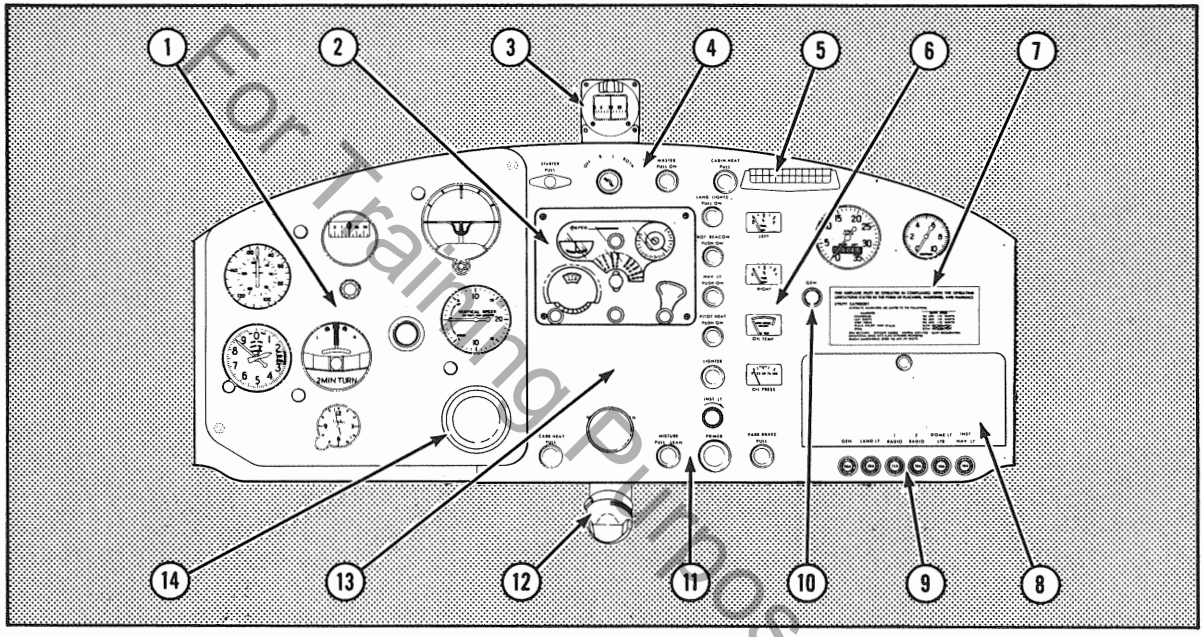


Table of Contents

This manual describes the operation and performance of the Standard, Trainer, and Inter-City Commuter configurations of the Cessna Model 150 airplane. Equipment described as "Optional" is either furnished as additional equipment in the Trainer and Inter-City Commuter or is available as optional equipment for any of the three configurations.



1. Flight Instrument Grouping
2. Radio (Optional Equipment)
3. Magnetic Compass
4. Switches and Controls (See figure 1-2)
5. Compass Correction Card
6. Fuel and Oil Instruments
7. Operation Limitations Placard
8. Map Compartment
9. Fuses
10. Generator Warning Light
11. Switches and Controls (See figure 1-2)
12. Microphone
13. Additional Radio Space
14. Additional Instrument Space

Figure 1-1. Instrument Panel

SECTION I

Description

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 section will discuss location, operation, and function of the various items of equipment, emphasizing description of equipment that is not readily understood at first inspection.

THE ENGINE.

The powerplant used in your Cessna is a four-cylinder, 100-horsepower, Continental Model O-200-A engine. The engine utilizes a wet sump oil system, dual magneto ignition system, and an up-draft type carburetion system.

ENGINE CONTROLS.

THROTTLE.

The throttle (figure 1-2), largest of the engine controls, is a push-pull type control. Engine speed is increased by pushing the throttle in or decreased by pulling it out.

NOTE

To prevent creeping, tighten the knurled friction-type locknut on the control. Turning the nut clockwise increases friction on the throttle; turning it counterclockwise decreases friction.

MIXTURE CONTROL KNOB.

The mixture control (figure 1-2) incorporates a locking lever to prevent unintentional use of the mixture control knob. To lean the mixture, it is necessary to depress the locking lever while pulling the mixture control knob out. This operation can be accomplished with one hand by using the thumb to press the locking lever in and the index and middle fingers to pull the knob out. The locking lever is effective only in the leaning operation. Forward movement of the mixture control knob is not affected by the locking lever.

CARBURETOR AIR HEAT KNOB.

The carburetor air heat knob (figure 1-2) operates the carburetor air intake butterfly valve, which proportions the hot and cold air entering the carburetor. Pulling the knob out provides heated air for the carburetor while pushing the knob all the way in provides only cold air for the carburetor.

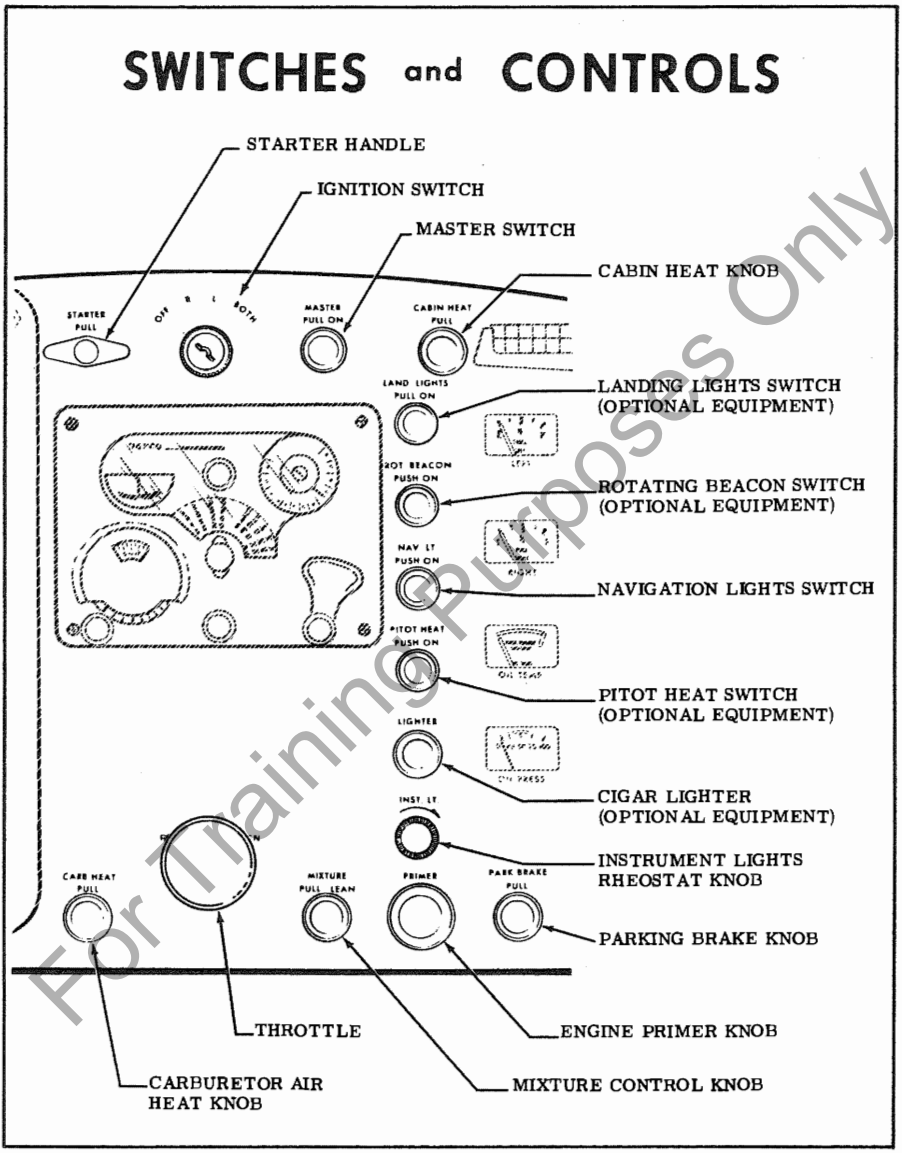


Figure 1-2.

IGNITION SWITCH.

The key-operated ignition switch (figure 1-2) controls the dual magneto ignition system. The switch has four positions labeled clockwise as follows: "OFF," "R," "L," and "BOTH." The engine should be operated on both magnetos ("BOTH" position). The "R" and "L" positions are for checking purposes only.

ENGINE PRIMER KNOB.

The engine primer in your airplane is a manual plunger type, and is operated by the engine primer knob (figure 1-2). It is used to aid in starting the engine by supplying an initial charge of raw fuel to the cylinders. For an initial start in normal air temperatures, use two strokes of the primer. Usually, a hot engine will need no priming. To operate the primer, proceed as follows:

(1) First, unlock the plunger by rotating the knob in either direction until the knob pops part way out.
(2) Slowly pull the plunger all the way out and then push it all the way in. This action is termed "one stroke of the primer.
(3) Normal winter weather will require two to four strokes of the primer, and very cold (-20°F) weather may require ten strokes.
(4) Normally, the engine is started immediately after the priming operation. In very cold weather, it is recommended that the engine be turned over while priming. Also, it may be necessary to continue the priming until the engine runs smoothly.

STARTER HANDLE.

Pulling out on the "T" shaped starter handle (figure 1-2) engages the engine starter. It is spring-loaded to return to the disengaged position.

NOTE

Do not pull out on starter handle when the propeller is turning. Engaging the starter with the engine rotating may damage the starter drive.

FLIGHT CONTROLS.

Conventional wheel and rudder pedal controls on the left side of the airplane operate the primary flight control surfaces (ailerons, elevators, and rudder). In addition, a control wheel and rudder pedals may be provided as optional equipment on the right side.

ELEVATOR TRIM TAB CONTROL WHEEL.

The elevator trim tab, located on the right elevator, is mechanically operated by the elevator trim tab control wheel on the floor just forward of the seats. A tab position indicator is incorporated in the tab control wheel mechanism to show the nose-up or nose-down setting of the tab. Forward rotation of the wheel trims nose-down, and rearward rotation trims nose-up. Takeoff should be made with the tab posi-

tion indicator set at the "TAKE-OFF" position labeled on the indicator cover.

WING FLAP HANDLE.

The wing flaps are controlled by a wing flap handle mounted between the seats. The handle is operated by depressing the thumb button and pulling the handle up and aft to the desired flap setting. By releasing the thumb button, the handle can be locked to provide 0, 10, 20, 30, and 40 degree flaps positions.

The flaps may be lowered or raised during normal flying whenever the airspeed is less than 85 MPH. The use of flaps is not recommended for crosswind take-offs. For unusually short field take-offs, apply 10° flaps (first notch) prior to take-off. For further discussion of the use of wing flaps for take-off, refer to Section III.

WING FLAP SETTINGS

For Normal Take-off . . .	Up (0°)
For Short Take-off.	1st notch (10°)
For Landing --	
Select as desired	Up (0°)
	1st notch (10°)
	2nd notch (20°)
	3rd notch (30°)
	4th notch (40°)

CONTROLS LOCK (OPTIONAL EQUIPMENT).

A controls lock is available to lock the ailerons and elevators in neutral position as a protection against damage caused by buffeting in gusty or strong winds. The lock is designed with a large red metal flag which clips on the throttle control shaft when the throttle is pulled out to the idle position. This feature prevents advancing the throttle with the lock installed.

To install the controls lock, pull out the throttle and position the red flag of the controls lock around the throttle shaft so that the lettering on the flag is on top. Pull the pilot's control wheel back until the hole in the control wheel shaft is aligned with the locking bracket which encircles the control wheel shaft opening on the instrument panel. Insert the controls lock pin through the locking bracket and control wheel shaft. Check that the pin is fully inserted, the flag is around the throttle shaft, and the lettering is legible. When not in use, the lock is stored in the map compartment.

INSTRUMENTS.

All instruments (figure 1-1) are mounted on the instrument panel except an outside air temperature gage and a magnetic compass. The outside air temperature gage (optional equipment) is located in the right cabin ventilator. For correct readings, the ventilator must be slightly open. The magnetic compass is mounted on the deck just above the instrument panel.

PITOT-STATIC SYSTEM INSTRUMENTS.

Instruments connected to the pitot-static system include the airspeed indicator, altimeter and rate-of climb indicator (optional equipment).

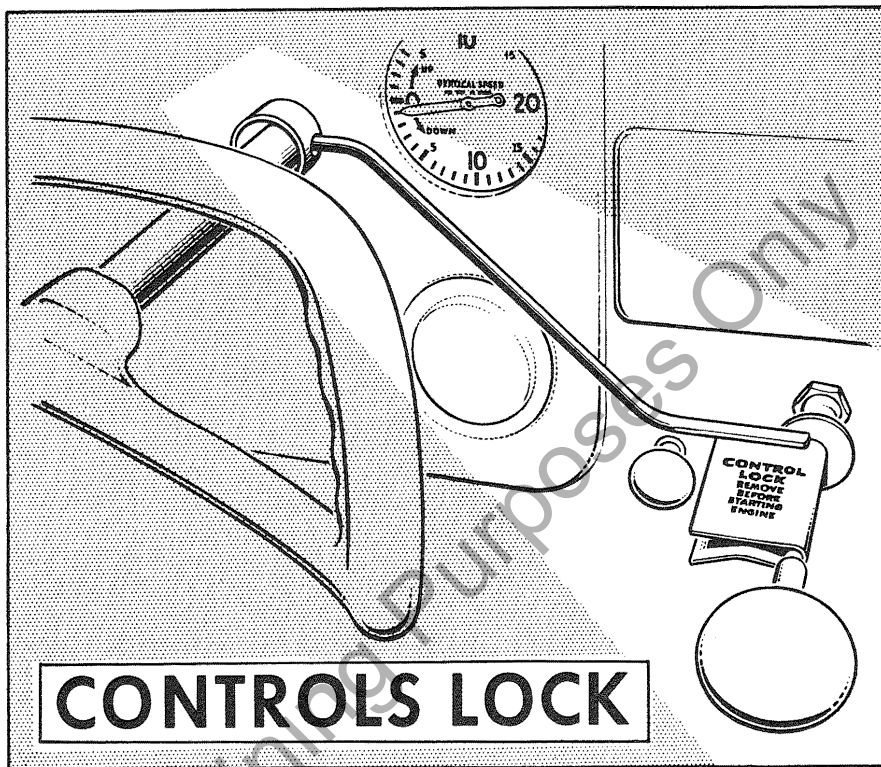


Figure 1-3.

This system functions on differential pressure between impact air pressure at the pitot tube mounted under the leading edge of the left wing and barometric pressure obtained from a static port mounted on the left forward side of the fuselage. To keep the pitot tube opening clean, a cover may be placed over the pitot tube whenever the airplane is idle on the ground. The static port should be kept free of polish, wax, or dirt since these instruments depend on a reliable source of atmospheric pressure for proper operation.

A sensitive altimeter is available as optional equipment. With this altimeter, it is possible to make accurate in-flight altitude corrections by setting the barometric pressure scale on the dial face to the altimeter setting received from an airport control tower or radio range station.

VACUUM -OPERATED INSTRUMENTS (OPTIONAL EQUIPMENT).

Instruments operated by the vacuum system include the directional gyro and gyro horizon. A suction gage is also included with the vacuum system to indicate the amount of suction available at the instruments.

TURN AND BANK INDICATOR (OPTIONAL EQUIPMENT).

The turn and bank indicator is electrically operated. Turned on by the master switch, the indicator continues to function until the master switch is turned off.

STALL WARNING INDICATOR.

The stall warning indicator is an electric horn, controlled by a sensing unit in the leading edge of the left wing. This system is in operation whenever the master switch is turned on. The sensing unit responds to changes in the airflow over the leading edge as a stall is approached. Since these changes in airflow occur with every stall, the unit functions regardless of attitude, speed, weight, altitude and other factors which effect stalling speed. Thus, it warns you of an inadvertent stall under all conditions. In straight-ahead and turning flight, the warning will come approximately 5 to 10 MPH ahead of the stall.

The only time you may hear the indicator under safe flight conditions will be merely a short beep as you land. Usually no warning will be evident on a properly executed landing. However, if the airplane is leveled off high, the indicator will signal. The indicator automatically cuts out on the ground, although high surface winds may give signals when taxiing. The unit has no silencing switch which might be inadvertently left off.

PITOT AND STALL WARNING HEATERS (OPTIONAL EQUIPMENT).

A heated pitot tube and heated stall warning transmitter are available as optional equipment. The heaters are controlled by a single circuit breaker switch (see figure 1-2), and should be turned on before ice is encountered.

CLOCK (OPTIONAL EQUIPMENT).

An electric clock may be installed as optional equipment in the flight instrument grouping on the instrument panel (see figure 1-1). The clock is connected electrically to the power lead from the battery and is in operation at all times. Because of the low power requirements of the clock, the electrical power drain on the battery is negligible, even if the airplane is not used regularly. If the airplane is put in long term storage, the battery should be removed.

OIL SYSTEM.

The oil capacity of the Continental Model O-200-A engine is 6 quarts, 2 quarts of which are considered unusable. Oil should be added if below 4 quarts and should be full if an extended flight is planned. The

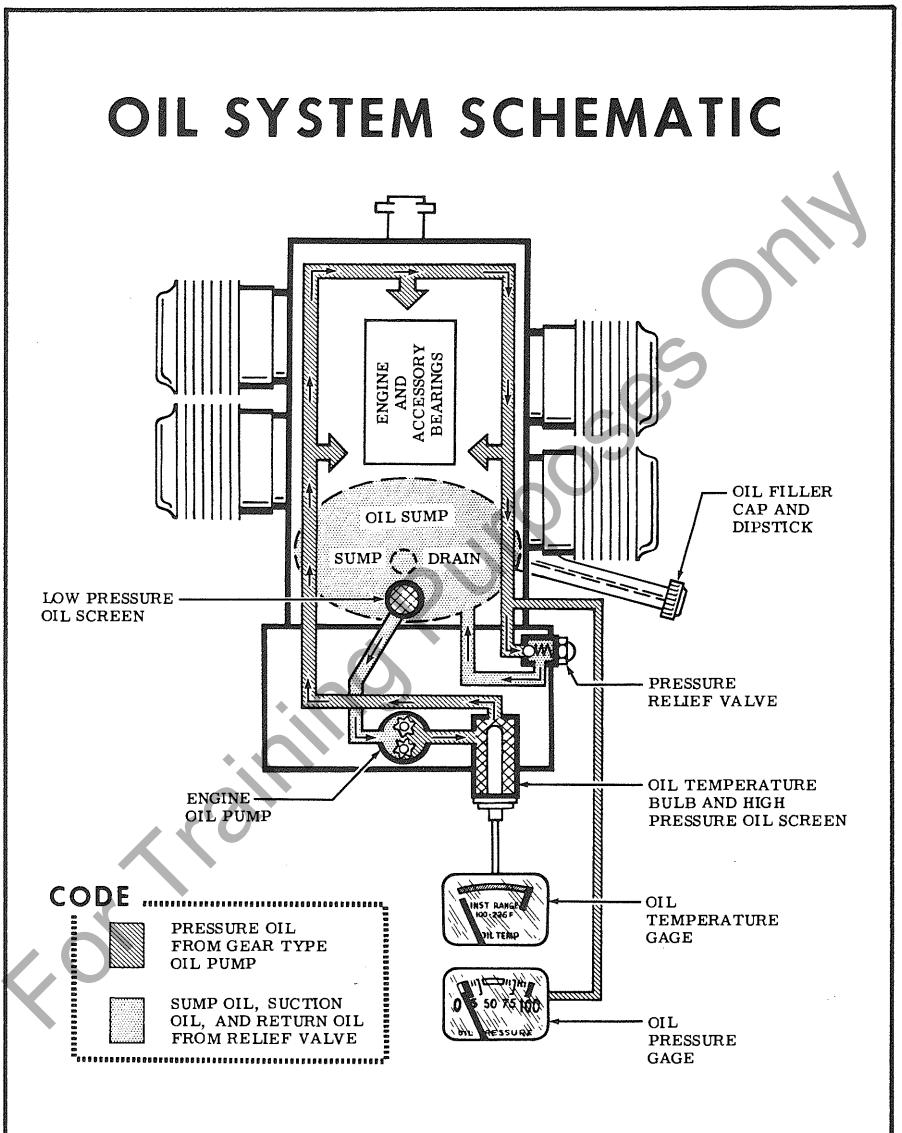


Figure 1-4.

quantity can be checked by opening the access door on the right side of the engine cowl and reading the oil level on the dipstick which is fastened to the oil filler cap. In replacing the oil filler cap, make sure that it is on firmly and turned clockwise as far as it will go to prevent loss of oil through the filler neck.

Refer to the servicing diagram (figure 5-1) for the recommended oil specification, grades, and servicing intervals.

OIL SYSTEM INSTRUMENTS.

A capillary type oil temperature gage (figure 1-1) and a direct reading oil pressure gage (figure 1-1) are standard equipment. A green arc on each gage dial indicates the normal operating range. Refer to Section IV for instrument markings.

OIL FILTER (OPTIONAL EQUIPMENT).

An oil filtering system is available as optional equipment. When this system is installed, one additional quart of oil should be added during oil and filter element changes to maintain the engine's normal oil supply.

Refer to the servicing diagram (figure 5-1) for a listing of the replacement filter element and for servicing instructions.

CARBURETOR AIR FILTERING SYSTEM.

Air is ducted to the carburetor from an air scoop located on the bottom of the engine cowl. Dirt and other foreign matter is filtered from the incoming air by a filter screen located in the air scoop. Proper cleaning and servicing of this air filter is important to increase life and maintain top efficiency of the engine. Servicing instructions are stamped on the carburetor air filter. Refer to the servicing diagram (figure 5-1) for the servicing interval.

FUEL SYSTEM.

Fuel is supplied to the engine from two 13 gallon wing tanks. From these tanks, fuel flows by means of gravity through a fuel shutoff valve and fuel strainer to the carburetor. The total usable fuel in all flight conditions is 22.5 gallons.

Refer to the servicing diagram (figure 5-1) for the recommended fuel grade, and fuel tank, strainer, and line draining procedure.

FUEL SHUT-OFF VALVE.

The fuel shutoff valve is located on the cabin floor just forward of the seats and is safetied in the "ON" position. The "ON" position provides fuel flow from both tanks simultaneously.

NOTE

When emergency operation of the valve is required, a sharp twist of the valve handle toward the "OFF" position will break the safety wire. The "OFF" position seals both tanks off from the rest of the fuel system.

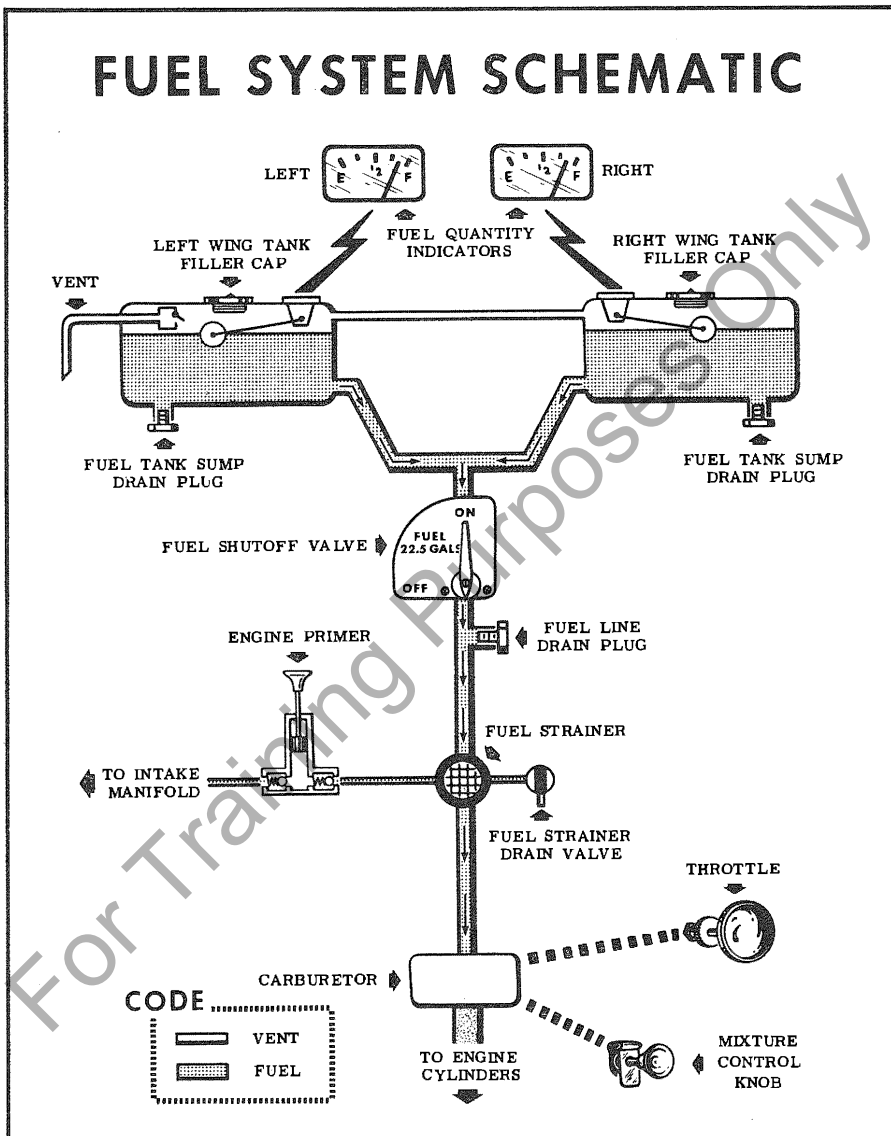


Figure 1-5.

FUEL SYSTEM INSTRUMENTS.

Two electrically-operated magnetic type fuel quantity indicators (figure 1-1) are provided, each working in conjunction with an electric fuel level transmitter in its respective fuel tank. Turned on by the master switch, the indicators continue to function until the master switch is turned off. Fuel quantity should be checked with the aircraft in a level attitude for accurate indications.

A red arc extends from the empty to 1/4 full range on each indicator dial. When the indicator needle is in this arc, the pilot is warned that the fuel tank is 1/4 full or less and that take-off is not recommended.

WING TANK SUMP DRAIN VALVES (OPTIONAL EQUIPMENT).

Quick drain valves are available as optional equipment and replace the conventional wing tank sump drain plugs. The valves facilitate frequent draining of tank sumps when checking for possible water and sediment. A quick drain fuel sampler cup is provided when these valves are installed. A rigid pin mounted in the center of the cup is used to open the drain valves; the cup then catches the fuel sample. When the cup is withdrawn,

FUEL QUANTITY DATA (U.S. GALLONS)

TANKS	USABLE FUEL ALL FLIGHT CONDITIONS	UNUSABLE FUEL	TOTAL FUEL VOLUME
TWO WING (13 GAL. EACH)	22.5	3.5	26
TWO PATROLLER WING (19 GAL. EACH)	35.0	3.0	38.0

Figure 1-6.

the drain valve automatically closes, and any water or sediment drained from the tanks is readily visible in the cup.

PATROLLER WINGS, LARGE FUEL TANKS (OPTIONAL EQUIPMENT).

Patroller wings with enlarged fuel tanks are available as optional equipment. With these tanks, the total fuel capacity is increased from 26 gallons to 38 gallons. This sizable increase in fuel capacity greatly increases the airplane's cruising range as outlined in the CRUISE PERFORMANCE CHART in Section VI. Refer to the FUEL QUANTITY DATA table for usable and unusable fuel quantities.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 12-volt, direct-current system (figure 1-7) powered by an engine-driven 20-amp generator. A 12-volt storage battery serves as a standby power source, supplying current to the system when the generator is inoperative such as when the generator voltage is insufficient to close the reverse-current relay. The battery is located in the fuselage tailcone just aft of the baggage compartment, and is accessible by unsnapping the rear baggage compartment curtain. Refer to the servicing disgram (figure 5-1) for information on servicing the battery.

Control of the charging current and voltage is accomplished by the voltage regulator mounted on the firewall.

NOTE

Only those persons familiar with the operation, adjustment, and repair of the voltage regulator should be permitted to remove the cover.

MASTER SWITCH.

A master switch (figure 1-2) controls the entire airplane electrical system except the magneto-powered ignition system. When the master switch is pulled on, a solenoid switch is energized and the electrical power of the battery is admitted into the electrical system. If the battery is allowed to get sufficiently low, it will not have enough energy to actuate the solenoid when the master switch is pulled on resulting in the generator being unable to charge the battery. In this case, the battery should be recharged prior to flight.

The airplane normally should not be operated without a battery or with the battery disconnected. Damage to the generator and generator regulator may be the result. In the event of a short or malfunctioning of the airplane electrical system, the master switch may be pushed to the off position and the engine will continue to run on the magneto ignition system.

FUSES.

Fuses (figure 1-1) protect the electrical circuits in your airplane. The circuits controlled by each fuse are indicated above each fuse retainer. Fuse capacity is indicated on each fuse retainer cap. Fuses are re-

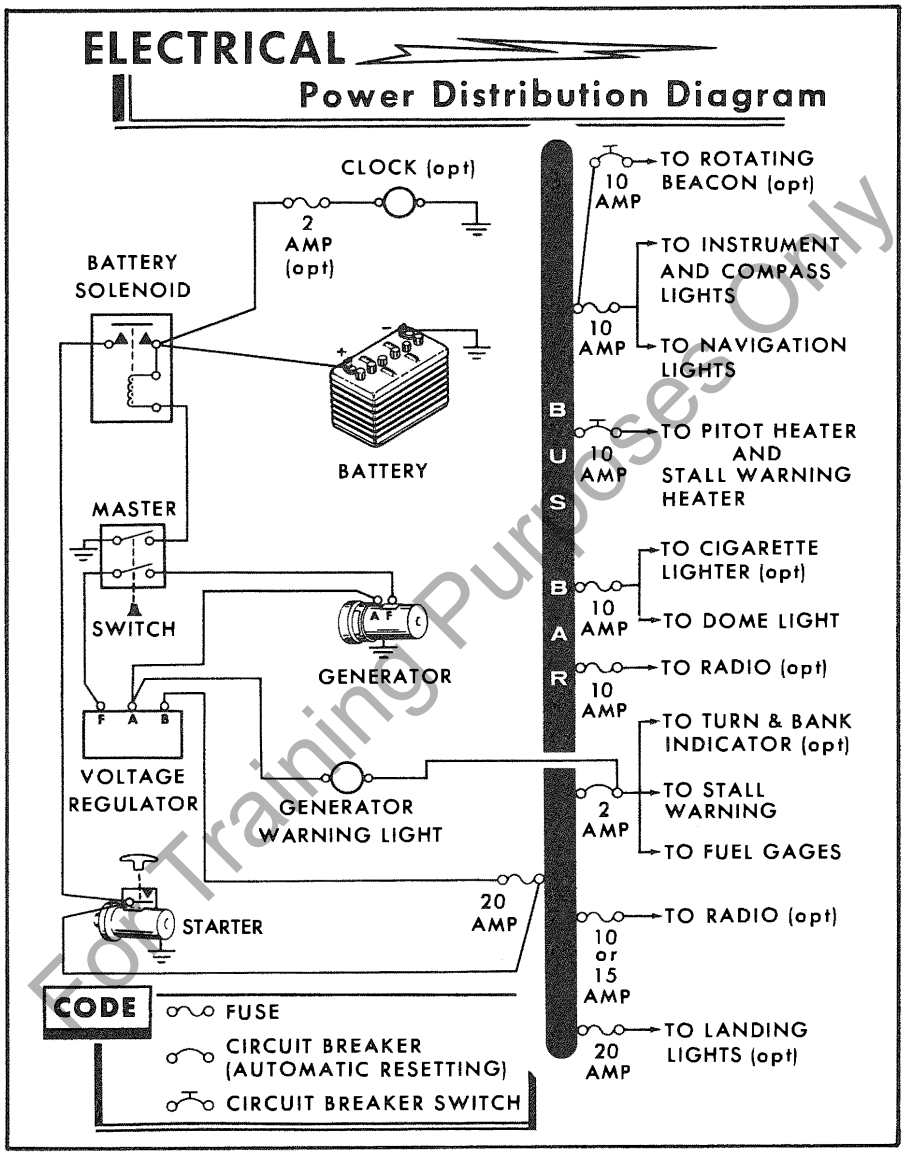


Figure 1-7.

moved by pressing the fuse retainers inward and rotating them counter-clockwise until they disengage. The faulty fuse may then be lifted out and replaced. Spare fuses are held in a clip on the inside of the map compartment door.

The fuel quantity indicators, stall warning system, and optional turn-and-bank indicator circuits are protected by an automatically-reset circuit breaker which provides intermittent emergency operation of these devices in case of a faulty circuit. The optional rotating beacon system and optional pitot and stall warning heater systems are protected by separate circuit breaker switches. The optional clock is protected by a separate fuse mounted near the battery solenoid.

GENERATOR WARNING LIGHT.

The red generator warning light (figure 1-1) indicates generator output. The light, when on, indicates that the electrical system is receiving current from the battery and the generator is not functioning. Failure of the light to illuminate, when the master switch is pulled on prior to starting the engine, will indicate faulty wiring, a dead battery, or a malfunctioning light. The light should fade out at approximately 1000 RPM showing that the generator is functioning properly and is supplying current to the system. If the light should illuminate above this RPM, a malfunctioning generator or regulator, or a short in the generator circuit is indicated. It is possible, under extreme electrical loads, to draw current from the battery to supplement the current of the generator; however, the generator warning light will not indicate this drain on the battery as long as the generator is functioning properly. Therefore, the warning light is not to be used as a battery charge indicator.

LANDING GEAR SYSTEM.

MAIN LANDING GEAR.

Your airplane is equipped with Cessna's Land-O-Matic" landing gear. It consists of a single tapered spring leaf for each main gear. The springs are made from the highest quality chrome vanadium steel, heat treated and shot peened for added fatigue resistance. No maintenance of the springs is necessary other than paint to prevent rusting.

NOSE GEAR.

The nose gear is steerable and incorporates an air and oil shock strut and a shimmy dampener. Nosewheel steering is accomplished through normal operation of the rudder pedals. The wheel is steerable through an arc of approximately 10° each side of neutral, after which it becomes free-swiveling up to a maximum deflection of 30° right or left of center. The nosewheel is automatically centered while the airplane is in flight, and movement of the rudder pedals will not affect its position. Thus the pilot has the assurance that the nosewheel will be straight at the initial landing touchdown.

Refer to the servicing diagram (fig-

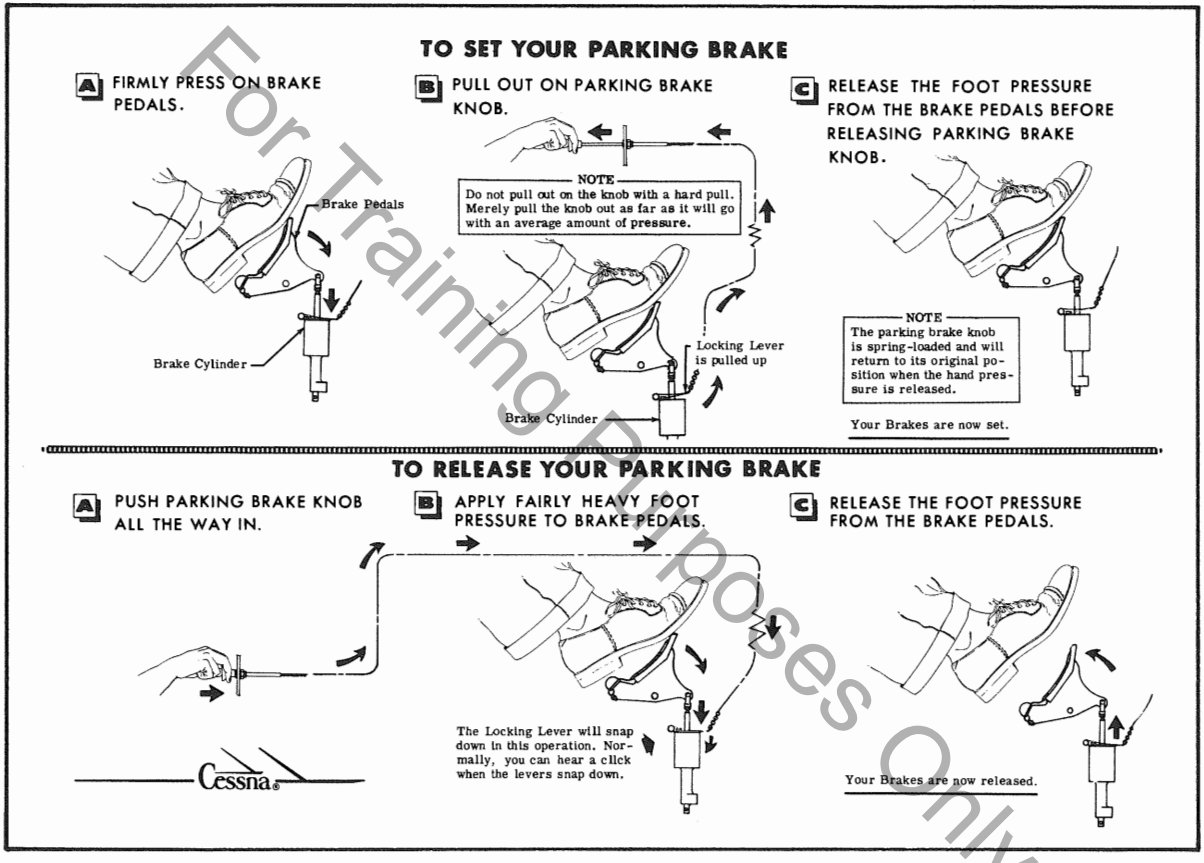


Figure 1-8.

ure 5-1) for the nose gear shock strut and shimmy dampener servicing procedure, and servicing intervals.

WHEELS AND TIRES.

Cast aluminum two-piece wheels and disc type brakes are installed to simplify wheel, tire and brake system maintenance. The main and nose landing gear wheels are equipped with tubeless tires. The tires incorporate a new design feature which eliminates the conventional filler valve stem. The tires are inflated through a small rubber valve device on the tire sidewall using a special filler needle.

Refer to the servicing diagram (figure 5-1) for tire inflation pressures, and to Section V for wheel and tire removal and tire inflation procedures.

SPEED FAIRINGS (OPTIONAL EQUIPMENT).

Landing gear "Speed Fairings" and a propeller spinner are available as an optional equipment kit. The fairings are designed as a closely fitted housing for each wheel and tire, and add to the beauty of your airplane. Because of the small clearance between the tire and fairing, the wheel opening should be kept free of mud, snow, or ice as these elements will have a braking effect on the wheel if allowed to accumulate. If these elements cannot be avoided, make an inspection of the fairings before each flight and remove any accumulations which may be forming.

Refer to Section V for a discussion of speed fairing removal.

BRAKE SYSTEM.

The hydraulic brakes on the main wheels are conventionally operated by applying toe pressure to either the pilot's or copilot's rudder pedals. The rotation of the pedals actuates the brake master cylinders resulting in a braking action on the main landing gear wheels. The brakes may also be set by operating the parking brake knob. Refer to figure 1-8 for parking brake operation.

CABIN HEATING AND VENTILATING SYSTEM.

Cabin heat is provided by a manifold-type heater. The cabin heat knob (figures 1-2 and 1-9) actuates a valve on the firewall which controls the amount of heated fresh air entering the cabin. When the knob is pulled full out, maximum heat is provided. No heat is provided when the knob is in. Intermediate positions of the knob may be selected as desired.

Ventilation for the cabin, excluding the ventilation obtained through the cabin heat system, is provided by manually-adjusted cabin ventilators in the upper corners of the windshield. To provide a flow of fresh air, pull the ventilator tube out. The amount of air entering the cabin can be regulated by varying the distance the ventilator tube is extended. To change the direction of airflow, rotate the ventilator tube to the position desired. To stop the flow of air,

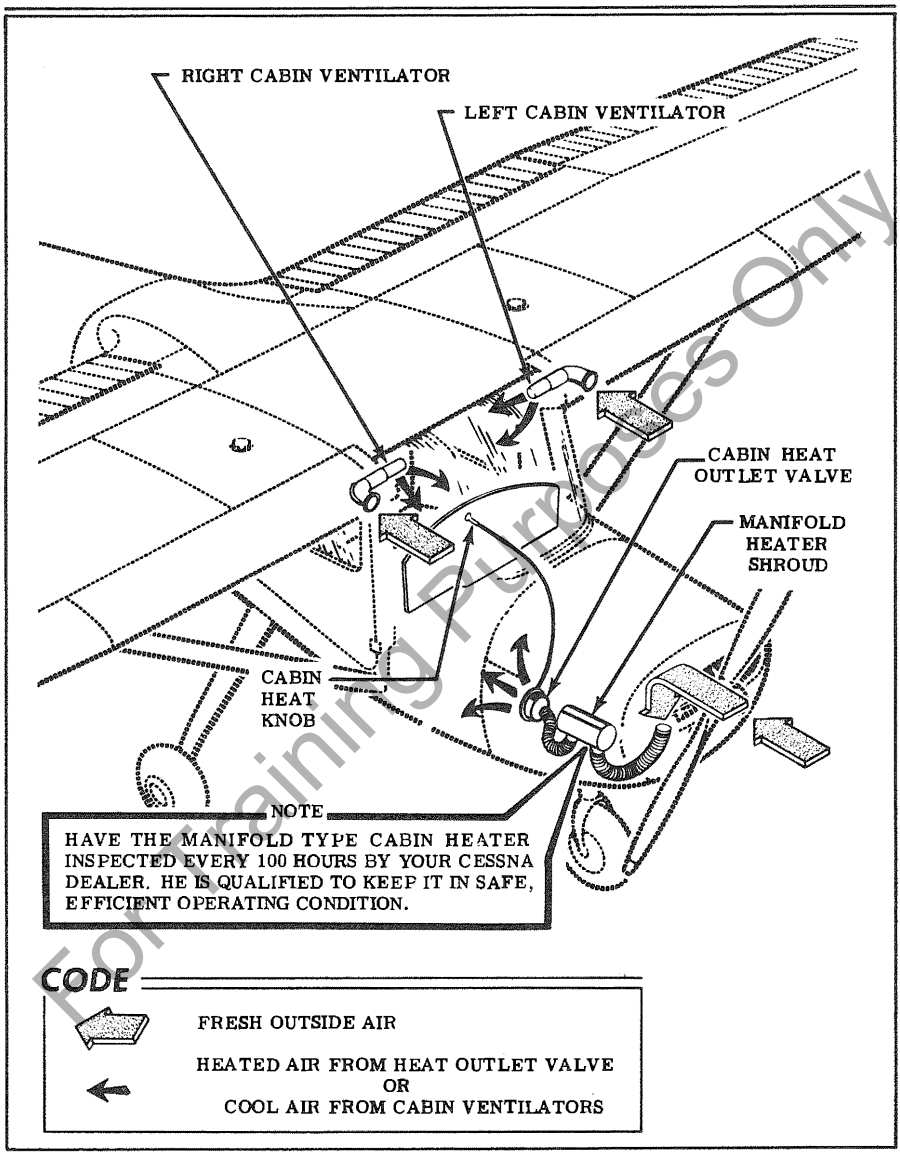


Figure 1-9.

push the ventilator tube all the way in.

LIGHTING EQUIPMENT.

NAVIGATION LIGHTS.

Conventional wing and tail navigation lights are standard equipment on your airplane. The navigation lights switch (figure 1-2) turns on the lights when pulled out.

Optional plastic detectors on the wing tip navigation lights glow when the lights are burning. The glowing tips of the detectors are visible from the pilot's seat.

INSTRUMENT LIGHTS.

A red flood light is mounted on the cabin ceiling to illuminate the instrument panel. The light, in conjunction with the compass light and radio dial lights, is controlled by a rheostat switch. To turn on the lights, rotate the rheostat switch knob (figure 1-2) clockwise until the desired illumination is obtained. To turn off the lights turn the knob counterclockwise.

DOME LIGHT.

A white dome light in the cabin ceiling is controlled by a slide switch mounted just forward of the dome light.

LANDING LIGHTS (OPTIONAL EQUIPMENT).

The landing lights consist of two lamps mounted side-by-side in the leading edge of the left wing. One lamp is adjusted to give proper illumination of the runway during landing and take-off while the other lamp provides illumination of the ground for taxiing purposes. The landing light switch (figure 1-2), when pulled out to the first stop, turns on the taxi light; when pulled to the second stop, it turns on both the landing light and taxi light. The full in position of the switch is "OFF."

ROTATING BEACON (OPTIONAL EQUIPMENT).

A rotating beacon is installed on the tip of the vertical fin, and serves as an anti-collision light. When the beacon is turned on, its lights rotate continuously through 360°.

NOTE

The rotating beacon should be turned off during flight through clouds to prevent a distracting glare.

The rotating beacon switch (figure 1-2) incorporates a manually-set circuit breaker. Pushing the switch button in turns on the rotating beacon. To turn off the beacon, pull the switch button out. A short in the circuit will also open the circuit breaker and force the button out.

MISCELLANEOUS EQUIPMENT.

STANDARD SEATS.

Two large cushioned seats with a common adjustable seat back are

provided. The seat back is adjustable to four positions at the bottom and four positions at the top, and pivots forward and down for access to the baggage compartment.

The lower adjustment of the seat back permits seating at the most comfortable distance from the rudder pedals. To adjust the bottom of the seat back, grasp the spring-loaded pivot pin on the left side of the seat and pull the pin from the adjustment hole. Position the seat as desired making sure that both the fixed pivot pin on the right and the spring-loaded pin on the left are properly aligned, then release the left pivot pin to secure the seat. Check that the pins are fully inserted in the proper adjustment holes.

The upper adjustment determines the reclining angle of the seat back. This adjustment is made by gripping the handle behind the center of the seat back, and positioning the seat back to the desired angle.

INDIVIDUAL ADJUSTABLE SEATS (OPTIONAL EQUIPMENT).

Individual adjustable seats are available for both the pilot and passenger. Each seat will adjust to two positions of seat back angle and seven fore and aft positions for a total of 14 possible in-flight positions. An infinite number of additional seat back positions are available by making a simple preflight adjustment to the back tilt-angle adjusting bolt which projects from the aft lower edge of the back frame.

To adjust the seats fore and aft, lift the lever on the outboard front edge of the seat cushion, and slide the seat to the desired position; then release the lever and move the seat forward or back slightly until the seat positioning pins lock in the seat rails.

To adjust the seat back tilting angle pull out the handle on the inboard front edge of the seat cushion. This allows the seat back to fall aft to the aft tilting position. To move the seat back to the front tilting position, grasp the top of seat back and pull forward approximately 6 inches; then push seat aft to the new position. The seat back may be pulled full forward for access to the baggage compartment.

CHILD'S SEAT (OPTIONAL EQUIPMENT).

A small seat may be installed just aft of the front seats in place of the baggage compartment and utility shelf. This seat provides seating space for children or space for baggage up to a maximum of 80 pounds. The back of the seat is hinged at the top and may be lifted up (after removing the seat pad and retaining screws on the seat back) to permit access to the battery whenever battery servicing or replacement is necessary.

CABIN DOORS.

Cabin doors permit entry from either side of the airplane. The doors have a flush-mounted door handle on both the outside and the inside. To open the door, pull out on the forward edge of the handle.

The right cabin door can be locked from the inside only. To lock the right door, press down on the lock button located at the lower rear corner of the door window. Lift the lock button to unlock the door.

The left door can be locked from the outside only with a key-operated lock. The same key operates both the door lock and the ignition.

CABIN WINDOWS.

The window in each cabin door may be opened to provide cabin ventilation during engine warm-up and taxiing. The two rear cabin windows are of the fixed type. The cabin door windows are hinged along the top of the windows and open out and up. To open a window, press on the window latch button and rotate the latch handle upward. The window is spring-loaded to the open position and will open approximately one-third full open. A retaining arm holds the window in this position. To close a window, pull the window shut and rotate the window latch handle downward.

BAGGAGE COMPARTMENT.

The baggage compartment just aft of the seats has a capacity of 80 pounds. To gain access to the baggage compartment, grip the handle behind the center of the seat back and pull it full forward to disconnect the top of the seat back from the cabin sidewall. The seat back then may be pivoted full forward and down, thus providing easy access to the entire baggage area.

BAGGAGE TIE-DOWN STRAPS.

Two baggage tie-down straps are provided when the individually adjustable seats are installed. The straps are equipped with readily adjustable slip type buckles. Baggage should be securely tied down before each flight when adjustable seats are installed.

UTILITY SHELF.

A utility shelf just above the baggage compartment is convenient for storing hats, brief cases, and other small articles. By removing the shelf securing screws, the shelf may be removed for installation of the child's seat or when additional baggage area is needed.

WINTERIZATION KIT (OPTIONAL EQUIPMENT).

A winterization kit is available as optional equipment for use at temperatures consistently below freezing. The kit consists of a restrictor plate which partially covers the cowl nose cap thereby restricting the flow of cold air through the engine section. To install the restrictor plate, simply position it over the cowl nose cap and install nine screws.

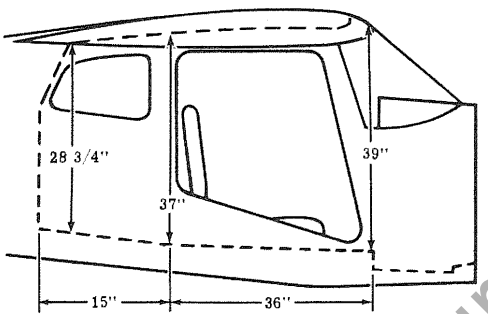
As directed by a placard on the plate, remove it when the ground level temperature exceeds 20°F. Refer to Section III for further discussion of cold weather operation.

FIRE EXTINGUISHER (OPTIONAL EQUIPMENT).

A portable fire extinguisher may

be installed behind the right rear door post just under the utility shelf. In case of emergency, rotate the back of the seat forward in the usual manner, remove the extinguisher from its storage bracket, and use it in accordance with the instructions on the extinguisher.

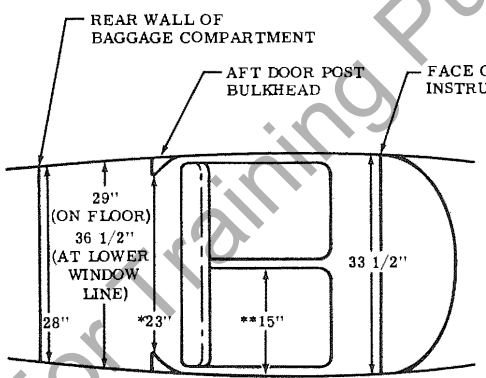
INTERNAL CABIN DIMENSIONS



CABIN HEIGHT MEASUREMENTS

NOTE

Measurements are with utility shelf or optional child's seat removed, giving maximum usable areas and reducing empty weight.



FLOOR WIDTH MEASUREMENTS

*Cabin floor width as measured between inner edges of bulkheads. Additional floor space is available in areas between these points and the fuselage sidewalls.

**This space available when the airplane is equipped with individual seats (optional) and the right seat is removed.

DOOR OPENING DIMENSIONS

WIDTH (TOP)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (REAR)
27"	31"	31¾"	24½"

Figure 1-10.

SECTION II

Operating Check List

This section lists, in Pilot's Check List form, the steps necessary to operate your Cessna 150 efficiently and safely. The section is intentionally brief and is designed as a "quick reference" source of operating procedures. More detailed information on operating characteristics and techniques may be found in Section III; operational limitations are in Section IV.

All airspeeds mentioned in Sections II and III are indicated airspeeds. Corresponding true indicated airspeeds may be obtained from the airspeed correction table in Section VI.

BEFORE ENTERING THE AIRPLANE.

(1) Perform an exterior inspection of the airplane (see figure 2-1).

BEFORE STARTING THE ENGINE.

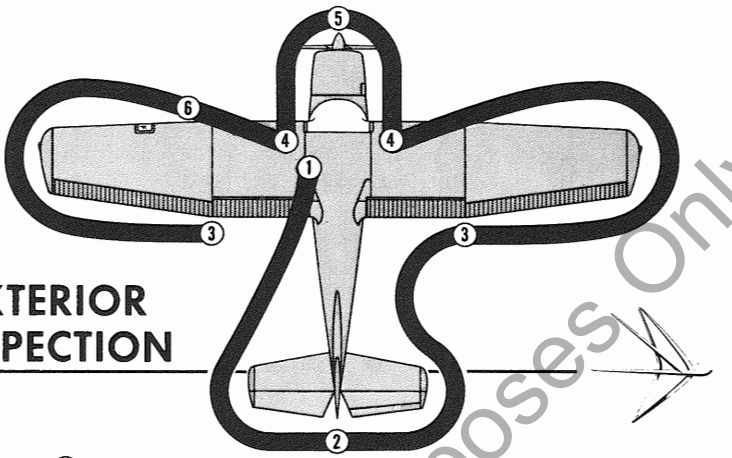
(1) Seats and Seat Belts — Adjust and lock.
(2) Flight Controls — Check.
(3) Brakes — Test and set.
(4) Master Switch — "ON."
(5) Trim Tab — Set.
(6) Fuel Selector — "ON."

STARTING THE ENGINE.

(1) Carburetor Heat — Cold.
(2) Mixture — Rich.
(3) Primer — As required.
(4) Propeller Area. — Check clear.
(5) Ignition Switch — "BOTH."
(6) Throttle — Open 1/4-inch.
(7) Starter Handle — Pull.

BEFORE TAKE-OFF.

(1) Altimeter — Set.



EXTERIOR INSPECTION

(1) (a) Remove control wheel lock if installed.
(b) Turn on master switch and check fuel quantity indicators.

NOTE

Take-off with both fuel quantity indicators in the red arc (below 1/4) is not recommended.

(c) If night flight is planned, turn master switch "ON" and check operation of all lights.
(d) With master switch "ON," check operation of stall warning transmitter tab and warning horn.
(e) Make sure master and ignition switches are "OFF," check fuel shutoff valve safetied in "ON" position.
(f) Adjust seat for comfort and distance to rudder pedals.

(2) (a) Remove rudder lock, if installed.
(b) Inspect tail surface hinges and hinge bolts.
(c) Apply moderate force to each elevator, in opposite directions, checking for looseness at the attachment of the elevators to the torque tube adapter.
(d) Check elevator trim tab for security.
(e) Disconnect tie-down rope or chain.

(3) (a) Remove aileron lock, if installed.
(b) Check aileron and flap hinges.
(c) Check navigation light for damage.

(4) (a) Check main wheel tire for cuts, bruises, and proper inflation.
(b) Inspect airspeed static source hole on side of fuselage for stoppage, (left side only).
(c) Remove fuel tank cap and check fuel level for agreement with gage reading. Secure cap.
(d) Disconnect tie-down rope or chain from tie-down ring on wing strut.
(e) If optional quick drain valves are installed, (on first flight of the day) drain a two-ounce quantity of fuel from wing tank sump to check for presence of water and sediment.

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

(6) (a) Remove pitot tube cover if installed.
(b) Inspect pitot tube opening for stoppage.
(c) Check fuel tank vent opening for stoppage.

Figure 2-1.

(2) Throttle Setting — 1600 RPM.
(3) Engine Instruments — Within green arc.
(4) Generator — Light out.
(5) Magnetos — Check (125 RPM maximum drop).
(6) Carburetor Heat — Check operation.
(7) Flight Controls — Recheck.
(8) Trim Tab — Recheck.
(9) Cabin Doors — Latched.
(10) Flight Instruments and Radios — Set.

TAKE-OFF.

NORMAL TAKE-OFF.

(1) Flaps — Up.
(2) Carburetor Heat — Cold.
(3) Throttle — Full "OPEN."
(4) Elevator Control — Lift nose wheel at 50 MPH.
(5) Climb Speed — 71 MPH.

OBSTACLE CLEARANCE TAKE-OFF.

(1) Flaps — Up.
(2) Brakes — Hold.
(3) Throttle — Full "OPEN."
(4) Brakes — Release.
(5) Elevator Control — Slightly tail low.
(6) Climb Speed — 55 MPH.

CLIMB.

NORMAL CLIMB.

(1) Air Speed — 75 to 80 MPH.
(2) Power — Full throttle.
(3) Mixture — Rich (unless engine is rough due to rich mixture).

MAXIMUM PERFORMANCE CLIMB.

(1) Air Speed — 71 MPH.
(2) Power — Full throttle.
(3) Mixture — Rich (unless engine is rough due to rich mixture).

CRUISING.

(1) Recommended Cruising RPM — 2000 to 2750 RPM (see page 4-3).
(2) Elevator Trim — Adjust.
(3) Mixture — Lean to maximum RPM.

BEFORE LANDING.

(1) Mixture — Rich.
(2) Carburetor Heat — Apply full heat before closing throttle.
(3) Airspeed — 65 to 75 MPH.
(4) Flaps — As desired below 85 MPH.
(5) Airspeed — 60 to 70 MPH (flaps extended).
(6) Elevator Trim — Adjust.

NORMAL LANDING.

(1) Touch Down — Main wheels first.
(2) Landing Roll — Lower nose wheel gently.
(3) Braking — Minimum required.

AFTER LANDING.

(1) Wing Flaps — Up.
(2) Mixture — Idle cut-off.
(3) Ignition Switch — "OFF."
(4) Master Switch — Off.
(5) Parking Brake — Set.

SECTION III

Operating Details

The following paragraphs cover in somewhat greater detail the items entered as a Check List in Section II. Only those items on the Check List that required further explanation will be found in this section; those which are self-explanatory have been omitted.

PRE-FLIGHT CHECK.

The exterior inspection described in Section II is recommended for the first flight of the day. Inspection procedures for subsequent flights normally are limited to brief checks of the tail surface hinges, fuel and oil quantity, and security of fuel and oil filler caps. If the airplane has been subjected to long-term storage, recent major maintenance, or operation from marginal airports, a more extensive exterior inspection is recommended.

After major maintenance has been performed, the flight and trim tab controls should be double-checked, for free and correct movement.

The security of all inspection plates on the airplane should be checked following periodic inspections. If the airplane has been waxed and polished it is a good practice to check the external static pressure source hole for stoppage.

If the airplane has been exposed to much ground handling in a crowded hanger, it should be checked for dents and scratches on wings, fuselage, and tail surfaces, as well as damage to navigation and landing lights, and radio antennas. Outside storage for long periods may result in water and obstructions in the airspeed system lines, condensation in fuel tanks, and dust and dirt on the intake air filter and engine cooling fins.

Operation from a gravel or cinder field will require extra attention to propeller tips and abrasion on leading edges of the horizontal tail.

Airplanes that are operated from rough fields, especially at high altitudes are subjected to abnormal landing gear abuse. A frequent check of all components of the landing gear shock strut, tires, and brake condition is important.

If night flying is anticipated, all exterior and interior lights should be checked for proper illumination. Cold weather flights involve a careful check of other specific areas that will be discussed in a separate paragraph.

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 1/4 inch. In extremely cold temperatures, it may be necessary to continue 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, ignition switch OFF, and 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.

Release the parking brake before taxiing and use the minimum amount of power necessary to start the airplane moving. During taxi, and especially when taxiing downwind, the RPM should be held down to prevent excessive taxi speeds. Taxiing should be done at a speed slow enough to make the use of brakes almost entirely unnecessary. Using the brakes as sparingly as possible will prevent undue wear and strain on the tires, brakes, and landing gear. Normal steering is accomplished by applying pressure to the rudder pedal in the direction the airplane is to be turned. For smaller radius turns, at slow speed, the brakes may be used on the inside wheel. At slow taxi speed, this airplane may be pivoted about the outboard strut fitting without sliding the tires. When taxiing in crosswinds it is important that speed and use of brakes be held to a minimum and that all controls be utilized (see taxiing diagram on page 3-3) to maintain directional control and balance.

NOTE

Caution should be used when taxiing over rough fields to avoid excessive loads on the nosewheel. Rough use of brakes and power also add to nosewheel load. A good rule of thumb: "Use minimum speed, power, and brakes."

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

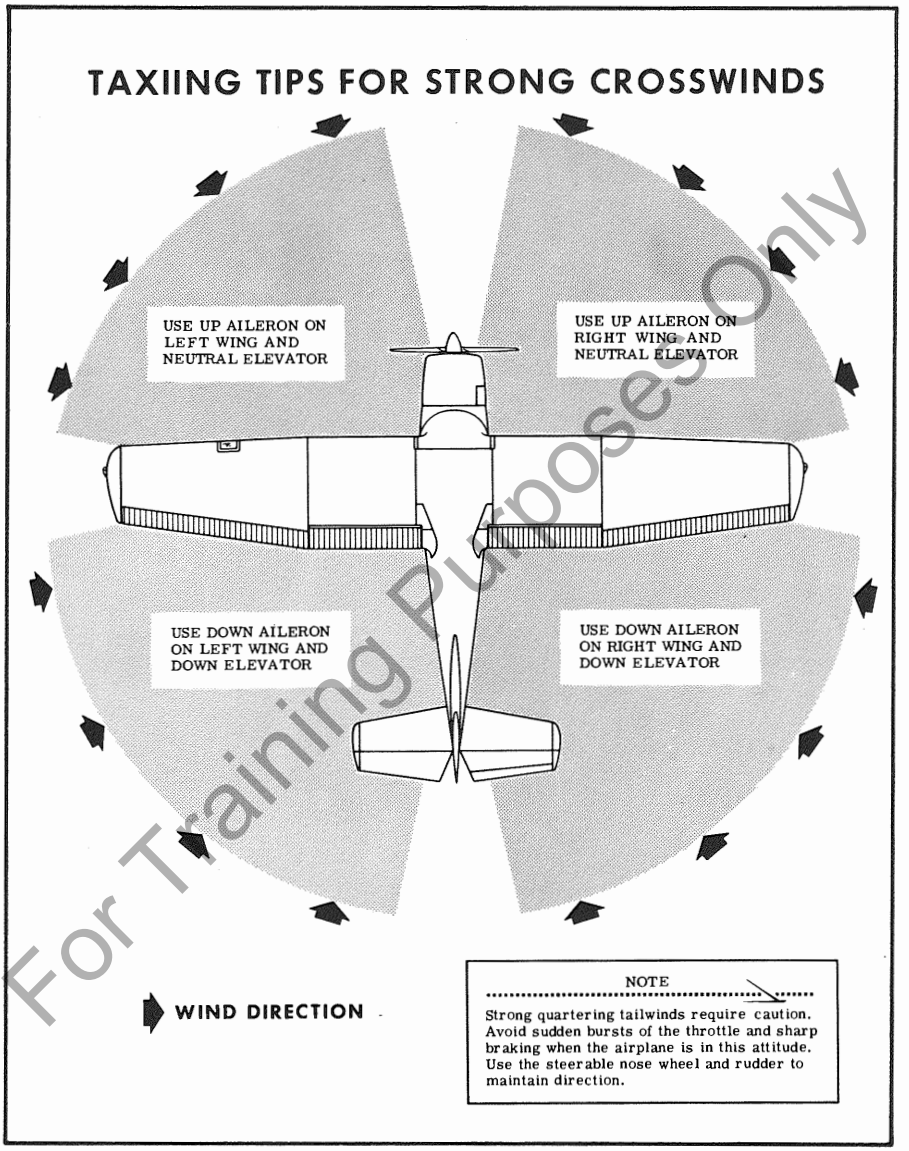


Figure 3-1.

it. When unavoidable small dents appear in the propeller blade, they should be immediately corrected as described in Section V under propeller care.

BEFORE TAKE-OFF.

Most of the warm up will have been conducted during taxi, and additional warm up before take-off should be restricted to the checks outlined in Section II. 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. If a full throttle run-up is necessary the engine should run smoothly and turn 2320 to 2470 RPM with carburetor heat off. Engine run-ups should not be performed over loose gravel or cinders because of possible stone damage or abrasion to the propeller tips.

If the ignition system produces an engine speed drop greater than 125 RPM, the warm up should be continued a minute or two longer prior to rechecking the system. If there is doubt concerning the operation of the ignition system, checks at higher engine speed may confirm the deficiency. In general, a drop in excess of 125 RPM with a warm engine at 1600 RPM should be considered excessive. If the engine accelerates smoothly and the oil pressure remains normal and steady, the engine is warm enough for take-off.

The engine should be checked for smooth idling at approximately 500 RPM, although prolonged idling is done above 600 RPM for better engine lubrication.

If instrument or night flights are contemplated, a careful check should be made of vacuum pump operation. The minimum and maximum suction limits are 3.8 and 4.2 inches of mercury. The condition of the generator is also important since satisfactory operation of all radio equipment and electrical instruments is essential to instrument flight. The generator is checked by noting that the warning light is out with the engine speed above 1000 RPM.

A simple last-minute recheck of important items should include a glance to see that the mixture and carburetor heat knobs are full in, all flight controls have free and correct movement, and the fuel selector is "ON."

TAKE-OFF.

Since the use of full throttle is not recommended in the static run-up, 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 run-up before another take-off is attempted.

Normal and obstacle clearance take-offs are performed with 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° flap 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 deflections of 30° and 40° are not recommended at any time for take-off. General rules for flap operation during take-off are as follows:

DON'T, under marginal conditions, leave flaps down so long that you are losing both climb and airspeed. DON'T release flaps with airspeed below flaps up stalling speed (See Stalling Speed Table in Section VI). DO slowly release the flaps as soon as you reasonably can after take-off, preferably 50 feet or more over terrain obstacles.

Consult the take-off chart (figure 6-2) for take-off distances under various gross weight, altitude, and headwind conditions.

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.

For detailed data, see the Climb Performance Chart in Section VI. Normal climbs are conducted at 75 to 80 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 best rate-of-climb speeds range from 71 MPH at sea level to 66 MPH at 10,000 feet. If an obstruction 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 55 MPH at sea level to 59 MPH at 10,000 feet.

NOTE

Steep climbs at these low speeds should be of short duration because of poor engine cooling.

CRUISE.

Normal cruising is done at 60% to 70% power. Maximum allowable cruising RPM's are 2500 RPM at sea level, 2650 RPM at 5000 feet, and 2750 RPM at 10,000 feet. At standard air temperatures, these engine speeds provide approximately 70% power. These RPM's require progressively higher throttle openings as altitude is increased until, at 9000 feet, full throttle is reached and results in 70% power.

Cruising can be done most efficiently at high altitude because of lower airplane drag due to lower

air density. This is illustrated in the following table for 70% power:

Altitude	RPM	True Airspeed
Sea Level	2500	112
5000 feet	2640	117
9000 feet	Full Throttle	121

For detailed cruise performance, refer to the Cruise Performance Chart in Section VI. It should be noted that greater range can be obtained from lower power settings. Therefore if a destination is slightly out of reach in one flight at normal cruise speed it may save time and money to make the trip non-stop at a lower speed. Range and endurance figures in Section VI are given for lean mixture from 2500 feet to 12,500 feet. All figures, are based on zero wind, 22.5 or 35 gallons of fuel for cruise (depending on tanks installed), Sensenich M69CK-52 propeller, 1500 pounds gross weight and standard atmospheric conditions. At any altitude, the mixture should be leaned by pulling the knob out until maximum RPM is obtained with fixed throttle, and then the control is pushed in toward "full rich" until RPM starts to decrease. The mixture should be readjusted for each change in power, altitude, or carburetor heat.

Allowances for fuel reserve, headwinds, take-off 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 condition, and turbulence of the atmosphere may account for variations of 10% or more in maximum range.

STALLS.

The stalling speeds are shown in Section VI for forward c.g., normal category, full gross weight conditions. They are presented as true indicated airspeed because indicated airspeeds are inaccurate near the stall. Other loadings result in slower stalling speeds. The horn stall warning indicator produces a steady signal 5 to 10 MPH before the actual stall is reached and remains on until the airplane flight attitude is changed. Fast landings will not produce a signal.

The stall characteristics are conventional for the flaps up and flaps down condition. Slight elevator buffeting may occur just before the stall with flaps down.

LANDING.

Normal landings are made power off with any flap setting. Approach glides are normally made at 65 to 75 MPH with flaps up, or 60 to 70 with flaps down, depending upon the turbulence of the air.

Landings are usually made on the main landing wheels 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 is diminished to avoid unnecessary nose gear strain.

This procedure is especially important in rough field landings.

Excessive braking in the landing roll is not recommended because of the probability of skidding the main wheels with the resulting loss of braking effectiveness and damage to the tires.

For a short field landing, make a power off approach at 59 MPH with flaps 40° (fourth notch) and land on the main wheels first. Immediately after touchdown, lower the nose gear to the ground and apply heavy breaking as required. Raising the flaps after landing will provide more efficient braking.

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.

COLD WEATHER OPERATION.

Prior to starting on cold 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 (-20°F) weather the use of an external pre-heater is recommended whenever possible to reduce wear and abuse to the engine and the electrical system. Cold weather starting procedures are as follows:

(1) Clear propeller.
(2) Turn 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.
(4) Turn magneto switch to "BOTH."
(5) Open throttle 1/4" (to idle position) and engage starter to start engine.

NOTE

In extremely cold weather a few strokes of the primer as the engine fires will enable the engine to keep running. (Avoid overpriming.) After priming, push primer all the way in and turn to locked position to avoid possibility of engine drawing fuel through the primer. Do not attempt a second start until engine has come to a complete stop from the first attempt. Failure to do this may result in damage to the starting gear.

During cold weather operations, no indication will be apparent on the oil temperature gage prior to takeoff if outside air temperatures are very cold. After a suitable warmup 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 in sub-zero temperature, avoid using partial carburetor heat. Partial heat may increase the carburetor air temperature to the 32° to 80°F range, where icing is critical under certain atmospheric conditions.

SECTION IV
Operating Limitations

OPERATIONS AUTHORIZED.

Your Cessna 150, with standard equipment as certified under FAA Type Certificate No. 3A19, 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.

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 the Cessna 150. In connection with the foregoing, the following gross weights and flight load factors apply, with recommend entry speeds for maneuvers as shown.

Maximum Design Weight. . . . . 1500 lbs.
Flight Maneuvering Load Factor, *Flaps Up. . . . . +4.4 -1.76
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.

No acrobatic maneuvers are approved except those listed below:

MANEUVER	RECOMMENDED ENTRY SPEED
Chandelles.	106 MPH (92 Knots)
Lazy Eights	106 MPH (92 Knots)
Steep Turns	106 MPH (92 Knots)
Spins	Use Slow Deceleration
Stalls	Use Slow Deceleration

Spins with flaps down are prohibited due to the fact that recovery cannot be made without exceeding flap design speeds. Acrobatics that may impose high inverted loads should not be attempted. The important thing to bear in mind in flight maneuvers is that the Cessna 150 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 true indicated airspeed limits for the Cessna 150:

Maximum (Glide or dive, smooth air)	157 MPH (red line)
Caution Range	120-157 MPH (yellow arc)
Normal Range	54-120 MPH (green arc)
Flap Operating Range	50-85 MPH (white arc)
Maneuvering Speed*	106 MPH

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

ENGINE OPERATION LIMITATIONS.

Power and Speed	100 BHP at 2750 RPM

ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE.

Normal Operating Range	Green Arc
Maximum Allowable	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 (1.75 gallons unusable each tank)	E (red line)
*Not recommended for take-off	E to 1/4 (red arc)

*This fuel is available for all normal operations.

TACHOMETER.

Normal Operating Range:

At sea level	2000-2500 (inner green arc)
At 5000 feet	2000-2650 (middle green arc)
At 10,000 feet	2000-2750 (outer green arc)
Maximum Allowable	2750 (red line)

WEIGHT AND BALANCE.

The information presented in this section will enable you to operate your 150 within the prescribed weight and center of gravity limitations.

In figuring your loading problems be certain that you use the Licensed Empty Weight of your particular airplane as shown on its Weight and Balance Data sheet. This sheet plus an Equipment List is included with each airplane as it leaves the factory. The FAA requires that any change in the original equipment affecting the empty Weight Center of Gravity be recorded on a Repair and Alteration Form ACA-337.

READ BEFORE WORKING LOADING PROBLEM FOR YOUR AIRPLANE.

To figure the weight for your airplane in the same manner as the sample problem on page 4-4, proceed as follows:

Step 1. Take the licensed Empty Weight and Moment/1000 from the Weight and Balance Data sheet carried in your airplane and write them down in two columns in the manner shown in the sample problem. These figures are non-variables and, unless your airplane or equipment is modified, these figures may be used every time you figure your weight and balance.

Step 2. Write down the weight and moment/1000 for the oil in the proper columns. Since you usually have full load of oil for a trip, you figure 6 qts. at 11 lbs. and a moment of -0.1. You may use these same figures every time and consider this also a non-variable.

Step 3. Add the weight of yourself and your passenger. Refer to the loading graph (on page 4-5) and find this weight at the left side of the graph and then go across the graph horizontally to the right until you intersect the line identified as "PILOT AND PASSENGER." After intersecting the line drop down vertically to the bottom line and read the moment/1000 given on the scale. Now write down this weight and moment/1000 for you and your passenger in the proper columns.

Step 4. Proceed as you did in step 3 except use the line identified as "FUEL" and 6 lbs. per gallon for the amount of gasoline you are carrying, and

read the moment/1000 from the loading graph. If full fuel is used, the values will be identical to those listed in the sample problem. Write the weight and moment/1000 in the proper columns.

Step 5. Proceed as you did in step 3, except use the line identified as "BAGGAGE," and read the moment/1000 for the number of pounds of baggage being carried. Write the weight and moment/1000 in the proper columns.

Step 6. Add the weight column. The total must be 1500 lbs., or below, or you must lighten your aircraft load. Add the moment column (remember to subtract rather than add the oil moment because it is a minus quantity).

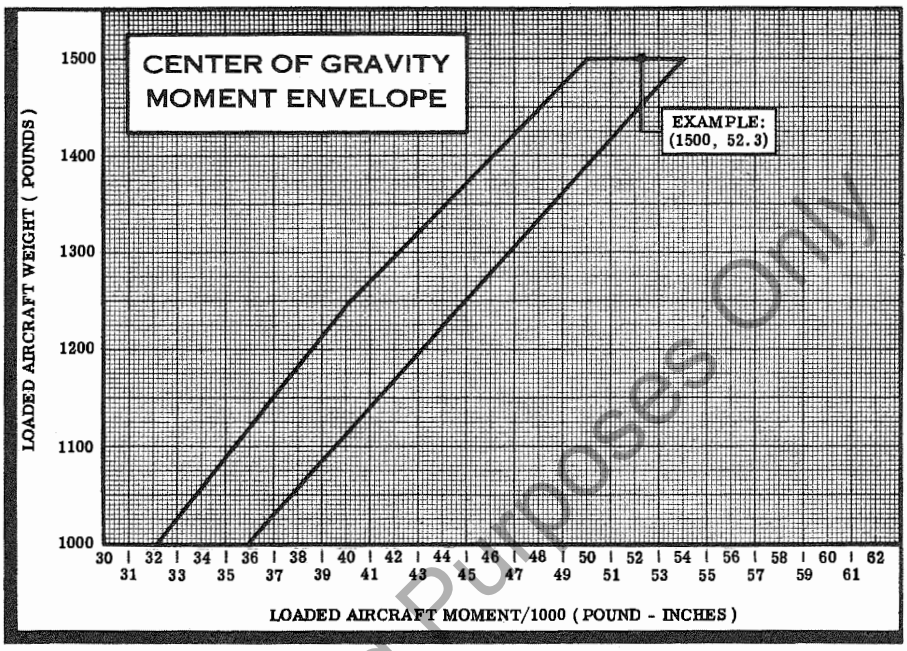
Step 7. Refer to the Center of Gravity Moment Envelope. Locate the total weight on the scale on the left hand side of the graph and, from this point, follow a line horizontally to the right. Locate the total moment/1000 on the scale running across the bottom of the graph and, from this point, follow a line vertically up until you intersect the line running horizontally from your total weight. If the point where the two lines intersect is within the envelope, your airplane is loaded within approved limits. If the point of intersection falls outside the envelope, your load must be adjusted before flight.

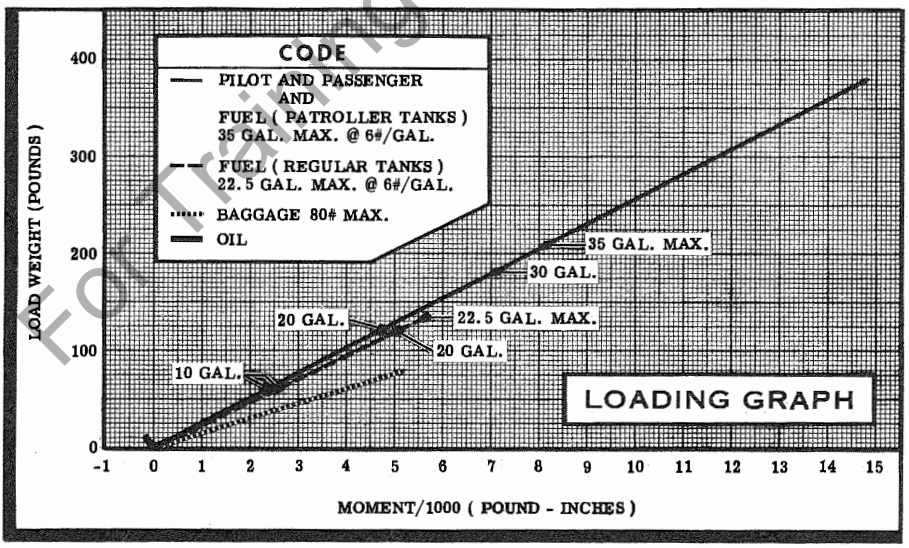
SAMPLE LOADING PROBLEM

	Sample Airplane		Your Airplane	
	Weight (lbs)	Moment (lb-ins. /1000)	Weight	Moment
1. Licensed Empty Weight (Sample Airplane)	991.5	31.9		
2. Oil - 6Qts.*	11.0	-.1	11.0	-.1
3. Pilot & Passenger	340.0	13.3		
4. Fuel - Std. Tanks (22.5 Gal at 6#/Gal)	135.0	5.7		
5. Baggage (or children on child's seat)	22.5	1.5		
6. Total Aircraft Weight (Loaded)	1500.0	52.3		

7. Locate this point (1500 at 52.3) on the center of gravity envelope and since this point falls within envelope the loading is acceptable.

*Note; Normally full oil may be assumed for all flights.





SECTION V

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 other seasonal and periodic services.

GROUND HANDLING.

The airplane is most easily and safely maneuvered, during ground handling, by the use of a tow-bar (optional equipment) attached to the nosewheel. Always use a tow-bar when one is available. When moving the airplane by hand and no tow-bar is available, push down at the front edge of the stabilizer adjacent to the fuselage to raise the nosewheel off the ground. With the nosewheel clear of the ground the airplane can be turned in any direction by pivoting it about the main gear. When moving the airplane forward or backward, push at the wing strut root fitting or at the main gear strut.

MOORING YOUR AIRPLANE.

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

(1) Tie sufficiently strong (700 pounds tensile strength) ropes or chains to the tie-down ring located at the upper end of each strut, and secure the opposite ends to tie-down rings suitably anchored in the ground.

(2) Tie a rope to an exposed portion of the engine mount, and secure the opposite end to a tie-down ring in the ground.

(3) Securely tie the middle of a length of rope to the tie-down ring at the tail. Pull each end of the rope away at a 45° angle and secure to tie-down rings in the ground positioned on each side of the tail.

(4) Install an external gust lock between the flap and aileron of each wing.

(5) Install an external gust lock over the fin and rudder.

(6) Install the controls lock (optional equipment) on the pilot's control column, or if a controls lock is not available, tie the pilot's control

wheel back with the pilot's safety belt.

STORAGE.

The all-metal construction of your Cessna makes outside storage practical. Inside storage will increase its life just as inside storage does for your car. If an airplane must remain inactive for a time, cleanliness is probably the most important consideration, whether your airplane is stored inside or outside.

Do not neglect the engine when storing the airplane. Turn the propeller over by hand or have it turned over every few days to keep the engine bearings, cylinder walls, and internal parts lubricated. Fuel tanks should be kept full during storage to help prevent moisture condensation and increase fuel tank life.

Airplanes are built to be used and regular use tends to keep them in good condition. An airplane left standing idle for any great length of time is likely to deteriorate more rapidly then if it is flown regularly, and should be carefully checked over before being put back into service.

EXTERIOR CARE.

A minimum of care is required to keep the aluminum exterior surfaces of your airplane bright and polished. Clear water should be used to remove dirt; gasoline, carbon tetrachloride or other non-alkaline grease solvents to remove oil and grease. Household type detergent soap powders are effective cleaners, but should be used cautiously since some are strongly alkaline. Dulled aluminum surfaces may be cleaned effectively with Bon-Ami. A cleaning solution consisting of about two quarts of alcohol, two quarts of water, and a package of powdered Bon Ami will be found to be particularly effective in cleaning the aluminum.

With only a minimum of care, the lacquered exterior of your Cessna will retain its brilliant gloss and rich color for many years. Do not wax or polish the lacquer for approximately 30 days after it is applied, so that any solvent remaining in the paint may escape. After the initial curing period, regular waxing with a good automotive wax will help preserve the lacquer's luster and will afford a measure of protection from damage.

Spilled fluids containing dyes, such as fuel and hydraulic oil, if accidentally spilled on the surface should be flushed away at once to avoid a permanent stain. Battery electrolyte must be flushed off at once, and the area neutralized with an alkali such as baking soda solution, followed by a thorough rinse with clear water.

The plastic windshield and windows should be kept clean and waxed at all times. To clean the plastic, wash with plenty of soap and water, using the palm of the hand to feel and dislodge any caked dirt or mud. A soft cloth, sponge, or chamois may be used, but only as a means of carrying water to the plastic. Dry with a clean, damp chamois.

NOTE

Rubbing with a dry cloth builds

up an electrostatic charge on the plastic so that it attracts dust particles from the air. Wiping with a damp chamois will remove this charge as well as the dust and is therefore recommended.

Remove oil or grease from the plastic by rubbing lightly with a cloth wet with kerosene.

NOTE

Do not use gasoline, alcohol, acetone, carbon tetrachloride, fire extinguisher or de-icing fluid, lacquer thinner or glass window cleaning spray as they will soften the plastic and cause crazing.

If after removing dirt and grease no great amount of scratching is visible, apply a good grade of commercial wax in a thin even coat and bring it to a high polish by rubbing lightly with a clean, dry, soft flannel cloth. The wax will fill in minor scratches and help prevent further scratching.

Do not use a canvas cover for protection of the windshield when the airplane is moored outside, unless freezing rain or snow is expected, as it may cause the plastic to craze.

Metal propeller care is limited to inspection, cleaning, and minor repair of small dents, nicks, and scratches. Occasionally wiping the propeller with an oily cloth will clean off grass and bug stains and will assist in corrosion proofing in salt water areas. When small dents and nicks are found, they should be carefully dished and shallowed out using a fine file, sandpaper, and crocus cloth. More extensive damage must be repaired by a CAA Certified Propeller Repair Station. Your Cessna Dealer should be consulted.

Care of the landing gear is discussed under separate paragraphs in this section.

INTERIOR CARE.

Keeping the inside of your airplane clean is no more difficult than taking care of the rugs and furniture in your home. It is a good idea to occasionally take the dust out of the upholstery with a whisk broom and a vacuum cleaner.

If spots or stains get on the upholstery they should be removed as soon as convenient before they have a chance to soak and dry. Any good grade of commercial cleaning fluid may be used for cleaning the upholstery.

NOTE

Don't use too much fluid as the seat cushions are padded with foam rubber and polyurethane Some volatile cleaners may attack these materials.

WHEEL AND TIRE REMOVAL.

Main and nose gear wheels and tires are removed and disassembled for repair or replacement in accordance with the following instructions:

Main Gear Wheels and Tires:

(1) Jack the main gear until the

tire clears the ground.
(2) Remove the wheel hub fairing (if installed), cotter pin, and wheel axle nut.
(3) Pull the wheel from the axle.
(4) Remove the grease seals and bearings from each side of the wheel and disassemble the two-piece wheel to remove the tire. Be sure that the tire is completely deflated before taking the wheel apart. A large O-ring seal is installed between the wheel halves to prevent leakage of air when tubeless tires are used. During disassembly and reassembly, be careful not to damage the seal.
(5) The wheel is reassembled and installed by reversing the above procedure. When installing the wheel on the airplane, the wheel axle nut should be tightened finger tight plus one-half turn.

Nose Gear Wheel and Tire.
(1) Jack the nose or weight down the tail to raise the nosewheel clear of the ground. Chock the main wheels before lifting the nosewheel for wheel removal.
(2) Remove the cotter pin, nut, and axle bolt from the nosewheel axle.
(3) Slide the nosewheel assembly out of the nose gear fork.
(4) Remove the ferrule, bearing grease seals, and bearing from each side of the wheel; remove the axle.
(5) Disassemble the two piece wheel and remove the tire. Be sure that the tire is completely deflated before taking the wheel apart. A large O-ring seal is installed between the wheel halves to prevent leakage of air when tubeless tires are used. During disassembly and reassembly, be careful not to damage this seal.
(6) The wheel is reassembled and installed by reversing the above procedure.

TIRE INFLATION.

The tubeless tires on the main and nose landing gear wheels are inflated through a small rubber valve device on the tire sidewall using a special filler needle. To obtain maximum service from these tires, they should be inflated to the correct pressure using the following procedure:
(1) Special filler needle may be found in the map compartment.
(2) Lubricate end of filler needle by pressing against the pads in the needle case.
(3) Place end of needle and work glycerine lubricant around guide hole in small rubber valve device located in the sidewall of the tire.

NOTE

Opening in valve should be well lubricated before inserting needle. Needle should never be inserted dry.

(4) Insert filler needle into valve hole with a rotating motion.

NOTE

Do not force needle. If needle does not enter easily, relubricate.

(5) Inflate tire as you would with

a conventional valve.
(6) Check air pressure.
(7) Remove filler needle from valve as soon as possible.
(8) Replace needle in case and store in map compartment.

SPEED FAIRING REMOVAL.

If your airplane is equipped with landing gear "Speed Fairings" (Optional Equipment), it is necessary to remove the main wheel fairings, and to disconnect the nosewheel fairing prior to removing the main and nosewheels and tires. To remove or disconnect the fairings for wheel removal proceed in accordance with the following instructions.

Main Gear Fairings:
(1) Remove bolt and washers from outboard side of fairing.
(2) Remove six screws and washers from inboard side of fairing.
(3) Lift fairing from main wheel.
(4) Remove main wheel and tire in the usual manner.

Nose Gear Fairing:
(1) Remove cotter pin, nut and washer from either side of fairing at axle location, and pull axle stud out of nosewheel axle.
(2) Remove nut, washers and bolt from top attachment point on fairing.
(3) Slide fairing upward to permit removal of wheel.
(4) Remove the nosewheel and tire in the usual manner, then slip the upper fairing plate back until it clears the strut barrel. Rotate the plate to release the spring clips which fasten it to the fairing proper, and remove it. Then rotate the fairing so the wheel fork will pass through.

NOTE

The strut must be disassembled to remove earlier fairings which were made in one piece.

When changing a tire with optional "Speed Fairings," check the clearance between the tire and the mud scraper. Proper clearance is .19 to .31 inch on the nosewheel and .25 to .38 inch on the main wheels. To adjust a scraper, loosen the scraper attaching screws on each side of the fairing, move the scraper as required and retighten the screws. Do not pry between the scraper and the fairing. The clearance check is of particular importance if a recapped tire is installed, since the growth of the tire carcass in service may have increased its diameter.

INSPECTION SERVICE AND INSPECTION PERIODS.

With your airplane you will receive an Owner's Service Policy. This policy has coupons attached to it which entitle you to a no-charge initial inspection and a no-charge 100-hour inspection. 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 your Cessna 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 90 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 purchase the airplane accomplish this work.

The Civil Air Regulations require all airplanes to have a periodic (annual) inspection as prescribed by the administrator, by a person designated by the administrator, and in addition, 100-hour periodic inspections made by an "appropriately rated mechanic" if the airplane is flown for hire. The Cessna Aircraft Company recommends the 100-hour periodic inspection for the Model 150 airplanes. 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 Cessna procedures provides the highest type of service possible at lowest cost.

Time studies of the 100-hour inspection at the factory and in the field have developed a standard flat rate charge for this inspection at any Cessna Dealer. Points which the inspection reveals require modification or repairs will be brought to your attention by the Dealer and quotations or charges will be made accordingly. The inspection charge does not include the oil required for the oil change.

Every effort is made to attract the best mechanics in each community to Cessna service facilities. Many Dealers' mechanics have attended Cessna Aircraft Company schools and have received specialized instruction in maintenance and care of Cessna airplanes. Cessna service instruction activity in the form of service bulletins and letters is constantly being carried on so that when you have your Cessna inspected and serviced by Cessna Dealers' mechanics the work will be complete and done in accordance with the latest approved methods.

Cessna Dealers maintain stocks of genuine Cessna parts and service facilities consistent with the demand.

Your Cessna Dealer will be glad to give you current price quotations on all parts that you might need and advise you on the practicability of parts replacement versus repairs that might be necessary from time to time.

AIRPLANE FILE.

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

A. To be carried in the airplane at all times:
   (1) Aircraft Airworthiness Certificate (Form ACA 1362).
   (2) Aircraft Registration Certificate (Form ACA 500A).
   (3) Airplane Radio Station License

(if transmitter is installed).
(4) Weight and Balance Report or latest copy of the Repair and Alteration Form (Form ACA 337).
(5) Airplane Equipment List.
(6) Airplane Log Book.
(7) Engine Log Book.

B. To be maintained but not necessarily carried in the airplane at all times:
(1) A form containing the following information: Model, Registration Number, Factory Serial Number, Date of Manufacture, Engine Number, and Key Numbers (duplicate keys are available through your Cessna Dealer).

Most of the items listed are required by the United States Civil Air 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.

Specific lubrication points, intervals and specifications are shown in figure 5-1. In addition, all pulleys, the trim tab screwjack actuator rod, control surface hinge bearings, bellcrank clevis bolts, flap actuating handle, brake pedal pivots, rudder pedal crossbars, shimmy dampener pivot bushings, door hinges and latches, Bowden controls, and control wheel shaft universal, should be lubricated with SAE 20 General Purpose oil every 1,000 hours or oftener as required.

In general, roller chains (aileron, tab wheel, tab actuator) and control cables tend to collect dust, sand and grit when they are greased or oiled. Except under seacoast conditions, more satisfactory operation results when the chains are wiped clean occasionally with a clean, dry cloth.

NOSE GEAR SHOCK STRUT.

The nose gear shock strut should be kept clean, filled with fluid and correctly inflated. The exposed portion of the strut piston, particularly should be wiped off with a clean dry cloth to remove dust and grit which may cut the O-ring seals in the strut barrel. Do not wipe the strut with hydraulic oil since this tends to collect even more dust and grit.

Inflation of the nose strut should be checked whenever tire pressures are checked. The fluid level should be checked on periodic inspections, and oftener if there is evidence of leakage on the piston or around the filler valve. If the leakage is appreciable or persistent, the strut should be serviced and repaired as necessary by your Cessna dealer.

To check the strut inflation, jack the nose or lower the tail until the strut is fully extended and the wheel is clear of the ground. Remove the cap on the filler valve and check the pressure with a tire gage, adding or removing air as necessary to obtain 20 psi. Air may be bled out by depressing the stem of the valve core.

Use the following procedure for checking the strut fluid level:

(1) Working through the right cowl access door, remove the valve cap and depress the valve core stem to release all air pressure.
(2) Using a 3/4-inch box end or deep socket wrench, unscrew the filler valve and remove it.
(3) Completely compress the strut, so the stops contact the outer barrel. The fluid level should be even with the bottom of the valve hole. If it is not, add MIL-H-5606 (red) hydraulic fluid.
(4) Completely extend the strut and replace the filler valve.
(5) With the strut fully extended and the wheel clear of the ground, inflate the strut to 20 psi. Replace the valve cap.

SHIMMY DAMPENER.

The shimmy dampener should be kept clean and filled with fluid. The exposed portions of the dampener shaft, particularly, should be wiped off with a clean dry cloth to remove dust and grit which may cut the seals in the dampener barrel. Do not wipe the shaft with hydraulic oil since this tends to collect even more dust and grit.

To fill the shimmy dampener, remove it from the airplane, then pull the dampener shaft fitting end to its travel limit and fill the dampener through the opposite end while holding the unit vertical. Push the shaft upward slowly to seal off the filler hole and reinstall the shimmy dampener on the airplane. An alternate method is to submerge the dampener in fluid and work the shaft back and forth to expel air and fill the dampener with fluid.

DEALER 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 to you in your airplane 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.

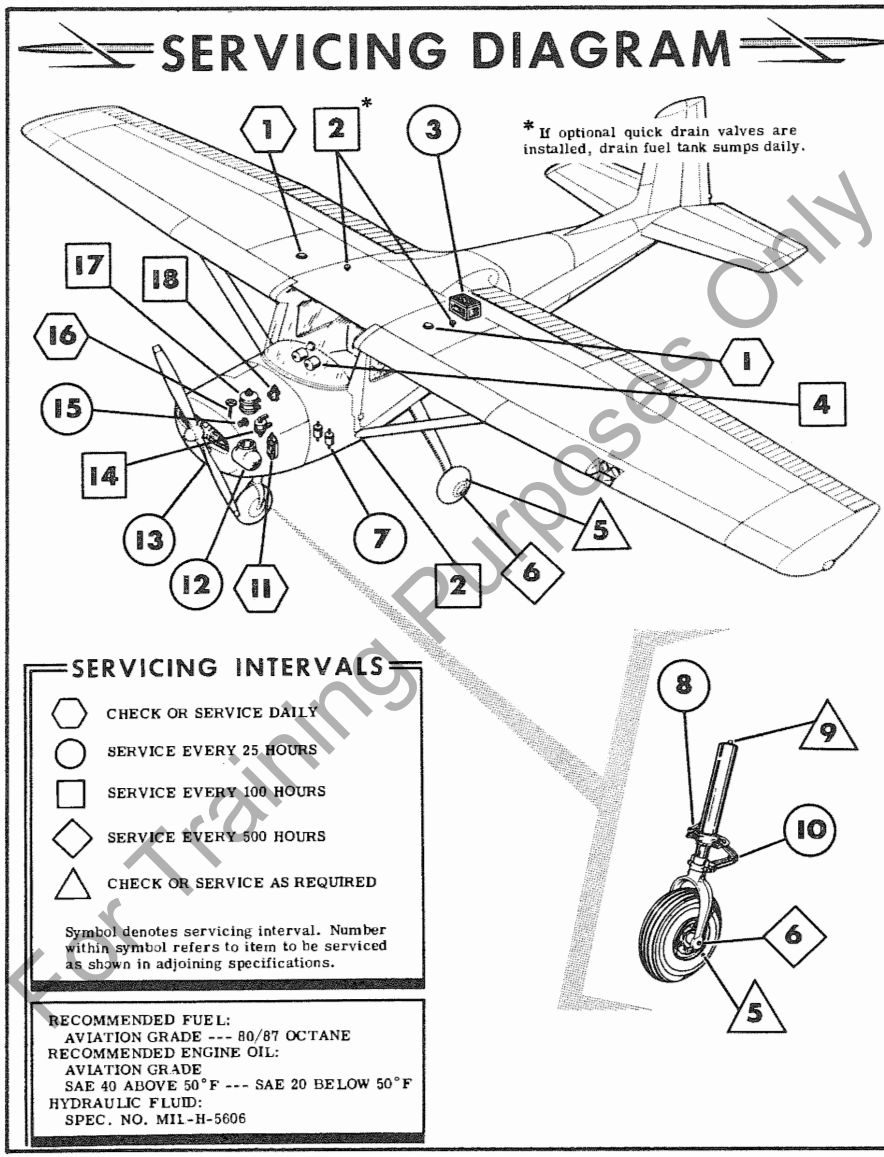


Figure 5-1 (Sheet 1 of 4)

SERVICING PROCEDURES

(1) **FUEL TANKS:**
Service after each flight with 80/87 octane aviation grade fuel. The capacity of each tank is 13 gallons for standard fuel tank; 19 gallons for optional patroller tank.

[2] **FUEL TANK SUMP AND FUEL LINE DRAIN PLUGS:**
Remove plugs, drain off water and sediment, and reinstall plugs. Safety wire plugs to adjacent structure. If optional quick drain valves are installed, drain fuel tank sumps daily.

(3) **BATTERY:**
Check level of electrolyte every 25 hours (or at least every 30 days), oftener in hot weather. Maintain level of electrolyte even with the split ring at the bottom of the filler hole by adding distilled water. Neutralize any spilled electrolyte at once with baking soda solution, followed by a thorough rinse. Keep battery clean (use baking soda solution, then rinse thoroughly and dry) and battery connections tight.

[4] **GYRO INSTRUMENT INLET FILTERS:**
Replace every 100 hours and when erratic or sluggish responses are noted with normal suction gage readings.

<5> **TIRES:**
Maintain pressure at 30 psi. Inflate tires with filler needle stored in map compartment. Periodically inspect tires for general condition. Oil and grease on tires should be removed with soap and water.

<6> **WHEEL BEARINGS:**
Pack with MIL-L-3545 wheel bearing grease at first 100 hours, 500 hours thereafter; oftener if more than the usual amount of water, mud, ice or snow is encountered.

(7) **BRAKE MASTER CYLINDERS:**
Fill with MIL-H-5606 (red) hydraulic fluid. Filling with a

(Continued on next page)

Figure 5-1 (Sheet 2 of 4).

pressure pot connected to the brake bleeder ports is preferable, although fluid may be poured through the plugs on the top of the master cylinders.

(8) SHIMMY DAMPENER:
Fill with MIL-H-5606 (red) hydraulic fluid. See page 5-8 for detailed instructions.

(9) NOSE GEAR SHOCK STRUT:
Keep strut inflated and filled. See page 5-7 for detailed instructions.

(10) NOSE GEAR TORQUE LINKS:
Lubricate through grease fittings with MIL-L-7711 general purpose grease. Wipe off excess.

(11) FUEL STRAINER:
Drain approximately two ounces of fuel before each flight and after refueling to remove water and sediment. Make sure drain valve is closed after draining. Disassemble and clean bowl and screen each 100 hours.

(12) ENGINE OIL SUMP:
Drain by removing plug in bottom of sump. Remove lower cowling and provide protection for nosewheel tire when draining.

(13) CARBURETOR AIR FILTER:
Service in accordance with instructions stamped on the filter frame. Service at least every 25 hours or oftener when operating in dusty conditions. Under extremely dusty conditions, daily mainteannce of the filter is recommended.

(14) OIL SEPARATOR:
Remove separator and flush with Stoddard solvent (Federal Specification P-S-661); then dry with compressed air and reinstall.

(Continued on next page)

Figure 5-1 (Sheet 3 of 4).

15 ENGINE OIL SCREEN:

Remove and wash screen (located on right rear side of engine accessory section) with Stoddard solvent (Federal Specification P-S-661) whenever engine oil is changed.

16 OIL DIPSTICK AND FILLER CAP:

Remove and check oil level. Oil capacity is 6 quarts (7 quarts capacity when optional oil filter is installed). Do not operate with less than 4 quarts and completely fill the sump if an extended flight is planned. Service with aviation grade engine oil; SAE 40 for temperatures above 50°F or SAE 20 for temperatures below 50°F. Your Cessna was delivered from the factory with straight mineral oil 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, detergent oils, conforming to Continental Motors Specification MHS-24, are recommended for use in your Cessna. Your Cessna Dealer can supply an approved brand.

17 OIL FILTER (FRAM X-2389, "PB55"):

Replace optional filter whenever oil on dipstick appears dirty. An interval of 100 hours is considered maximum for replacement under average conditions.

18 SUCTION RELIEF VALVE INLET SCREEN:

Check inlet screen for dirt or obstructions if suction gage readings appear high. Remove screen and clean with compressed air or wash with Stoddard solvent (Federal Specification P-S-661).

The military specifications listed are not mandatory, but are intended as guides in choosing satisfactory materials. Products of most reputable manufacturers meet or exceed these specifications.

Figure 5-1 (Sheet 4 of 4).

SECTION VI

Performance 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. However, inasmuch as the number of variables included precludes great accuracy, an ample fuel reserve should be provided. The range performance shown makes no allowance for wind, navigational error, pilot technique, warm-up, take-off, climb, etc. which may be different on each flight you make. All of these factors must be considered when estimating reserve fuel.

To realize the maximum usefulness from your 150 you should take advantage of its high cruising speeds. However, if range is of primary importance, it may pay you to fly at a low cruising RPM thereby increasing your range and allowing you to make the trip non-stop with ample fuel reserve. The range table on page 6-3 should be used to solve flight planning problems of this nature.

In the table, (figure 6-3), range and endurance are given for lean mixture from 2500 feet to 12,500 feet. All figures are based on zero wind, 22.5 gallons of fuel for cruise, Sensenich M69CK-52 propeller, 1500 pounds gross weight, and standard atmospheric conditions. Mixture is leaned to maximum RPM. Allowances for fuel reserve, headwinds, take-offs and climb, and variations in mixture leaning technique should be made as no allowances are shown on the chart. Other indeterminate variables such as carburetor metering characteristics, engine and propeller conditions, and turbulence of the atmosphere may account for variations of 10% or more in maximum range.

AIRSPEED CORRECTION TABLE

(Flaps Up or Down)

IAS	40	50	60	70	80	90	100	110	120	130	140
TIAS	52	58	65	73	82	91	100	108	117	126	135

Figure 6-1.

—TAKE-OFF DISTANCE—

FLAPS RETRACTED - ZERO WIND .....
HARD SURFACE RUNWAY .....

GROSS WEIGHT, LBS.	IAS, MPH AT 50 FT.	AT SEA LEVEL & 59° F.		AT 2500 FT. & 50° F.		AT 5000 FT. & 41° F.		AT 7500 FT. & 32° F.	
		GROUND RUN	TOTAL TO CLEAR 50' OBSTACLE	GROUND RUN	TOTAL TO CLEAR 50' OBSTACLE	GROUND RUN	TOTAL TO CLEAR 50' OBSTACLE	GROUND RUN	TOTAL TO CLEAR 50' OBSTACLE
1500	61	680	1205	830	1440	1013	1760	1274	2212

NOTE: Decrease the distances shown by 10% for each 4 knots of headwind. Increase the distances 10% for each 35° F. increase in temperature above standard for the particular altitude.

—CLIMB DATA—

GROSS WEIGHT, LBS.	AT SEA LEVEL & 59° F.			AT 5000 FT. & 41° F.			AT 10000 FT. & 23° F.			AT 15000 FT. & 5° F.		
	BEST CLIMB IAS, MPH	RATE OF CLIMB FT. /MIN.	FUEL USED, GAL.	BEST CLIMB IAS, MPH	RATE OF CLIMB FT. /MIN.	FUEL USED FROM S.L., GAL.	BEST CLIMB IAS, MPH	RATE OF CLIMB FT. /MIN.	FUEL USED FROM S.L., GAL.	BEST CLIMB IAS, MPH	RATE OF CLIMB FT. /MIN.	FUEL USED FROM S.L., GAL.
1500	71	740	.6	68	530	1.5	66	320	2.6	63	115	4.5

NOTE: Flaps retracted, full throttle, mixture leaned to smooth operation above 5000 ft. Fuel used includes warm-up and take-off allowances.

—LANDING DISTANCE—

FLAPS LOWERED TO 40° - POWER OFF
HARD SURFACE RUNWAY - ZERO WIND

GROSS WEIGHT, LBS.	APPROACH SPEED, IAS, MPH	AT SEA LEVEL & 59° F.		AT 2500 FT. & 50° F.		AT 5000 FT. & 41° F.		AT 7500 FT. & 32° F.	
		TOTAL TO CLEAR 50' OBSTACLE	GROUND ROLL	TOTAL TO CLEAR 50' OBSTACLE	GROUND ROLL	TOTAL TO CLEAR 50' OBSTACLE	GROUND ROLL	TOTAL TO CLEAR 50' OBSTACLE	GROUND ROLL
1500	59	1055	360	1100	390	1150	420	1230	465

NOTE: Decrease the distances shown by 10% for each 4 knots of headwind. Increase the distance by 10% for each 60° F. temperature increase above standard.

Figure 6-2.

CRUISE PERFORMANCE — WITH LEAN MIXTURE

ALTITUDE	RPM	%BHP	TAS MPH	GAL/HR.	* END. HOURS		* RANGE. MILES	
					STANDARD	PATROLLER	STANDARD	PATROLLER
					22.5 GAL.	35 GAL.	22.5 GAL.	35 GAL.
2500	2750	85	124	6.4	3.5	5.5	435	680
	2700	81	121	6.1	3.7	5.7	450	695
	2600	72	115	5.4	4.2	6.5	480	745
	2500	64	110	4.8	4.7	7.3	515	800
	2400	57	104	4.3	5.2	8.1	540	845
	2300	52	99	4.0	5.6	8.8	555	870
	2200	47	94	3.7	6.1	9.5	570	890
5000	2750	80	123	6.0	3.7	5.8	465	720
	2700	73	120	5.5	4.1	6.4	490	765
	2600	67	114	5.0	4.5	7.0	510	800
	2500	60	109	4.6	4.9	7.6	540	830
	2400	54	103	4.1	5.5	8.5	565	875
	2300	49	98	3.8	5.9	9.2	580	905
	2200	45	92	3.5	6.4	10.0	590	920
7500	2750	74	122	5.5	4.1	6.4	495	780
	2700	69	119	5.2	4.3	6.7	515	800
	2600	63	113	4.7	4.8	7.5	535	840
	2500	57	108	4.3	5.2	8.2	565	880
	2400	51	102	3.9	5.7	9.0	585	915
	2300	47	98	3.7	6.1	9.5	600	925
	2200	44	93	3.5	6.5	10.0	610	930
10000	2740 (Full Throttle)	68	120	5.1	4.4	6.9	530	825
	2700	65	118	4.9	4.6	7.2	540	845
	2600	59	112	4.5	5.0	7.8	560	870
	2500	54	107	4.1	5.5	8.6	590	915
	2400	49	102	3.8	6.0	9.2	605	940
	2300	46	98	3.6	6.3	9.7	615	955
	2200	43	95	3.4	6.6	10.3	630	980
12500	2700 (Full Throttle)	61	116	4.6	4.9	7.6	570	880
	2600	56	111	4.2	5.3	8.3	585	920
	2500	52	106	4.0	5.7	8.8	600	935
	2400	48	103	3.8	6.0	9.2	620	950
	2300	45	97	3.5	6.4	10.0	625	970
	2200	43	93	3.4	6.6	10.3	610	960

* No allowances for take-off or reserve.

NOTE: Shaded areas are cruising RPM settings that are not recommended for the given altitude.

Figure 6-3.

=Power Off= **STALLING SPEEDS** MPH=TIAS

Gross Weight 1500 lbs. CONDITION	ANGLE OF BANK 0°	20°	40°	60°
Flaps Up	54	56	62	77
Flaps 10°	53	55	61	75
Flaps 40°	50	52	58	71

Figure 6-4.

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WARRANTY

■ The Cessna Aircraft Company warrants each new airplane, manufactured by it, to be free from defects in material and workmanship under normal use and service, provided, however, that this warranty is limited to making good at the Cessna Aircraft Company's factory any part or parts thereof which shall, within ninety (90) days after delivery of such airplane to the original purchaser, be returned to the Company with transportation charges prepaid, and which upon Company examination shall disclose to the Company satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and all other obligations or liabilities on the part of the Company, and the Company neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its airplanes.

■ This warranty shall not apply to any airplane which shall have been repaired or altered outside the Company's factory in any way so as, in its judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident.

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CESSNA AIRCRAFT COMPANY — WICHITA, KANSAS