THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE

1965

CESSNA

N 2315 F

TWO TEN CENTURION

OWNER'S MANUAL

WORLD'S LARGEST PRODUCER OF GENERAL AVIATION AIRCRAFT SINCE 1956

PERFORMANCE - SPECIFICATIONS

	TWO TEN CENTURION
GROSS WEIGHT	3100 lbs
SPEED, BEST POWER MIXTURE:	
Top Speed at Sea Level	199 mph
Cruise, 75% Power at 6500 ft	191 mph
RANGE, NORMAL LEAN MIXTURE:	
Cruise, 75% Power at 6500 ft	765 mi
63.5 Gallons, No Reserve	4.0 hrs
	190 mph
Cruise, 75% Power at 6500 ft	970 mi
80 Gallons, No Reserve	5.1 hrs
	190 mph
Optimum Range at 10,000 ft	1035 mi
63.5 Gallons, No Reserve	7.9 hrs
	131 mph
Optimum Range at 10,000 ft	1305 mi
80 Gallons, No Reserve	9.9 hrs
	131 mph
RATE OF CLIMB AT SEA LEVEL	1210 fpm
SERVICE CEILING	21,000 ft
TAKE-OFF:	
Ground Run	590 ft
Total Distance Over 50-foot Obstacle	1110 ft
LANDING:	
Landing Roll	700 ft
Total Distance Over 50-foot Obstacle	1275 ft
EMPTY WEIGHT (Approximate)	1860 lbs
USEFUL LOAD	1270 lbs
WING LOADING: Pounds/Sq Foot	17.7
POWER LOADING: Pounds/HP	10.9
FUEL CAPACITY: Total	
Standard Tanks	65 gal.
Optional Long Range Tanks	84 gal.
OIL CAPACITY: Total	12 qts
PROPELLER: Constant Speed (Diameter)	82 inches
ENGINE:	
Continental Fuel Injection Engine	IO-520-A
285 rated HP at 2700 RPM	

N 2315 F

CONGRATULATIONS . . . . . .

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

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

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

FACTORY TRAINED PERSONNEL to provide you with courteous expert service.

FACTORY APPROVED SERVICE EQUIPMENT to provide you with the most efficient and accurate workmanship possible.

A STOCK OF GENUINE CESSNA SERVICE PARTS on hand when you need them.

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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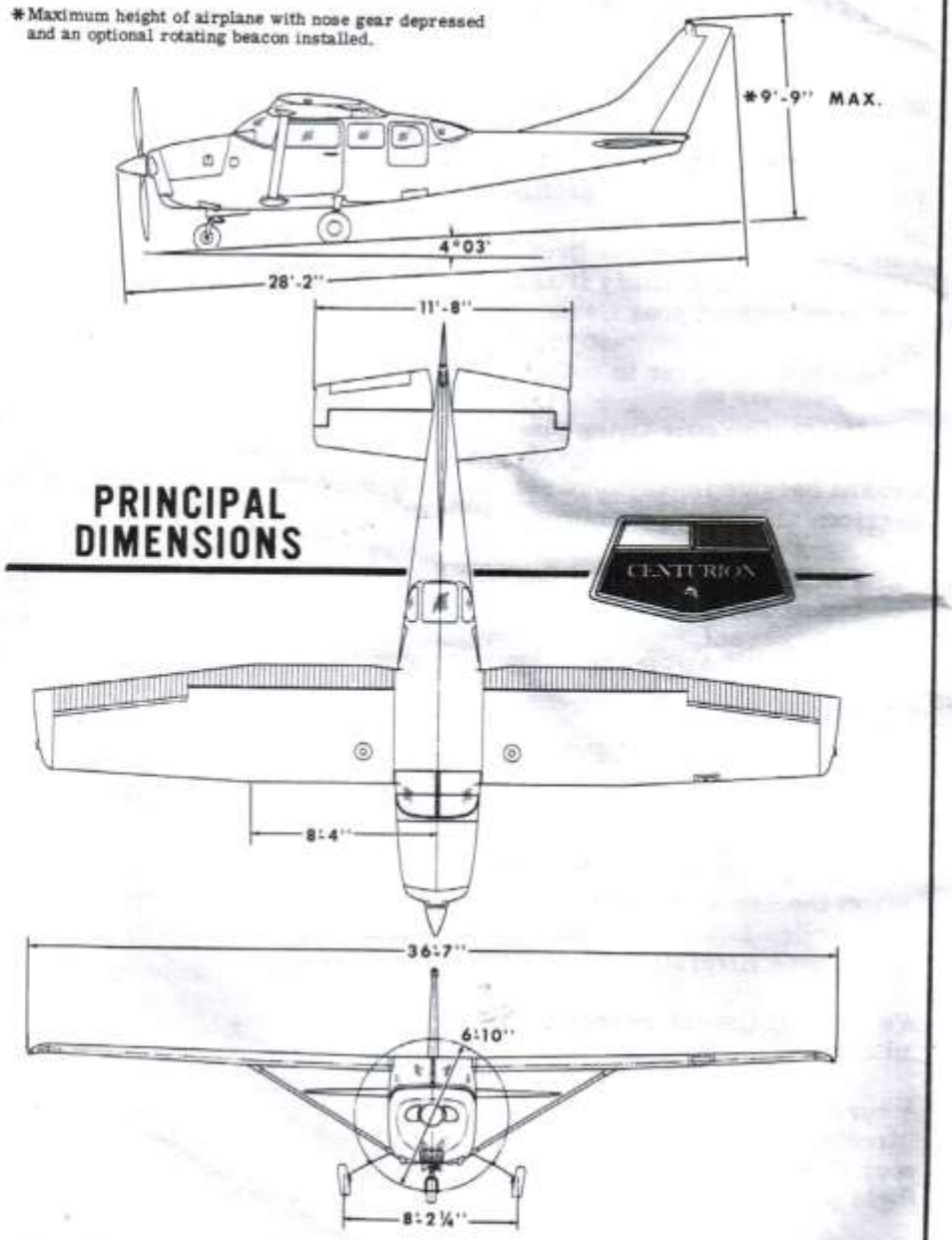
PRINCIPAL DIMENSIONS



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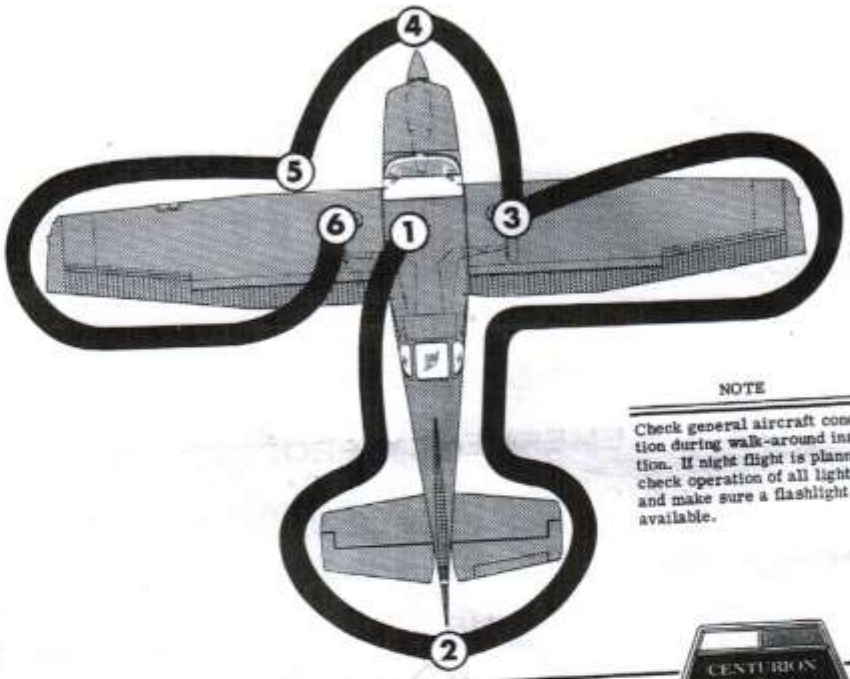


NOTE

Check general aircraft condition during walk-around inspection. If night flight is planned, check operation of all lights, and make sure a flashlight is available.

EXTERIOR INSPECTION

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

(2) a. Inspect airspeed static source holes on sides of fuselage tailcone for stoppage.
b. Remove rudder gust lock, if installed.
c. Disconnect tail tie-down.

(3) a. Disconnect wing tie-down.
b. Check fuel tank vent opening for stoppage.
c. Check main wheel tire for proper inflation.

(4) a. Check propeller and spinner for nicks and security, and propeller for oil leaks.
b. Check induction air filters for restrictions by dust or other foreign matter.
c. Make visual check to insure that fuel strainer drain valve is closed after draining operation.
d. Check nose wheel strut and tire for proper inflation.
e. Disconnect nose tie-down.
f. Check oil level. Do not operate with less than nine quarts. Fill for extended flight.

(5) a. Remove pitot tube cover, if installed, and check pitot tube opening for stoppage.

(6) Same as (3).

Figure 1-1.

Section I

CENTURION

OPERATING CHECK LIST

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

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

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

BEFORE ENTERING THE AIRPLANE.

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

BEFORE STARTING THE ENGINE.

(1) Pilot's Check List -- Review check list on left front doorpost.
(2) Seats and Seat Belts -- Adjust and lock.
(3) Brakes -- Test and set.
(4) Master Switch -- "ON."
(5) Landing Gear -- Handle neutral and down light green.
(6) Landing Gear Lights and Horn -- Push to test.
(7) Cowl Flaps -- "OPEN." (Move lever out of locking hole to reposition.)

(8) Fuel Selector -- Fullest tank
(9) Turn all radio switches "OFF."

STARTING ENGINE.

(1) Mixture -- Full Rich.
(2) Propeller -- High RPM.
(3) Throttle -- Closed.
(4) Auxiliary Fuel Pump Switch -- On "LO."

NOTE

The auxiliary fuel pump will not operate until the ignition switch is turned to the "START" position.

(5) Ignition Key -- "START."
(6) Slowly advance throttle.
(7) Release ignition key when engine starts.

NOTE

If engine fails to continue running, start again from step (3).

(8) Reset throttle to desired idle speed.
(9) Auxiliary Fuel Pump Switch -- Off.

BEFORE TAKE-OFF.

(1) Induction Air -- Cold.
(2) Cowl Flaps -- Full "OPEN."
(3) Flight Controls -- Check.
(4) Throttle Setting -- 1700 RPM.
(5) Magnetos -- Check (50 RPM maximum differential between magnetos.)
(6) Propeller -- Cycle from high to low RPM; return to high RPM (full in).
(7) Ammeter -- Check.
(8) Engine Instruments -- Check.
(9) Wing Flaps -- 0° to 20°.
(10) Elevator and Rudder Trim -- Take-off settings.
(11) Cabin Doors and Window -- Closed and locked.
(12) Flight Instruments and Radios -- Set.
(13) Suction Gage -- Check (4.5 inches of mercury desired, 3.75 to 5.0 acceptable).

TAKE-OFF.

NORMAL TAKE-OFF.

(1) Power -- Full throttle and 2700 RPM.
(2) Elevator Control -- Lift nosewheel at 60 MPH.
(3) Brakes -- Apply momentarily (when airborne).
(4) Landing Gear -- Retract (in climb-out).
(5) Wing Flaps -- Retract (if extended after obstacles are cleared).

MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps -- 20°.
(2) Brakes -- Apply.
(3) Power -- Full throttle and 2700 RPM.
(4) Mixture -- Lean for field elevation per fuel flow indicator placard.
(5) Brakes -- Release.
(6) Elevator Control -- Maintain slightly tail-low attitude.
(7) Climb Speed -- 63 MPH until all obstacles are cleared, then set up climb speed as shown in "MAXIMUM PERFORMANCE CLIMB" paragraph.
(8) Landing Gear and Wing Flaps -- Retract (after obstacles are cleared).

CLIMB.

NORMAL CLIMB.

(1) Air Speed -- 120 to 140 MPH.
(2) Power -- 24 inches and 2500 RPM.
(3) Mixture -- Lean to 16.5 gal/hr. fuel flow.
(4) Cowl Flaps -- Open as required.

MAXIMUM PERFORMANCE CLIMB.

(1) Air Speed -- 105 MPH (sea level) to 97 MPH (10,000 feet).
(2) Power -- Full throttle and 2700 RPM.
(3) Mixture -- Lean for altitude per fuel flow indicator placard.
(4) Cowl Flaps -- Full "OPEN."

CRUISING.

(1) Power -- 15-24.5 inches of manifold pressure and 2200-2500 RPM. Select combination to give no more than 75% power.
(2) Cowl Flaps -- Open as required.
(3) Elevator and Rudder Trim -- Adjust.

(4) Mixture -- Lean for cruise fuel flow as determined from your Cessna Power Computer or the OPERATIONAL DATA in Section VI.

LET-DOWN.

(1) Mixture -- Rich.
(2) Power -- As desired.

BEFORE LANDING.

(1) Fuel Selector -- Fullest tank.
(2) Landing Gear Lever -- "DOWN" (below 160 MPH).
(3) Landing Gear Light -- Green.
(4) Wing Flaps -- Down 10° (below 160 MPH).
(5) Mixture -- Rich.
(6) Airspeed -- 85-95 MPH (flaps retracted).
(7) Propeller -- High RPM.
(8) Wing Flaps -- Down 10° - 40° (below 110 MPH).
(9) Airspeed -- 75-85 MPH (flaps extended).
(10) Elevator and Rudder Trim -- Adjust.

NORMAL LANDING.

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

AFTER LANDING.

(1) Cowl Flaps -- "OPEN."
(2) Wing Flaps -- Retract.

SECURE AIRCRAFT.

(1) Mixture -- Idle cut-off.
(2) All Switches -- Off.
(3) Brakes -- Set.
(4) Control Lock -- Installed.

Section II

DESCRIPTION AND OPERATING DETAILS

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

FUEL SYSTEM.

Fuel is supplied to the engine from two tanks, one in each wing. Usable fuel in each tank, for all flight conditions, is 31.7 gallons for standard tanks and 40 gallons for long range tanks.

NOTE

Unusable fuel is at a minimum due to the design of the fuel system. However, with 1/4 tank or less, prolonged uncoordinated flight such as slips or skids can uncover the fuel tank outlets, causing fuel starvation and engine stoppage. Therefore, with low fuel reserves, do not allow the airplane to remain in uncoordinated flight for periods in excess of one minute.

Fuel from each wing tank flows through a fuel reservoir tank to the fuel selector valve. Depending upon the setting of the selector valve, fuel from the left or right tank flows through a fuel strainer and by-pass in the electric auxiliary fuel pump (when it is not operating) to the engine-driven fuel pump. From here fuel is distributed to the engine cylinders via a fuel control unit and manifold.

NOTE

Fuel cannot be used from both fuel tanks simultaneously.

Vapor and excess fuel from the engine-driven fuel pump and fuel control unit are returned by way of the selector valve to the reservoir tank of the wing tank system being used.

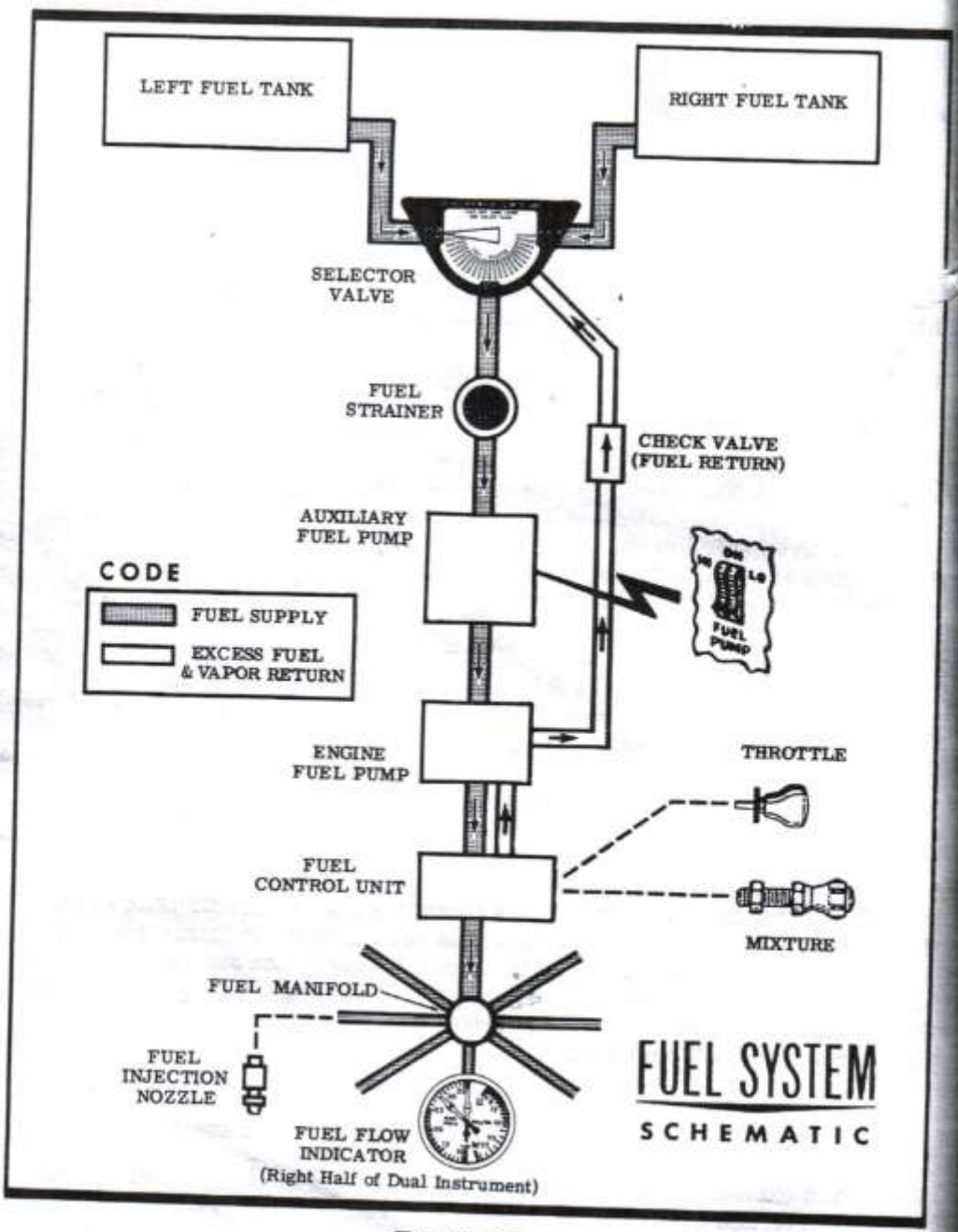

LEFT FUEL TANK
RIGHT FUEL TANK
SELECTOR VALVE
FUEL STRAINER
CHECK VALVE (FUEL RETURN)
AUXILIARY FUEL PUMP
CODE
FUEL SUPPLY
EXCESS FUEL & VAPOR RETURN
ENGINE FUEL PUMP
THROTTLE
FUEL CONTROL UNIT
MIXTURE
FUEL MANIFOLD
FUEL INJECTION NOZZLE
FUEL FLOW INDICATOR
(Right Half of Dual Instrument)
FUEL SYSTEM
SCHEMATIC

Figure 2-1.

FUEL FLOW STABILIZATION PROCEDURE

If fuel flow fluctuations of 5 lbs./hr. -- 1 gal/hr. or more or power surges occur, the following procedures are recommended to eliminate vapor and stabilize fuel flow.

1. Switch auxiliary fuel pump to "On" or "Hi" position (as applicable for your model).
2. Reset the mixture as required.
3. If symptoms of vapor continue, turn the fuel selector to the opposite tank.
4. The auxiliary fuel pump may be used as long as necessary to eliminate and avoid fuel vapor accumulation.
5. When fuel flow has remained steady for several minutes, the auxiliary fuel pump can be turned off and the mixture reset.

Anytime after the fuel vapor is eliminated and the fuel flow stabilized, the other tank can be selected provided there is fuel in the tank.

NOTE

If the opposite tank cannot be used because of a lack of fuel, then retarding the throttle quickly to 10 inches or less of manifold pressure for 30 seconds will also aid in eliminating vapor in the system.

IN-FLIGHT ENGINE RESTARTING PROCEDURES

In the very unlikely event of power interruption due to fuel vapor accumulation, immediately perform the following procedures.

1. Switch the auxiliary fuel pump to "On" or "Hi" position (as applicable for your model).
2. Turn fuel selector to the opposite tank.
3. Position throttle at least half open.
4. When the fuel flow is in the green arc range with a windmilling propeller, turn the auxiliary fuel pump off.
5. Lean the mixture from full rich until restart occurs.
6. Reset mixture.
7. Adjust power as required.

The other tank may be used again any time after vapor is eliminated and fuel flow is stabilized.

AUXILIARY FUEL PUMP SWITCH.

The right half of the auxiliary fuel pump switch, labeled "LO," is used for starting. With the switch in the "LO" position, and the ignition-starter switch turned to "START," the auxiliary fuel pump will operate at a low flow rate (providing proper fuel mixture for starting) as the engine is being turned over with the starter.

NOTE

The auxiliary fuel pump will not operate in the "LO" position until the ignition switch is turned to the "START" position.

The left half of the switch, labeled "HI," is used for engine operation if the engine-driven pump should fail. When the switch is in this position, the pump operates at one of two flow rates depending upon the setting of the throttle. With the throttle at a cruise setting, the pump is operating at maximum capacity, supplying sufficient fuel flow to maintain flight. When the throttle is moved toward the closed position (as during let-down, landing and taxiing), the auxiliary fuel pump flow rate is automatically reduced, preventing an excessively rich mixture during these periods of reduced engine speed.

The auxiliary fuel pump is not to be turned on "HI" during normal operation, because, with the engine-driven pump functioning, a fuel/air ratio considerably richer than best power is produced.

NOTE

Turn auxiliary fuel pump switch on "HI" when switching from empty tank to tank containing fuel.

NOTE

If the auxiliary fuel pump switch is accidentally turned on "HI" (with master switch on) with the engine stopped, the intake manifolds will be flooded.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 14-volt, direct-current system powered by an engine-driven alternator. The 12-volt battery is located on the upper right-hand forward portion of the firewall.

CIRCUIT BREAKERS.

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

ROTATING BEACON (OPT).

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

LANDING GEAR SYSTEM.

The retractable tricycle landing gear is extended and retracted by hydraulic actuators, powered by an engine-driven hydraulic pump. Both the nose and main gears have positive mechanical up and down locks, operated by separate hydraulic actuators. The nose gear also has a hydraulic safety lock within its actuator and is actuated in the nose gear down position only.

Two position-indicator lights show that the gear is either up or down and locked. The lights are the press-to-test type. The gear-down indicator light (green) has two test positions; with the light pushed in half-way (throttle pulled out) the gear warning horn should sound intermittently, and with the light pushed full in, the light should illuminate. The gear-up indicator light (amber) has only one test position; with the light pushed full in, it should illuminate. The indicator lights contain dimming shutters for night operation.

As an additional reminder that the gear is retracted, a warning horn sounds intermittently whenever the throttle is retarded with the gear up.

LANDING GEAR POSITION HANDLE.

The gear position handle has two neutral positions (slightly above center for gear up, and slightly below center for gear-down) which give

a mechanical indication of the gear position. From either position, the handle must be pulled out to clear a detent before it can be repositioned; operation of the gear and doors will not begin until the handle has been repositioned.

To reposition the gear, the handle is pulled out and moved to the desired position, then released. Pressure is created in the system by the engine-driven hydraulic pump and the gear is actuated to the selected position. A detent in the gear handle system holds the handle in the operating position until the cycle is completed; then the handle automatically returns to neutral and pressure in the system is relieved.

IMPORTANT

The landing gear position handle should be returned to neutral manually if a malfunction occurs in the hydraulic system which prevents the gear position handle from returning to neutral after a cycle has been completed. Continuous operation with the handle out of neutral keeps the system pressurized and will eventually result in overheating and damage.

During a normal cycle, the gear locks up or down and the position indicator light comes on. When the light illuminates, hydraulic pressure is switched from the gear actuators to the door actuators to close the gear doors. When the doors are closed, the gear handle returns to neutral and the cycle is complete. The normal time interval between the indicator lighting and the handle returning to neutral is 3-9 seconds. If the position indicator light does not light, the gear doors will not close and hydraulic pressure will be retained on the landing gear actuators.

A safety switch, actuated by the nose gear strut, restricts the gear position handle to prevent inadvertent retraction whenever the nose gear strut is compressed by the weight of the airplane.

EMERGENCY HAND PUMP.

For emergency use, if the hydraulic pump fails, the hydraulic control unit contains a manual pump which may be used to extend the gear. The system reservoir is arranged to retain sufficient fluid to extend the gear with the hand pump if a failure between the engine-driven pump and reservoir results in fluid loss. See Section III for emergency operation of the hand pump.

OPERATION OF LANDING GEAR DOORS (AIRPLANE ON THE GROUND

For inspection purposes, the landing gear doors may be opened and closed while the airplane is on the ground with the engine stopped. Operate the doors with the landing gear handle in the "down" or "down-neutral" position. To open the doors, turn off the master switch and operate the hand pump until the doors open. To close the doors, turn the master switch on and operate the hand pump.

NOTE

The position of the master switch for gear door operation is easily remembered by the following rule:
OPEN circuit = OPEN doors
CLOSED circuit = CLOSED doors

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM.

The temperature and volume of airflow into the cabin can be regulated to any degree desired by manipulation of the push-pull "CABIN HEAT" and "CABIN AIR" knobs. Additional outside air for summer ventilation is provided through the heat and vent system by operation of the push-pull "AUX CABIN AIR" knob. The rotary type "DEFROST" knob regulates the airflow for windshield defrosting.

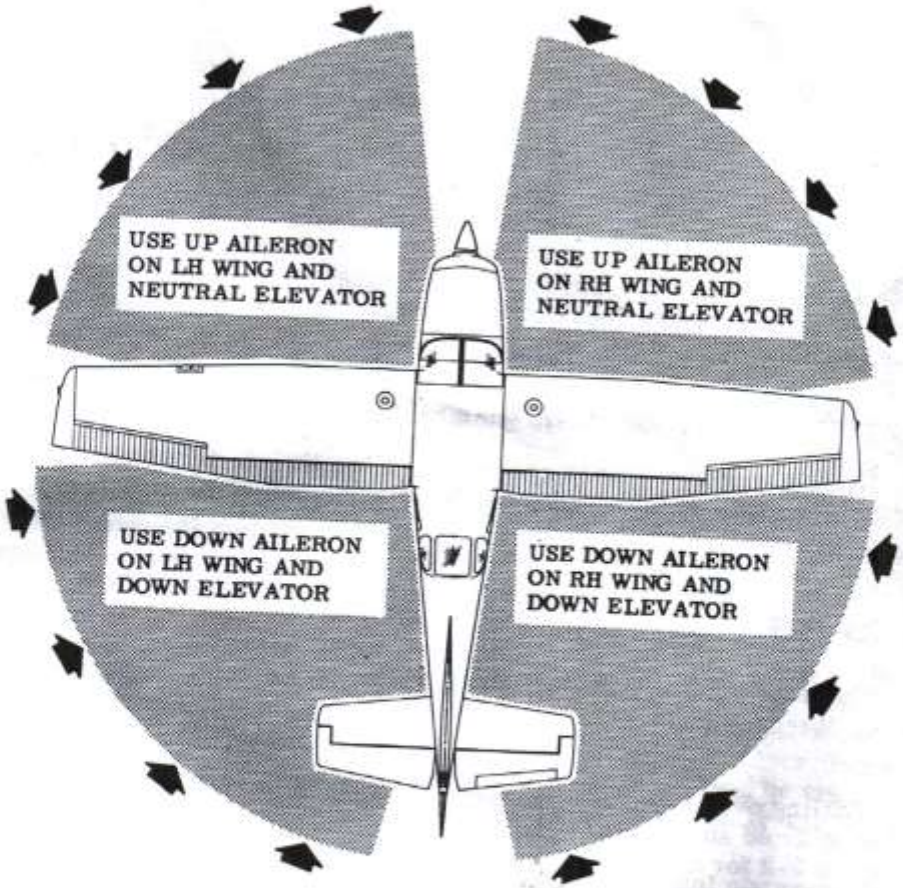
Front cabin heat and ventilating air is supplied by outlet holes spaced across a cabin manifold just forward of the pilot's and copilot's feet. Rear cabin heat and air is supplied by two ducts from the manifold, one extending down each side of the cabin. Windshield defrost air is also supplied by a duct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

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

STARTING ENGINE.

Proper fuel management and throttle adjustments are the determining factors in securing an easy start from your continuous-flow fuel-injection engine. The procedure outlined in Section I should be followed closely as

TAXIING DIAGRAM



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WIND DIRECTION ➧

NOTE

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

Figure 2-2.

it is effective under nearly all operating conditions, including hot and cold weather conditions. Slight variations from this procedure may be necessary at times to compensate for extreme conditions.

Conventional full rich mixture and high RPM propeller settings are used for starting; the throttle, however, should be fully closed initially. When ready to start, depress the right half of the auxiliary fuel pump switch to "LO" and turn the ignition-starter switch to "START" position. At the same time the starter engages and turns the engine, the auxiliary fuel pump will operate at a low flow rate, supplying fuel for starting. While cranking slowly advance the throttle until the engine starts. Slow throttle advancement is essential since the engine will start readily when the correct fuel/air ratio is obtained. On the other hand, fast throttle movement may prevent starting since an excessively rich mixture will be obtained due to greater fuel flow metered by the throttle position. In this case, another starting attempt must be made. When the engine has started, reset the throttle to the desired idle speed and turn the fuel pump switch off.

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

TAXIING.

The induction hot air knob should be pushed in during all ground operations. When the knob is pulled out, unfiltered air is mixed with the normal intake air.

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller tips. Refer to figure 2-2 for additional taxiing tips.

BEFORE TAKE-OFF.

Since the engine is closely cowled for efficient in-flight cooling, precautions should be taken to avoid overheating on the ground. Full throttle checks on the ground are not recommended unless the pilot has good reason to suspect that the engine is not turning up properly.

The magneto check should be made at 1700 RPM with the propeller in

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

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

TAKE-OFF.

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.

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

For maximum engine power, the mixture should be adjusted during the initial take-off roll to the fuel flow corresponding to the field elevation. (Refer to Maximum Performance Take-Off and Climb Settings placard located adjacent to fuel flow indicator.) The power increase is significant above 3000 feet and this procedure always should be employed for field elevations greater than 5000 feet above sea level.

Using 20° wing flaps reduces the ground run and total distance over the obstacle by approximately 10 per cent. Soft field take-offs are performed with 20° flaps by lifting the nosewheel off the ground as soon as practical and leaving the ground in a slightly tail-low attitude. However, the airplane should be leveled off immediately to accelerate to a safe climb speed of 75 MPH.

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.

Landing gear retraction normally is started after reaching the point over the runway where a wheels-down, forced landing on that runway would become impractical. Since the landing gear swings downward approximately two feet as it starts the retraction cycle, damage can result by retracting it before obtaining at least that much ground clearance. In addition, the landing gear would extend slowly in the event of an engine failure during take-off, and might not be completely down while a wheels-down landing could still be made on the runway.

Before retracting the landing gear, the brakes should be applied momentarily to stop wheel rotation. Centrifugal force caused by the rapidly-spinning wheel expands the diameter of the tire. If there is an accumulation of mud or ice in the wheel wells, the rotating wheel may rub as it is retracted into the wheel well.

CLIMB.

A cruising climb at 24 inches of manifold pressure, 2500 RPM (approximately 75% power) and 120 to 140 MPH is recommended to save time and fuel for the overall trip. In addition, this type of climb provides better engine cooling, less engine wear, and more passenger comfort due to lower noise level.

Cruising climbs should be conducted at approximately 16.5 GPH up to 6500 feet and at 1 GPH more than the normal lean fuel flow shown on the Cessna Power Computer at higher altitudes and lower power.

If it is necessary to climb rapidly to clear mountains or reach favorable winds at high altitudes, the best rate-of-climb speed should be used with maximum power. This speed is 105 MPH at sea level, decreasing approximately 4 MPH for each 5000 feet above sea level. The mixture should be leaned as shown by the Maximum Performance Take-Off and Climb Settings placard located adjacent to the fuel flow indicator.

If an obstruction ahead requires a steep climb angle, the airplane should be flown at the best angle of climb with flaps up and maximum power. This speed is 76 MPH at sea level, increasing 1/2 MPH for each 1000 feet above sea level.

In a balked landing (go-around) climb, the wing flap setting should be reduced to 20° immediately after full power is applied. After all obstacles are cleared and a safe altitude and airspeed are obtained, the wing flaps should be retracted.

CRUISE.

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

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

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

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

The fuel injection system employed on this engine is considered to be non-icing. The induction hot air knob should be pushed in for all normal operations. In the event that unusual conditions cause the intake air filters

OPTIMUM CRUISE PERFORMANCE

% BHP	GAL/HR	ALTITUDE	TRUE AIRSPEED	RANGE (STD. TANKS)
75	15.7	6500	190	765
70	14.6	8000	189	820
65	13.6	10,000	187	875

Figure 2-3.

to become clogged or iced over, an alternate intake air valve opens automatically. If desired, this valve can be opened manually by pulling out the air knob.

STALLS.

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

Power-off stall speeds at maximum gross weight and aft c.g. position are presented on page 6-2 as calibrated airspeeds since indicated airspeeds are unreliable near the stall.

SPINS.

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

BEFORE LANDING.

In view of the relatively low drag of the extended landing gear and the high allowable gear-down speed (160 MPH), the landing gear should be extended before entering the traffic pattern.

This practice will allow more time to confirm that the landing gear is down and locked. As a further precaution, leave the landing gear extended in go-around procedures or traffic patterns for touch-and-go landing.

Landing gear extension can be detected by illumination of the gear down indicator light (green), absence of a gear warning horn with the throttle retarded below 12 inches of manifold pressure, and visual inspection of the main gear position. Should the gear indicator light fail to illuminate, the light should be checked for a burned-out bulb by pushing to test. A burned-out bulb can be replaced in flight with the bulb from the compass light or the landing gear up (amber) indicator light.

LANDINGS.

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

For short field landings, make a power-off approach at 70 MPH with 40° flaps and land on main wheels first. Immediately after touchdown, lower the nose gear and apply heavy braking as required. For maximum brake effectiveness after all three wheels are on the ground, retract the flaps, hold full nose up elevator and apply maximum possible brake pressure without sliding the tires.

At light operating weights, during ground roll with full flaps, hold the control wheel full back to insure maximum weight on the main wheels for braking. Under these conditions, full nose down elevator (control wheel full forward) will raise the main wheels off the ground.

COLD WEATHER OPERATION.

The use of an external pre-heater and an external power source is recommended whenever possible to reduce wear and abuse to the engine and the electrical system. If external preheat is not available, the oil should be diluted before stopping the engine when very cold temperatures are anticipated.

Pre-heat will thaw the oil trapped in the oil cooler, which probably will be congealed prior to starting in extremely cold temperatures. When using an external power source, the position of the master switch is important. Refer to Section VII, paragraph GROUND SERVICE PLUG RECEPTACLE, for operating details.

In very cold weather, no oil temperature indication need be apparent before take-off. After a suitable warm-up period (2 to 5 minutes at 1000 RPM), the engine is ready for take-off if it accelerates smoothly and the oil pressure is normal and steady.

During let-down, observe engine temperatures closely and carry sufficient power to maintain them in the recommended operating range.

Refer to Section VII for discussion of additional cold weather equipment.

Section III

CENTURION

EMERGENCY PROCEDURES

SYSTEM EMERGENCY PROCEDURES.

LANDING GEAR—EMERGENCY OPERATION.

When the landing gear will not extend normally, it may be extended manually as follows:

NOTE

Prior to following emergency procedures, it is recommended that the landing gear handle be moved from "UP" to "DOWN" several times. In certain cases, this procedure can dislodge foreign matter which may be causing the malfunction.

(1) Place the gear handle in the full "DOWN" position.
(2) Pull the emergency hand pump out to its full extension.
(3) Operate the hand pump up and down until the down indicator (green) light comes on, and continue pumping until the landing gear handle returns to neutral.

NOTE

The landing gear cannot be retracted with the emergency hand pump. If the gear will not retract normally, extend the gear, land, and have the malfunction corrected.

LANDING EMERGENCIES (Except Ditching).

FORCED LANDING (Precautionary Landing with Power).

(1) Drag over selected field with flaps 20° and 90 MPH airspeed, noting type of terrain and obstruction.
(2) If surface is smooth and hard (pasture, frozen lake, etc.), plan

a wheels-down landing using full flaps and keeping nose wheel off ground as long as practical.

(3) If surface is rough or soft, plan a wheels-up landing as follows:

a. Approach with flaps down at 75 to 85 MPH.
b. Turn off all switches except ignition switch.
c. Unlatch cabin doors prior to flare-out.
d. Reduce power to a minimum during flare-out.
e. Prior to contact, turn ignition switch "OFF."
f. Landing in a slightly tail-low attitude.
g. Attempt to hold the tail low throughout slide.

FORCED LANDING (Engine Out).

In the event of a complete engine failure, maximum gliding distance can be obtained by maintaining 85 MPH indicated air speed with the landing gear and wing flaps retracted. Refer to the Maximum Glide Diagram, figure 3-1, for maximum glide data.

(1) Pull mixture control knob to idle cut-off.

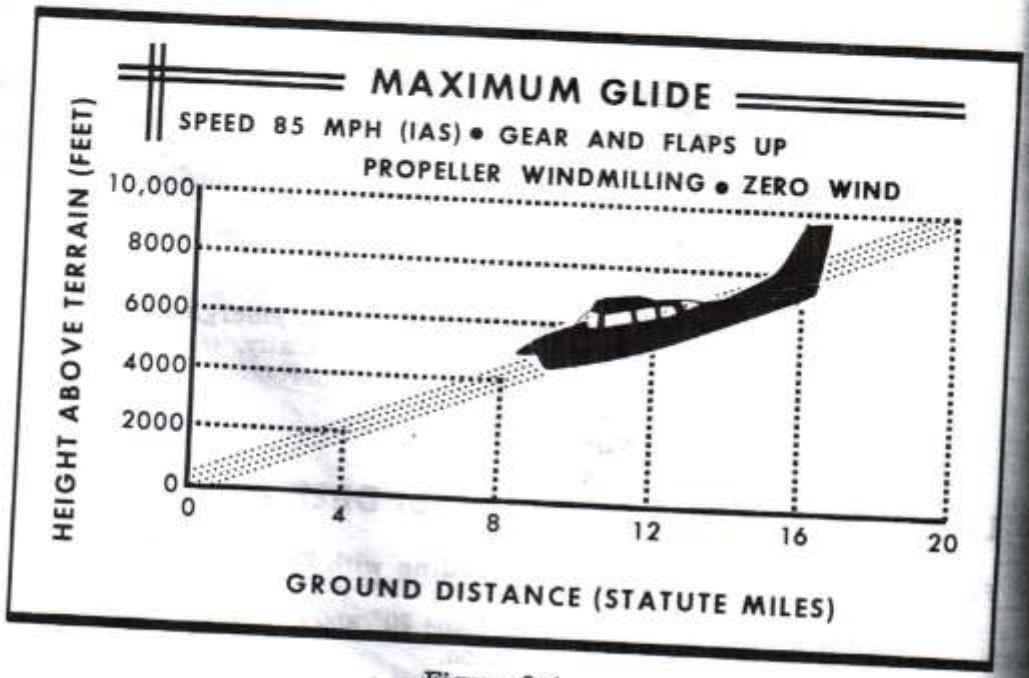


Figure 3-1.

(2) Turn fuel selector valve handle to "BOTH OFF."
(3) Turn off all switches except master switch.
(4) Approach at 85 to 95 MPH.
(5) If field is smooth and hard, extend landing gear within gliding distance of field.
(6) If electrical power is available, extend flaps as necessary within gliding distance of field.
(7) Turn off master switch.
(8) Make a normal landing, keeping nose wheel off ground as long as practical.
(9) If terrain is rough or soft, plan a wheels-up landing as follows:
   a. Approach at 85 to 95 MPH with gear and flaps retracted.
   b. If practical, extend flaps within gliding distance of field.
   c. Turn off master switch.
   d. Unlatch cabin doors prior to flare-out.
   e. Land in a slightly tail-low attitude.
   f. Attempt to hold tail low throughout slide.

LANDING WITHOUT POSITIVE INDICATION OF GEAR LOCKING.

Should a flickering, unsteady, or inoperative gear-down (green) light be obtained, and observers verify that the gear is down and apparently in the locked position, proceed as follows:

(1) Make a normal full-flaps approach.
(2) Holding the landing gear handle in the "DOWN" position and maintaining a minimum of 1000 RPM, complete the landing and taxi clear of the runway.

NOTE

Maintaining 1000 RPM and holding the gear handle "DOWN" secures the landing gear in the extended position by hydraulic pressure.

(3) BEFORE reducing engine RPM or releasing gear handle, have ground personnel depress the tail until nose gear is off ground.

NOTE

The nose gear requires hydraulic pressure to hold it in the "DOWN" position if it is not mechanically locked.

(4) Stop the engine and determine that the nose gear is mechanically locked down BEFORE lowering the nose wheel to the ground.

LANDING WITH DEFECTIVE NOSE GEAR.

If the nose gear does not extend or only partially extends, and observe verify that it is not down, prepare for a wheels-down landing as follows:

(1) Transfer movable load to baggage area, and front seat passenger to rear seat if a rear seat position is unoccupied.
(2) Select a hard-surfaced or smooth sod runway.

NOTE

If terrain is rough or soft, plan a wheels-up landing as presented under "FORCED LANDING (Precautionary Landing with Power)" in lieu of the following steps.

(3) Place landing gear handle "DOWN."
(4) Extend flaps to 40°.
(5) Turn off master switch.
(6) Land in a slightly tail-low attitude.
(7) Pull mixture control knob to idle cut-off.
(8) Turn ignition switch "OFF."
(9) Hold nose off the ground as long as possible.
(10) Turn fuel selector valve handle to "BOTH OFF."
(11) Evacuate the airplane as soon as it stops.

Section CENTURION IV

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED.

Your Cessna, with standard equipment as certificated under FAA Type Certificate No. 3A21, is approved for day and night operation under VFR.

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

MANEUVERS — NORMAL CATEGORY.

The airplane exceeds the requirements for airworthiness of the Federal Aviation Regulations, Part 3, set forth by the United States Government. Spins and aerobatic maneuvers are not permitted in normal category airplanes in compliance with these regulations. In connection with the foregoing, the following gross weight and flight load factors apply:

Maximum Gross Weight	3100 lbs.
Flight Load Factor *Flaps Up	+3.8, -1.52
Flight Load Factor *Flaps Down	+3.5

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

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

AIRSPEED LIMITATIONS.

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

Never Exceed (Glide or dive, smooth air)	225 MPH (red line)
Caution Range	190-225 MPH (yellow arc)
Maximum Structural Cruising Speed (Level flight or climb)	190 MPH
Normal Operating Range	67-190 MPH (green arc)
Maximum Speed, Gear Extended	160 MPH
Maximum Speed, Flaps Extended	
Flaps 10°	160 MPH
Flaps 10° -40°	110 MPH
Flap Operating Range	58-110 MPH (white arc)
Maneuvering Speed*	134 MPH

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

ENGINE OPERATION LIMITATIONS.

Power and Speed	285 BHP at 2700 RPM

ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE

Normal Operating Range	Green Arc
Do Not Exceed	240° F (red line)

OIL PRESSURE GAGE

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

MANIFOLD PRESSURE GAGE

Normal Operating Range	15-24.5 in. Hg (green arc)

CYLINDER HEAD TEMPERATURE GAGE

Normal Operating Range	300-460° F (green arc)
Do Not Exceed	460° F (red line)

TACHOMETER

Normal Operating Range . . . . . 2200-2500 RPM (green arc)
Maximum (Engine rated speed). . . . . .2700 RPM (red line)

FUEL QUANTITY INDICATORS

Empty (.7 gallon unusable each tank) . . . . . E (red line)

FUEL FLOW INDICATOR

Normal Operating Range . . . . . 7.0-17.0 gal/hr (green arc)
Minimum and Maximum . . . . . 3.5 and 18.5 psi (red lines)

NOTE

A placard, located adjacent to the fuel flow indicator, provides maximum performance (full throttle and 2700 RPM) take-off and climb fuel flow settings at altitude. These settings, as called out on the placard, are as follows:

Sea Level	22 gal/hr
4000 Feet	20 gal/hr
8000 Feet	18 gal/hr

WEIGHT AND BALANCE.

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

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

SAMPLE LOADING PROBLEM	Sample Airplane		Your Airplane	
	Weight (lbs)	Moment (lb - ins. /1000)	Weight	Moment
1. Licensed Empty Weight (Sample Airplane)	1955	71.3		
* 2. Oil - 12 Qts.	22	-0.4	22	-0.4
3. Pilot & Front Passenger	340	12.2		
4. Fuel - (55 Gal at 6#/Gal)	330	15.8		
5. Rear Passengers	340	23.8		
** 6. Child's Seat Passengers (Or Baggage in Same Area)	80	7.5		
*** 7. Baggage (Aft of Child's Seat)	33	3.8		
8. Total Aircraft Weight (Loaded)	3100	134.0		

9. Locate this point (3100 at 134.0) on the center of gravity envelope, and since this point falls within the envelope the loading is acceptable.

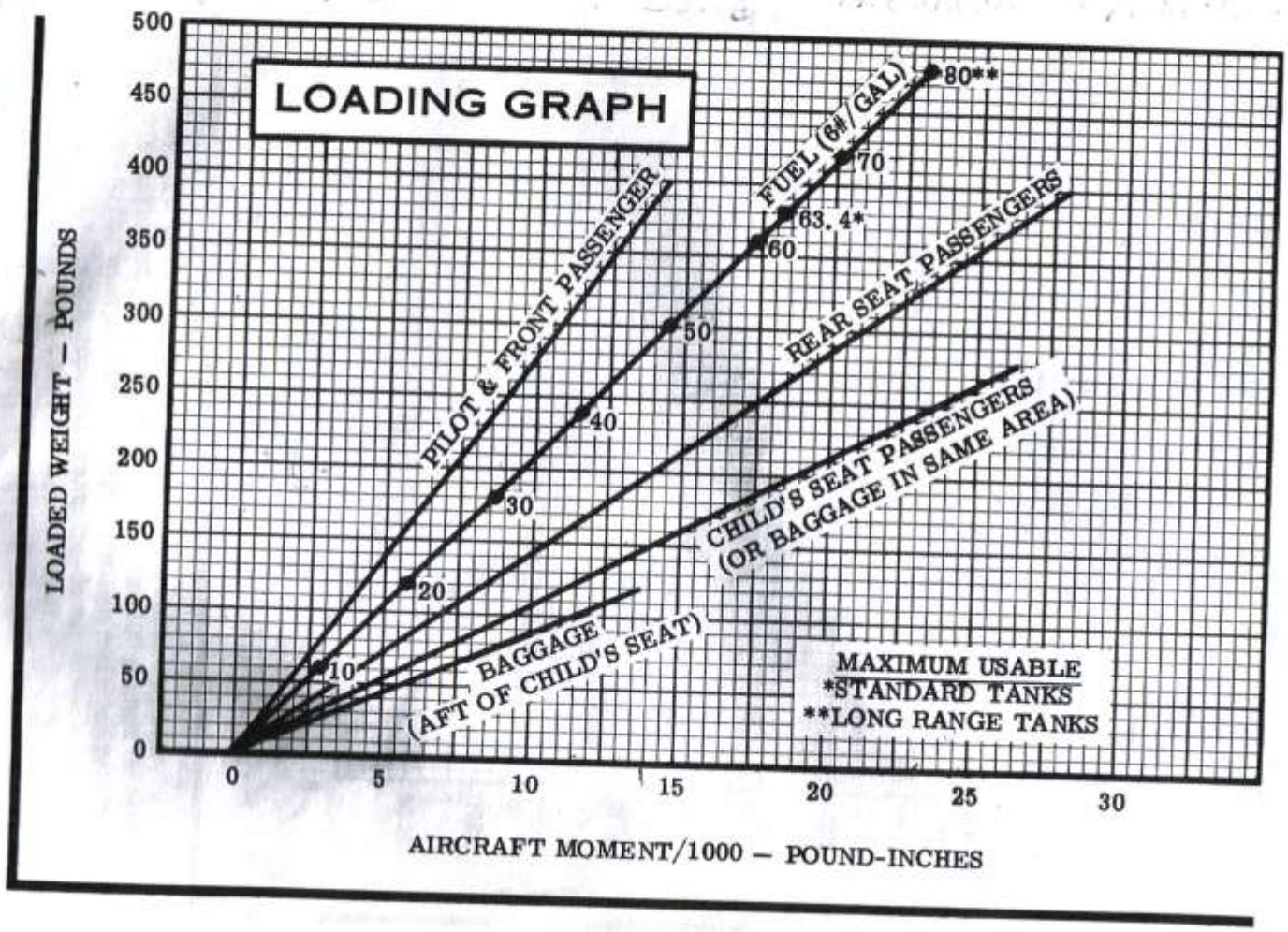
* Note: Normally, full oil may be assumed for all flights.

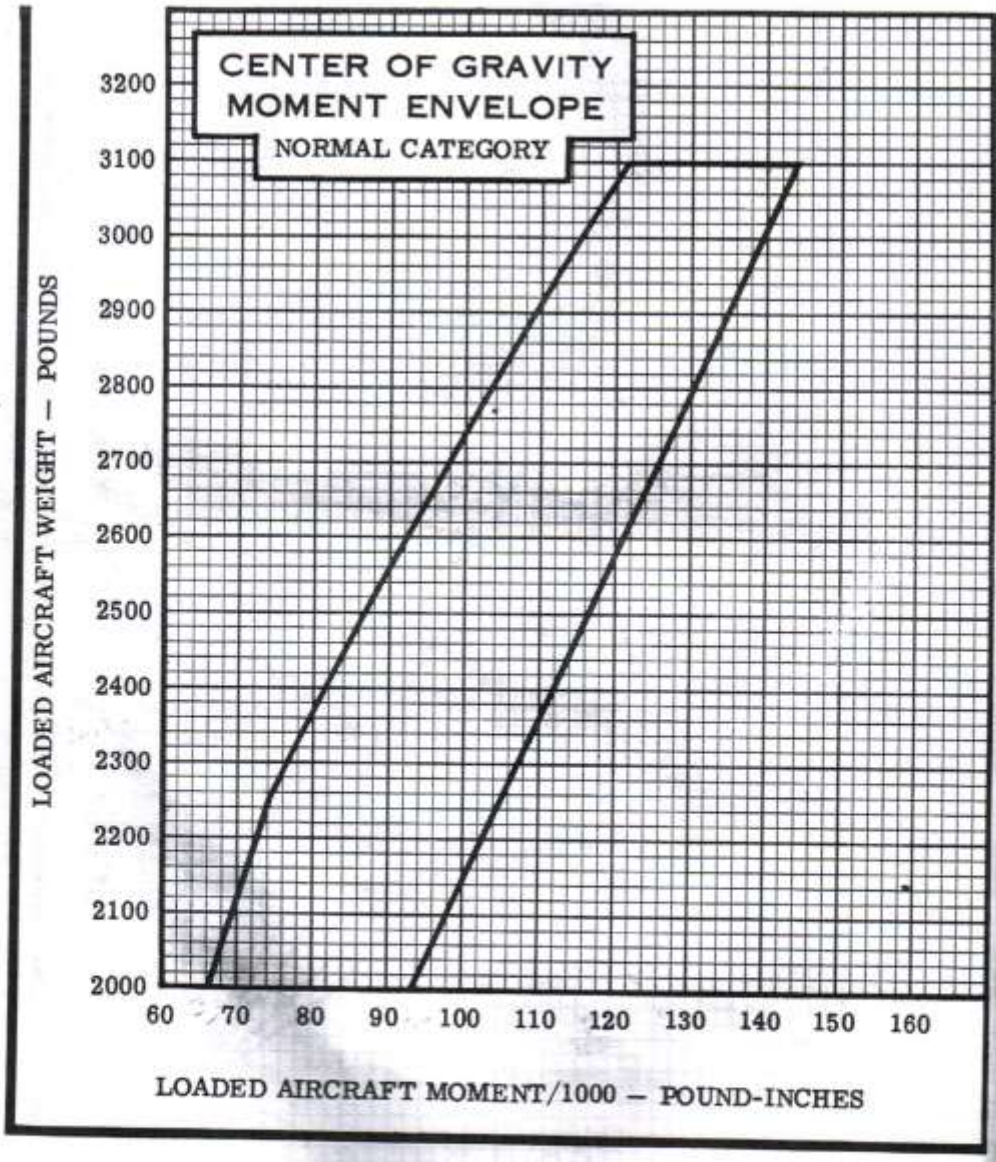
** Note: Maximum allowable load is 140 lbs. for each seat. If total area is used for baggage, maximum allowable load is 280 lbs. Use seat belts to secure baggage.

*** Note: Maximum allowable load is 120 lbs. Combined load in child's seat and baggage area must not exceed 280 lbs. total.

BAGGAGE TIE-DOWN

Two adjustable tie-down straps are provided to secure baggage in the baggage area. The fitting on one end of each strap has a slotted hole, and is to be latched over a screw permanently fastened in the baggage compartment floor just aft of each child's seat back. A hook on the other end of each strap should be fastened into an eyebolt provided at the top of the rear baggage area wall. A buckle in each strap permits strap length adjustment.


LOADING GRAPH
LOADED WEIGHT – POUNDS
AIRCRAFT MOMENT/1000 – POUND-INCHES
500
450
400
350
300
250
200
150
100
50
0
0
5
10
15
20
25
30
PILOT & FRONT PASSENGER
FUEL (6#/GAL)
80**
70
63.4*
60
50
40
30
20
10
REAR SEAT PASSENGERS
CHILD'S SEAT PASSENGERS
(OR BAGGAGE IN SAME AREA)
BAGGAGE
(AFT OF CHILD'S SEAT)
MAXIMUM USABLE
*STANDARD TANKS
**LONG RANGE TANKS


CENTER OF GRAVITY
MOMENT ENVELOPE
NORMAL CATEGORY
LOADED AIRCRAFT WEIGHT – POUNDS
3200
3100
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
60
70
80
90
100
110
120
130
140
150
160
LOADED AIRCRAFT MOMENT/1000 – POUND-INCHES

Section V

CARE OF THE AIRPLANE

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

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

GROUND HANDLING.

The airplane is most easily and safely maneuvered during ground handling by the tow-bar attached to the nosewheel.

NOTE

When using the tow-bar, do not exceed the nosewheel turning angle of 30° either side of center.

MOORING YOUR AIRPLANE.

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

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

WINDSHIELD-WINDOWS.

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

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

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

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

PAINTED SURFACES.

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

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

PROPELLER CARE.

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

LANDING GEAR CARE.

Cessna Dealer's mechanics have been trained in the proper adjustment and rigging procedures on the aircraft hydraulic system. To assure trouble-free gear operation, have your Cessna Dealer check the gear regularly and make any necessary adjustments. Only properly trained mechanics should attempt to repair or adjust the landing gear.

INTERIOR CARE.

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

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

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

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

If your airplane is equipped with leather seating, cleaning of the seats is accomplished using a soft cloth or sponge dipped in mild soap suds. The soap suds, used sparingly, will remove traces of dirt and grease. The soap should be removed with a clean damp cloth.

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

INSPECTION SERVICE AND INSPECTION PERIODS

With your airplane you will receive an Owner's Service Policy. Coupons attached to the policy entitle you to an initial inspection and the first 100-hour inspection at no charge. If you take delivery from your Dealer, he will perform the initial inspection before delivery of the airplane to you. If you pick up the airplane at the factory, plan to take it to your Dealer reasonably soon after you take delivery on it. This will permit him to check it over and to make any minor adjustments that may appear necessary. Also, plan an inspection by your Dealer at 100 hours or 180 days, whichever comes first. This inspection also is performed by your Dealer for you at no charge. While these important inspections will be performed for you by any Cessna Dealer, in most cases you will prefer to have the Dealer from whom you purchased the airplane accomplish this work.

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

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 Federal Aviation Regulations to insure that all data requirements are met.

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

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

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

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

C. To be made available upon request:

(1) Airplane Log Book.
(2) Engine Log Book.

NOTE

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

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

LUBRICATION AND SERVICING PROCEDURES

Specific servicing information is provided here for items requiring daily attention. A Servicing Intervals Check List is included to inform the pilot when to have other items checked and serviced.

DAILY

FUEL TANK FILLERS:

Service after each flight with 100/130 minimum grade fuel. The capacity of each tank is 32.5 gallons. When optional long range fuel tanks are installed, the capacity of each tank is 42.0 gallons.

FUEL STRAINER:

Drain approximately two ounces of fuel before initial flight and after refueling to remove water and sediment. Make sure drain valve is closed after draining.

OIL FILLER:

When preflight check shows low oil level, service with aviation grade engine oil; SAE 30 below 40°F. and SAE 50 above 40° F. Detergent oil, conforming to Continental Motors Specification MHS-24, must be used. Your Cessna Dealer can supply an approved brand.

OIL DIPSTICK:

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

OXYGEN CYLINDER AND FILLER VALVE (OPT):

Check oxygen pressure gage for anticipated requirements before each flight. Whenever pressure drops below 300 psi, use filler valve on left side of utility shelf and refill cylinder with aviator's breathing oxygen (Spec. No. MIL-O-27210). Maximum pressure, 1800 psi.

SERVICING INTERVALS CHECK LIST

EACH 50 HOURS

BATTERY -- Check and service. Check oftener (at least every 30 days) if operating in hot weather.
ENGINE OIL AND OIL FILTER -- Change engine oil and replace filter element. If optional oil filter is not installed, change oil and clean screen every 25 hours. Change engine oil at least every four months even though less than 50 hours have been accumulated. Reduce periods for prolonged operation in dusty areas, cold climates, or when short flights and long idle periods result in sludging conditions.
INDUCTION AIR FILTER -- Clean or replace. Under extremely dusty conditions, daily maintenance of the filter is recommended.
NOSE GEAR TORQUE LINKS -- Lubricate.

EACH 100 HOURS

FUEL STRAINER -- Disassemble and clean.
FUEL TANK SUMP DRAIN PLUGS -- Drain.
FUEL RESERVOIR DRAIN PLUGS -- Drain.
FUEL/AIR CONTROL UNIT SCREEN -- Clean.
BRAKE MASTER CYLINDERS -- Check and fill.
SHIMMY DAMPENER -- Check and fill.
LANDING GEAR DOWN LOCK PAWLS -- Lubricate.
HYDRAULIC SYSTEM FILTER -- Disassemble and clean.
VACUUM SYSTEM OIL SEPARATOR (OPT) -- Clean.
SUCTION RELIEF VALVE INLET SCREEN (OPT) -- Clean.

EACH 500 HOURS

WHEEL BEARINGS -- Lubricate. Lubricate at first 100 hours and at 500 hours thereafter.
VACUUM SYSTEM AIR FILTER (OPT) -- Replace filter element. Replace sooner if suction gage reading drops below 3.75 in. Hg.

AS REQUIRED

NOSE GEAR SHOCK STRUT -- Keep inflated and filled.
HYDRAULIC FLUID RESERVOIR -- Check fluid level through sight window and fill through filler fitting.
GYRO INSTRUMENT AIR FILTERS (OPT) -- Replace at instrument overhaul.

Section VI

OPERATIONAL DATA

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

The data in the charts has been compiled from actual flight tests with the airplane and engine in good condition and using average piloting techniques. Note also that the range charts make no allowances for wind, navigational errors, warm-up, take-off, climb, etc. You must estimate these variables for yourself and make allowances accordingly.

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

AIRSPEED CORRECTION TABLE

FLAPS 0°								
IAS - MPH	60	80	100	120	140	160	180	200
CAS - MPH	70	81	99	119	139	159	178	198
*FLAPS 20°								
IAS - MPH	50	60	70	80	90	100	110	
CAS - MPH	64	68	75	83	93	103	112	—
*FLAPS 40°								
IAS - MPH	50	60	70	80	90	100	110	
CAS - MPH	61	66	73	82	91	101	111	—

*Maximum Flap Speed 110 MPH - CAS

Figure 6-1.

STALL SPEED, POWER OFF

GROSS WEIGHT 3100 LBS. / CONFIGURATION	ANGLE OF BANK 0°	30°	60°
GEAR AND FLAPS UP	67	72	94
GEAR DOWN, FLAPS 20°	61	65	86
GEAR DOWN, FLAPS 40°	58	62	82

SPEEDS ARE MPH, CAS

Figure 6-2.

TAKE-OFF DATA

TAKE-OFF DISTANCE WITH 20° FLAPS FROM HARD SURFACE RUNWAY

GROSS WEIGHT POUNDS	IAS @ 50' MPH	HEAD WIND KNOTS	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 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS
2300	55	0	315	645	365	730	435	845	510	975
		10	200	465	240	530	290	620	345	725
		20	110	310	135	360	170	425	210	505
2700	59	0	440	855	515	975	610	1150	720	1350
		10	295	630	345	725	420	865	505	1030
		20	175	435	210	510	265	615	320	745
3100	63	0	590	1110	690	1290	825	1550	970	1865
		10	405	835	480	980	580	1190	695	1455
		20	255	590	305	705	380	870	465	1080

NOTE: Increase distance 10% for each 20°F above standard temperature for particular altitude.

MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT POUNDS	AT SEA LEVEL & 59° F			AT 5000 FT & 41° F			AT 10,000 FT & 23° F			AT 15,000 FT & 5° F			AT 20,000 FT & -12° F		
	IAS MPH	RATE OF CLIMB FT/MIN.	GAL. OF FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN.	FROM S. L. FUEL USED
2300	98	1760	2	94	1360	3.1	90	1090	4.3	87	750	5.8	83	410	7.9
2700	101	1450	2	98	1100	3.3	94	865	4.9	90	570	6.8	86	275	9.6
3100	105	1210	2	101	945	3.6	97	680	5.6	93	420	8.1	89	150	12.6

NOTES: 1. Full throttle, 2700 RPM, mixture at recommended leaning schedule, flaps up.
2. Fuel used includes warm-up and take-off allowance.

Figure 6-3.

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight- 3100 Pounds

2500 FEET

					63.5 GAL(NO RESERVE)		80 GAL(NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2500	24	74	179	15.4	4.1	735	5.2	930
	23	70	176	14.6	4.3	760	5.5	960
	22	66	172	13.9	4.6	785	5.8	990
	21	62	168	13.1	4.8	815	6.1	1025
2400	24.5	71	177	14.9	4.3	755	5.4	950
	23	66	171	13.8	4.6	790	5.8	995
	22	62	168	13.1	4.9	815	6.1	1025
	21	59	164	12.4	5.1	840	6.5	1060
2300	24.5	67	172	13.9	4.6	785	5.7	990
	23	61	167	12.9	4.9	820	6.2	1035
	22	58	163	12.2	5.2	845	6.5	1065
	21	54	159	11.6	5.5	870	6.9	1095
2200	24.5	62	168	13.1	4.9	815	6.1	1025
	23	57	162	12.1	5.2	850	6.6	1070
	22	54	158	11.5	5.5	875	7.0	1100
	21	51	154	10.9	5.8	900	7.4	1135
	20	47	149	10.3	6.2	925	7.8	1165
	19	44	144	9.7	6.6	945	8.3	1195
	18	41	138	9.1	7.0	965	8.8	1220
	17	38	130	8.4	7.5	980	9.5	1235
	16	34	120	7.8	8.1	975	10.2	1230

Figure 6-4 (Sheet 1 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions — Zero Wind — Gross Weight- 3100 Pounds

5000 FEET

					63.5 GAL(NO RESERVE)		80 GAL(NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2500	24	75	186	15.8	4.0	750	5.1	945
	23	72	184	15.0	4.2	780	5.3	980
	22	68	181	14.2	4.5	810	5.6	1020
	21	64	177	13.4	4.7	835	6.0	1055
2400	24.5	73	185	15.2	4.2	770	5.3	970
	23	67	180	14.1	4.5	810	5.7	1020
	22	64	177	13.4	4.7	840	6.0	1055
	21	60	172	12.7	5.0	865	6.3	1090
2300	24.5	68	181	14.3	4.4	805	5.6	1015
	23	63	176	13.2	4.8	845	6.0	1060
	22	60	172	12.6	5.1	870	6.4	1095
	21	56	167	11.9	5.3	890	6.7	1125
2200	24.5	64	177	13.4	4.7	840	6.0	1055
	23	59	171	12.4	5.1	875	6.4	1100
	22	56	166	11.8	5.4	895	6.8	1130
	21	52	161	11.2	5.7	915	7.2	1155
	20	49	156	10.6	6.0	935	7.6	1180
	19	46	150	10.0	6.4	955	8.0	1205
	18	42	144	9.3	6.8	975	8.6	1230
	17	39	137	8.7	7.3	995	9.2	1250
	16	36	129	8.1	7.8	1010	9.9	1275
	15	33	119	7.5	8.5	1010	10.7	1275

Figure 6-4 (Sheet 2 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions — Zero Wind — Gross Weight- 3100 Pounds

7500 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63.5 GAL(NO RESERVE)		80 GAL(NO RESERVE)	
					ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2500	22.5	71	189	14.9	4.3	805	5.4	1015
	21	65	183	13.7	4.6	850	5.8	1070
	20	61	179	12.9	4.9	880	6.2	1105
	19	57	174	12.2	5.2	905	6.6	1140
2400	22.5	67	185	14.1	4.5	835	5.7	1050
	21	62	179	13.0	4.9	875	6.2	1105
	20	58	174	12.3	5.2	905	6.5	1135
	19	54	169	11.6	5.5	930	6.9	1170
2300	22.5	63	181	13.2	4.8	865	6.0	1090
	21	58	174	12.2	5.2	905	6.6	1140
	20	54	169	11.5	5.5	930	6.9	1170
	19	51	163	10.9	5.8	955	7.4	1200
2200	22.5	59	176	12.4	5.1	895	6.4	1130
	21	54	169	11.5	5.5	930	7.0	1175
	20	51	163	10.9	5.8	955	7.4	1200
	19	47	157	10.2	6.2	975	7.8	1230
	18	44	151	9.6	6.6	995	8.3	1255
	17	41	143	9.0	7.0	1010	8.9	1275
	16	37	135	8.4	7.6	1020	9.5	1290
	15	34	126	7.8	8.2	1030	10.3	1295
	14	31	115	7.1	8.9	1025	11.2	1290

Figure 6-4 (Sheet 3 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions ⟍ Zero Wind ⟍ Gross Weight- 3100 Pounds

10,000 FEET

					63.5 GAL(NO RESERVE)		80 GAL(NO RESERVE)	
RPM	MP	% BHP	TAS MPH	GAL/ HOUR	ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2500	20	63	185	13.2	4.8	885	6.1	1115
	19	59	179	12.4	5.1	915	6.4	1155
	18	55	174	11.7	5.4	945	6.8	1190
	17	51	167	11.0	5.8	970	7.3	1220
2400	20	59	180	12.6	5.1	910	6.4	1150
	19	56	175	11.8	5.4	935	6.8	1180
	18	52	169	11.1	5.7	960	7.2	1210
	17	48	162	10.4	6.1	985	7.7	1240
2300	20	56	175	11.8	5.4	940	6.8	1180
	19	52	169	11.2	5.7	960	7.2	1210
	18	49	163	10.5	6.1	985	7.6	1240
	17	45	155	9.8	6.5	1005	8.1	1265
2200	20	52	169	11.2	5.7	960	7.2	1210
	19	49	163	10.5	6.0	980	7.6	1240
	18	46	156	9.9	6.4	1000	8.1	1260
	17	42	149	9.3	6.8	1015	8.6	1280
	16	39	141	8.7	7.3	1030	9.2	1295
	15	35	131	8.0	7.9	1035	9.9	1305
	14	32	120	7.4	8.6	1035	10.8	1300

Figure 6-4 (Sheet 4 of 5).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions — Zero Wind — Gross Weight- 3100 Pounds

15,000 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63.5 GAL(NO RESERVE) ENDR. HOURS	63.5 GAL(NO RESERVE) RANGE MILES	80 GAL(NO RESERVE) ENDR. HOURS	80 GAL(NO RESERVE) RANGE MILES
2500	16	50	171	10.7	5.9	1010	7.5	1270
	15	46	162	10.0	6.3	1030	8.0	1295
	14	42	152	9.3	6.8	1040	8.6	1315
	13	38	141	8.5	7.4	1050	9.4	1320
2400	16	47	165	10.3	6.2	1020	7.8	1285
	15	44	156	9.6	6.6	1035	8.4	1305
	14	40	146	8.9	7.2	1045	9.0	1320
	13	36	135	8.2	7.8	1050	9.8	1320
2300	16	44	158	9.7	6.5	1035	8.2	1305
	15	41	149	9.1	7.0	1045	8.8	1315
	14	37	139	8.4	7.6	1050	9.5	1325
	13	34	127	7.7	8.2	1045	10.4	1315
2200	16	42	152	9.2	6.9	1045	8.7	1315
	15	38	142	8.6	7.4	1050	9.3	1320
	14	35	131	7.9	8.0	1050	10.1	1320
20,000 FEET								
2500	13	41	152	9.1	7.0	1065	8.8	1340
	12	37	139	8.3	7.6	1060	9.6	1335
2400	13	39	145	8.6	7.3	1065	9.3	1340
	12	35	132	7.9	8.0	1055	10.1	1325
2300	13	36	137	8.2	7.7	1060	9.7	1335
	12	33	124	7.6	8.4	1040	10.6	1315

Figure 6-4 (Sheet 5 of 5).

LANDING DISTANCE TABLE

LANDING DISTANCE WITH 40° FLAPS ON HARD SURFACED RUNWAY

GROSS WEIGHT POUNDS	APPROACH IAS MPH	@ SEA LEVEL & 59° F		@ 2500 FEET & 50° F		@ 5000 FEET & 41° F		@ 7500 FEET & 32° F	
		GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.
3100	69	700	1275	740	1350	785	1430	830	1515

NOTE: Distances shown are based on zero wind, power off, and heavy braking.
Reduce landing distances 10% for each 4 knots headwind.

Figure 6-5.

Section VII

OPTIONAL SYSTEMS

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

LONG RANGE FUEL TANKS

Special wings with long range fuel tanks are available to replace the standard wings and fuel tanks for greater endurance and range. Each tank has a total capacity of 42 gallons. Usable fuel in each long range tank, for all flight conditions, is 40 gallons.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT AND NON-CONGEALING OIL COOLER.

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

GROUND SERVICE PLUG RECEPTACLE.

A ground service plug receptable may be installed to permit the use

of an external power source for cold weather starting and during lengthy maintenance work on the electrical system.

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

IMPORTANT

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

ENGINE PRIMER SYSTEM.

A manually-operated, plunger-type engine primer may be installed in the control pedestal.

For quick smooth engine starts in zero degree temperatures, use six strokes of the primer before cranking, with an additional one or two strokes as the engine starts. In colder temperatures, use additional priming before cranking, and turn the auxiliary fuel pump switch on "HI" while cranking.

STATIC-PRESSURE ALTERNATE-SOURCE VALVE.

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

If erroneous instrument readings are suspected due to water or ice in the static-pressure lines, the static-pressure alternate-source valve should be opened. Since this valve vents to the static pressure of the cabin, the airspeed indicator and altimeter will show slightly different readings than normal. Therefore, the alternate static source should be used primarily as a drain valve to restore the original system.

Using the alternate static source in cruise results in airspeed and altimeter indications that are 5 MPH and 70 feet high, respectively. During approach with 40° flaps, these would be 4 MPH and 40 feet low. During approach with 40° flaps and the side window open, the indications would be 7 MPH and 60 feet low.

OIL DILUTION SYSTEM.

If your airplane is equipped with an oil dilution system and very low temperatures are anticipated, dilute the oil prior to engine shut down by energizing the oil dilution switch with the engine operating at 1000 RPM. (Refer to figure 7-1 for dilution time for the anticipated temperature.) While diluting the oil, the oil pressure should be watched for any unusual fluctuations that might indicate a screen being clogged with sludge washed down by the fuel.

NOTE

On the first operation of the oil dilution system each season, use the full dilution period, drain the oil, clean the screen, refill with new oil and redilute as required.

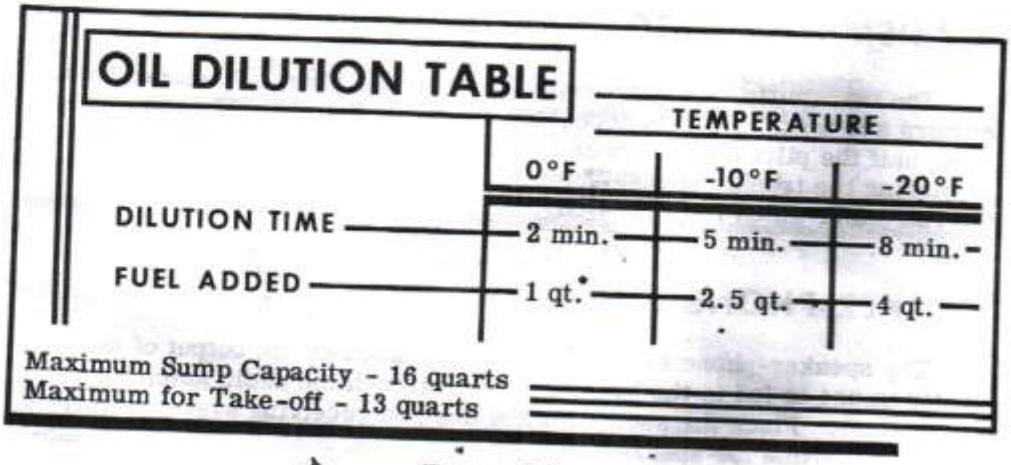


Figure 7-1.

If the full dilution time was used, beginning with a full oil sump (12 quarts), subsequent starts and engine warm-up should be prolonged to evaporate enough of the fuel to lower the oil sump level to 13 quarts prior to take-off. Otherwise, the sump may overflow when the airplane is nosed up for climb.

To avoid progressive dilution of the oil, flights of at least two hour's duration should be made between oil dilution operations.

RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION.

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

TRANSMITTER SELECTOR SWITCH.

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

SPEAKER-PHONE SWITCHES.

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

AUTOPILOT-OMNI SWITCH.

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

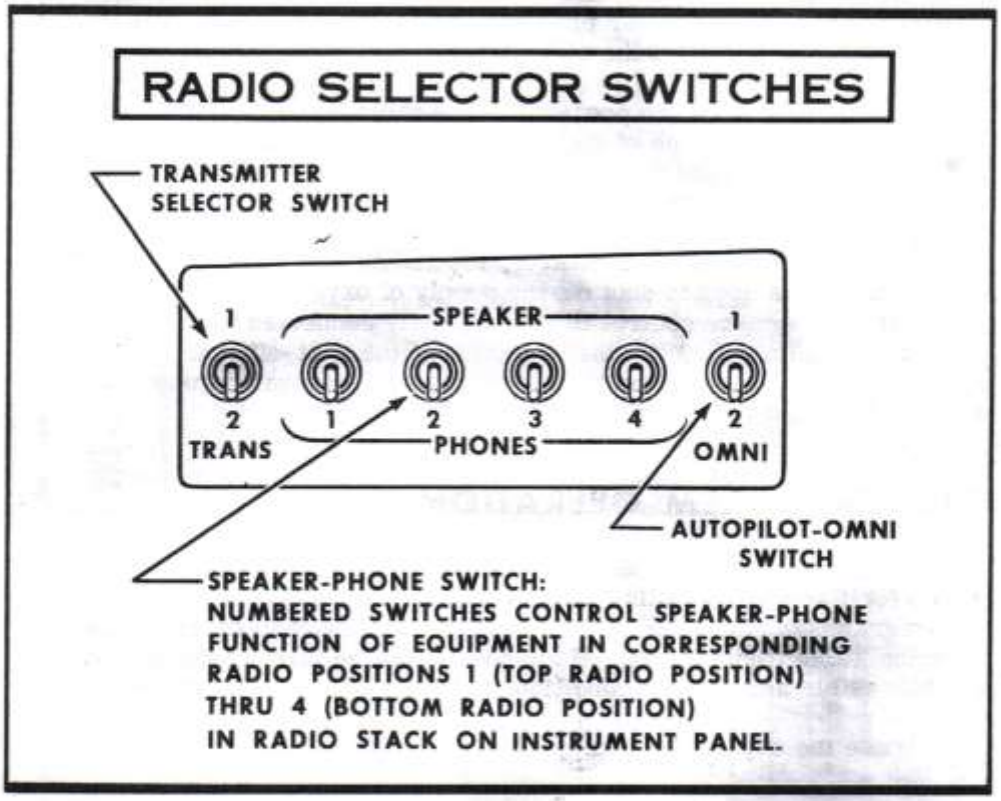


Figure 7-2.

OXYGEN SYSTEM

An oxygen cylinder, located behind the rear baggage compartment wall, supplies oxygen for the system. Cylinder pressure is reduced to an operating pressure of 70 psi by a pressure regulator attached to the cylinder. A shut-off valve is included as part of the regulator assembly. An oxygen cylinder filler valve is located on the left side of the utility shelf. Cylinder pressure is indicated by a pressure gage located on the wall behind the utility shelf.

Six oxygen outlets are provided in the cabin ceiling just above the side windows; one at each of the six-place seating positions. Six partial-rebreathing type oxygen masks, complete with vinyl plastic hoses and flow indicators, are provided.

A remote shut-off valve control, located adjacent to the pilot's oxygen outlet, is used to shut off the supply of oxygen to the system when not in use. The control is mechanically connected to the shut-off valve at the cylinder. With the exception of the shut-off function, the system is completely automatic and requires no manual regulation for change of altitude.

OXYGEN SYSTEM OPERATION.

Prior to flight, check to be sure that there is an adequate oxygen supply for the trip, by noting the oxygen pressure gage reading. Refer to paragraph OXYGEN DURATION CALCULATION, and to the Oxygen Duration Table (figure 7-3). Also, check that the face masks and hoses are accessible and in good condition.

To use the oxygen system, proceed as follows:

NOTE

Permit no smoking when using oxygen.

(1) Pull oxygen supply control knob "ON."
(2) Select mask and hose.

NOTE

In a standard oxygen installation, the hose assembly provided for the pilot is of a higher flow rate than those

OXYGEN DURATION (HOURS)

GAGE PRESSURE	PILOT ONLY				PILOT PLUS ONE (1) PASSENGER			
	PRESSURE ALTITUDE				PRESSURE ALTITUDE			
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	14.6	13.0	10.2	8.4	8.0	7.2	5.7	4.7
1600	12.9	11.4	9.0	7.4	7.1	6.3	5.0	4.1
1400	11.2	9.9	7.8	6.4	6.2	5.5	4.3	3.6
1200	9.4	8.4	6.6	5.4	5.2	4.6	3.7	3.0
1000	7.7	6.9	5.4	4.4	4.3	3.8	3.0	2.5
800	6.0	5.3	4.2	3.4	3.3	2.9	2.3	1.9
600	4.3	3.8	3.0	2.4	2.4	2.1	1.7	1.3
400	2.6	2.3	1.8	1.4	1.4	1.2	1.0	.8
200	.9	.7	.6	.4	.4	.4	.3	.2

GAGE PRESSURE	PILOT PLUS TWO (2) PASSENGERS				PILOT PLUS THREE (3) PASSENGERS			
	PRESSURE ALTITUDE				PRESSURE ALTITUDE			
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	5.6	5.0	3.9	3.2	4.2	3.8	3.0	2.5
1600	4.9	4.4	3.5	2.8	3.7	3.3	2.6	2.2
1400	4.2	3.8	3.0	2.5	3.2	2.9	2.3	1.9
1200	3.6	3.2	2.6	2.1	2.7	2.5	1.9	1.6
1000	2.9	2.6	2.1	1.7	2.2	2.0	1.6	1.3
800	2.3	2.1	1.6	1.3	1.7	1.6	1.2	1.0
600	1.6	1.5	1.2	.9	1.2	1.1	.9	.7
400	1.0	.9	.7	.6	.7	.7	.5	.4

GAGE PRESSURE	PILOT PLUS FOUR (4) PASSENGERS				PILOT PLUS FIVE (5) PASSENGERS			
	PRESSURE ALTITUDE				PRESSURE ALTITUDE			
	8000	10,000	15,000	20,000	8000	10,000	15,000	20,000
1800	3.4	3.1	2.4	2.0	2.9	2.6	2.0	1.7
1600	3.0	2.7	2.2	1.7	2.5	2.3	1.8	1.5
1400	2.6	2.4	1.9	1.5	2.2	2.0	1.5	1.3
1200	2.2	2.0	1.6	1.3	1.8	1.7	1.3	1.1
1000	1.8	1.6	1.3	1.0	1.5	1.4	1.1	.9
800	1.4	1.3	1.0	.8	1.2	1.1	.8	.7
600	1.0	.9	.7	.6	.8	.7	.6	.5

NOTES:
1. All figures based on pilot with orange color - coded oxygen line fitting and passengers with green color - coded line fittings.
2. Duration figures are averages --- actual duration will depend upon accuracy of setting altitude and ambient temperature.
3. Duration times are based on pressure altitude.

Figure 7-3.

for the passengers. The pilot's hose assembly is color-coded with an orange band adjacent to the plug-in fitting. The hoses provided for the passengers are color-coded with a green band. If the aircraft owner prefers to do so, he may provide the higher flow rate hoses for all passengers; these hoses would also be color-coded with an orange band. In any case, it is recommended that the pilot use the larger capacity hose. All masks are identical.

(3) Attach mask to face and adjust metallic nose strap for snug mask fit.
(4) Select oxygen outlet located nearest to the seat you are occupying, and plug delivery hose into it. Oxygen will flow continuously at the proper rate of flow for any altitude without any manual adjustments.
(5) Check the flow indicator in the face mask hose. Oxygen is flowing if the indicator is being forced toward the mask.
(6) Unplug the delivery hose from the outlet coupling when discontinuing use of oxygen system. This automatically stops the flow of oxygen.

OXYGEN DURATION CALCULATION.

The Oxygen Duration Table (figure 7-3) should be used in determining the usable duration (in hours) of the oxygen supply in your airplane. The following procedure outlines the method of finding the duration from the table.

(1) Note the available oxygen pressure shown on the pressure gage.
(2) Find this figure in the "GAGE PRESSURE" column adjacent to the block of figures applicable to the number of occupants in the airplane.
(3) Locate the pressure altitude at which you intend to fly; then, read down this column until you intersect the number in line with the gage pressure reading. The resulting number is the usable duration (in hours) of the existing oxygen supply.
(4) As an example of the above procedure, 1400 psi of pressure will safely sustain the pilot only for 9.9 hours at a 10,000 foot pressure altitude. The same pressure will sustain the pilot and three (3) passengers for 2.9 hours at 10,000 feet.

NOTE

Oxygen Duration Table figures are based on a standard

configuration oxygen system having one orange color-coded hose assembly for the pilot and green color-coded hoses for the passengers. If orange color-coded hoses are provided for the passengers in your airplane, it will be necessary to compute new duration figures due to the greater consumption of oxygen with these hoses.

OXYGEN SYSTEM SERVICING.

The oxygen cylinder, when fully charged, contains 48 cubic feet of oxygen, under a pressure of 1800 psi at 70° F. Refer to servicing procedures, page 5-6, for oxygen system servicing requirements.

IMPORTANT

Oil, grease, or other lubricants in contact with oxygen create a serious fire hazard, and such contact must be avoided.

CESSNA ECONOMY MIXTURE INDICATOR

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

Operation at peak EGT is not authorized, except to establish peak EGT for reference. A richer mixture which provides a drop of approximately 40° F from peak EGT is recommended for normal cruise at less than 75% power. Leaning in this manner will provide fuel consumption very close to the Cessna Flight Computer and Owner's Manual values and will result in a decrease of only 1 to 2 MPH in airspeed from that obtainable with the same power setting and best power mixture.

OPERATING INSTRUCTIONS.

(1) In take-off and full power climb, lean mixture as indicated by altitude markings on the fuel flow placard adjacent to the fuel flow indicator.

NOTE

Leaning in accordance with altitude markings on the fuel flow placard will provide sufficiently rich mixture for engine cooling. Leaner mixtures are not recommended for climb power settings in excess of 75%.

(2) In level flight (or cruising climb at less than 75% power), lean the mixture to peak EGT, then enrichen almost two small divisions (-40° F) below peak EGT.

NOTE

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

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

SERVICING REQUIREMENTS

CENTURION

FUEL:

AVIATION GRADE -- 100/130 MINIMUM GRADE
CAPACITY EACH STANDARD TANK -- 32.5 GALLONS
CAPACITY EACH LONG RANGE TANK -- 42.0 GALLONS

ENGINE OIL:

AVIATION GRADE -- SAE 30 BELOW 40° F.
SAE 50 ABOVE 40° F.
(DETERGENT OIL, CONFORMING TO CONTINENTAL MOTORS SPECIFICATION MHS-24, MUST BE USED.)
CAPACITY OF ENGINE SUMP -- 12 QUARTS
(DO NOT OPERATE ON LESS THAN 9 QUARTS. TO MINIMIZE LOSS OF OIL THROUGH BREATHER, FILL TO 10 QUART LEVEL FOR NORMAL FLIGHTS OF LESS THAN 3 HOURS. FOR EXTENDED FLIGHT, FILL TO 12 QUARTS. IF OPTIONAL OIL FILTER IS INSTALLED, ONE ADDITIONAL QUART IS REQUIRED WHEN THE FILTER ELEMENT IS CHANGED.)

HYDRAULIC FLUID:

MIL-H-5606 HYDRAULIC FLUID

OXYGEN:

AVIATOR'S BREATHING OXYGEN --
SPECIFICATION NO. MIL-O-27210
MAXIMUM PRESSURE -- 1800 PSI

TIRE PRESSURE:

MAIN WHEELS -- 42 PSI ON 6.00 × 6 TIRES
NOSE WHEEL -- 45 PSI ON 5.00 × 5 TIRE

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