Cessna

CUSTOMER CARE

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CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS

1975

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MORE PEOPLE BUY AND FLY CESSNA AIRPLANES THAN ANY OTHER MAKE

1975

WORLD'S LARGEST PRODUCER OF GENERAL AVIATION AIRCRAFT SINCE 1956

Dyall

Stationair

OWNER'S MANUAL

PERFORMANCE - SPECIFICATIONS

	*Stationair
GROSS WEIGHT	3600 lbs
SPEED, BEST POWER MIXTURE:	
Top Speed at Sea Level	180 mph
Cruise, 75% Power at 6500 ft	170 mph
RANGE, EXTENDED RANGE MIXTURE:	
Cruise, 75% Power at 6500 ft	675 mi
63 Gallons, No Reserve	4.0 hrs
	169 mph
Cruise, 75% Power at 6500 ft	860 mi
80 Gallons, No Reserve	5.1 hrs
	169 mph
Maximum Range at 10,000 ft	875 mi
63 Gallons, No Reserve	7.0 hrs
	125 mph
Maximum Range at 10,000 ft	1110 mi
80 Gallons, No Reserve	8.9 hrs
	125 mph
RATE OF CLIMB AT SEA LEVEL	920 fpm
SERVICE CEILING	14,800 ft
TAKE-OFF:	
Ground Run	900 ft
Total Distance Over 50-foot Obstacle	1780 ft
LANDING:	
Ground Roll	735 ft
Total Distance Over 50-foot Obstacle	1395 ft
STALL SPEED:	
Flaps Up, Power Off	70 mph
Flaps Down, Power Off	61 mph
EMPTY WEIGHT: (Approximate)	
Standard (Six Seats)	1870 lbs
Utility Option (One Seat)	1755 lbs
USEFUL LOAD: (Approximate)	
Standard (Six Seats)	1730 lbs
Utility Option (One Seat)	1845 lbs
WING LOADING: Pounds/Sq Foot	20.7
POWER LOADING: Pounds/HP	12.0
FUEL CAPACITY: Total	
Standard Tanks	65 gal.
Optional Long Range Tanks	84 gal.
OIL CAPACITY: Total	12 qts
PROPELLER: 3-Bladed Constant Speed, Diameter	80 inches
ENGINE:	
Continental Fuel Injection Engine	IO-520-F
300 rated BHP at 2850 RPM (5-Minute Take-Off Rating)	
285 rated BHP at 2700 RPM (Maximum Continuous Rating)	
NOTE: Performance data is shown for a standard aircraft equipped with speed fairings, which increase the speed by 3 to 4 mph.	

***This manual covers operation of the Stationair which is certificated as Model U206F under FAA Type Certificate No. A4CE.**

D1044-13—RAND—200—7/76

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 Stationair. It contains information about your Cessna's equipment, operating procedures, and performance; and suggestions for its servicing and care. We urge you to read it from cover to cover, and to refer to it frequently.

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

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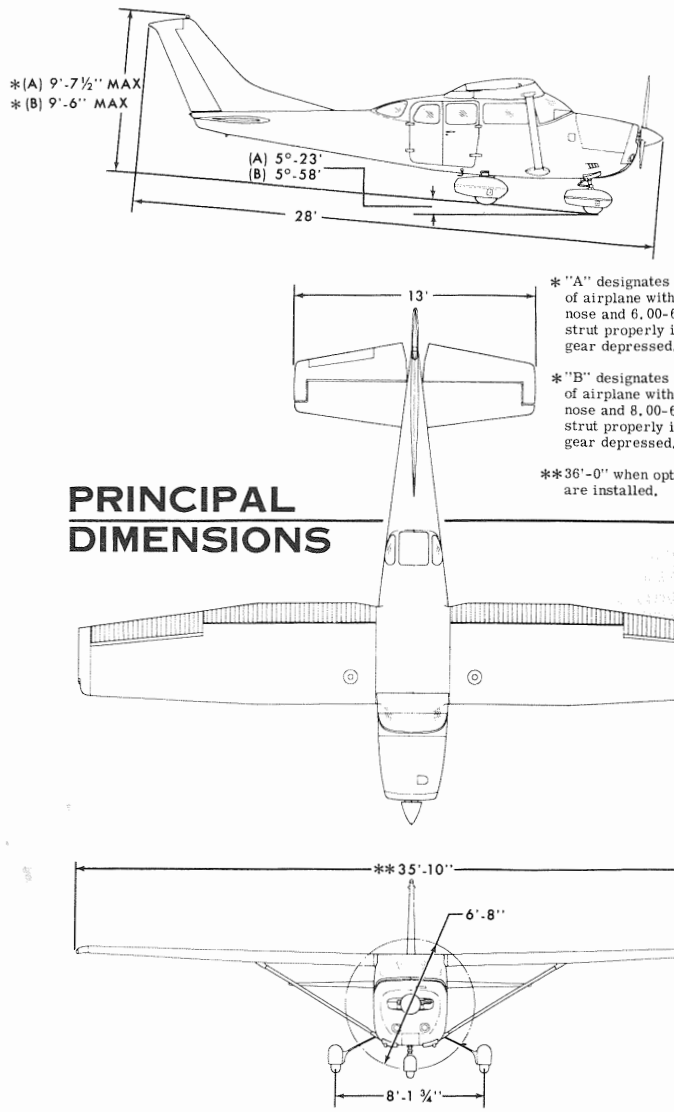
PRINCIPAL DIMENSIONS



* "A" designates maximum height of airplane with all tires (5.00-5 nose and 6.00-6 main) and nose strut properly inflated, and nose gear depressed.

* "B" designates maximum height of airplane with all tires (6.00-6 nose and 8.00-6 main) and nose strut properly inflated, and nose gear depressed.

** 36'-0" when optional strobe lights are installed.

TABLE OF CONTENTS

This manual describes the operation and performance of the Stationair and Stationair II. Equipment described as "Optional" denotes that the subject equipment is optional on the Stationair. Much of this equipment is standard on the Stationair II.

REVISED FUEL QUANTITY DATA

STATIONAIR
TURBO STATIONAIR

1973 AIRCRAFT (SERIAL U20602127 AND ON)
1974 AIRCRAFT (ALL SERIALS)
1975 AIRCRAFT (ALL SERIALS)

Due to changes in fuel tank manufacturing technique, the fuel systems in the above noted airplanes have been found to contain less than the capacity published in the Owner's Manuals for landplanes and Owner's Manual Supplements for floatplanes and skiplanes. Data in these manuals indicates total usable capacities of 63 gallons for standard tanks and 80 gallons for long range tanks; the usable capacity per tank is shown to be 31.5 gallons and 40 gallons respectively.

All fuel capacity references in Owner's Manuals and Supplements for these airplanes should be marked to reflect the capacities in the chart below.

	TOTAL BOTH TANKS	USABLE BOTH TANKS	TOTAL PER TANK	USABLE PER TANK
CAPACITY (STANDARD TANKS)	61 Gal.	59 Gal.	30.5 Gal.	29.5 Gal.
CAPACITY (LONG RANGE TANKS)	80 Gal.	76 Gal.	40 Gal.	38 Gal.

When figuring weight and balance data, consideration should be given to the reduction in weight and change in moment/1000 which results from a reduced fuel capacity.

For quick re-computation of cruise performance data, use the information in the Cruise Performance charts provided in Owner's Manuals and Supplements by multiplying the ENDR. HOURS and RANGE MILES figures by 0.93 (for standard tank values) or 0.95 (for long range tank values); this will provide conservative endurance and range based on the reduced fuel capacities.

Pages in the Owner's Manuals or Supplements which are affected by the change in fuel capacity are listed in the chart below.

MANUAL	PAGES AFFECTED														
1973 STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-16	4-6	4-8	5-8	6-4	6-5	6-6	6-7	6-8	7-1	Inside Cover	–
1973 TURBO STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-25	4-6	4-8	5-8	6-5	6-6	6-7	6-8	6-9	6-10	7-1	Inside Cover
1973 STATIONAIR & TURBO FLOAT, SKI SUPPL	Inside Cover	i	1-10	1-11	1-13	1-16 thru 1-19	2-4	2-7	2-8	3-10	3-11	3-13	3-17 thru 3-22	4-7	4-8
1974 STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-3	2-15	2-16	4-6	4-8	6-4	6-5	6-6	6-7	6-8	Inside Cover	–
1974 TURBO STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-3	2-25	4-6	4-8	6-5	6-6	6-7	6-8	6-9	6-10	Inside Cover	–
1974 STATIONAIR & TURBO FLOAT, SKI SUPPL	Inside Cover	i	1-10	1-11	1-13	1-16	1-17	1-18	1-19	2-4	2-7	2-8	3-7	3-8	–
1975 STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-3	4-6	4-8	6-4	6-5	6-6	6-7	6-8	Inside Cover	–	–	–
1975 TURBO STATIONAIR OWNER'S MANUAL	Inside Cover	2-1	2-2	2-3	4-6	4-8	6-5	6-6	6-7	6-8	6-9	6-10	Inside Cover	–	–
1975 STATIONAIR & TURBO FLOAT, SKI SUPPL	Inside Cover	i	1-10	1-11	1-13	1-16	1-17	1-18	1-19	2-7	2-8	3-7	3-8	–	–

THIS ADHESIVE BACKED STICKER IS TO BE ATTACHED TO ANY BLANK PAGE IN YOUR MANUAL FOR FUTURE REFERENCE.

REFERENCE SERVICE LETTER SE 75 – 7

Section I

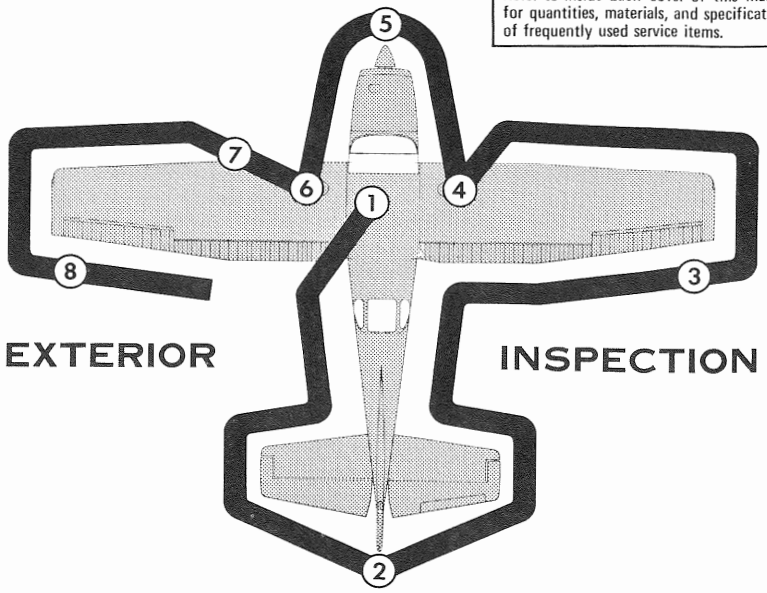
OPERATING CHECKLIST

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

Section I lists, in Pilot's Checklist form, the steps necessary to operate your aircraft efficiently and safely. It is not a checklist in its true form as it is considerably longer, but it does cover briefly all of the points that you should know for a typical flight. A more convenient plastic enclosed checklist, stowed in the map compartment, is available for quickly checking that all important procedures have been performed. Since vigilance for other traffic is so important in crowded terminal areas, it is important that preoccupation with checklists be avoided in flight. Procedures should be carefully memorized and performed from memory. Then the checklist should be quickly scanned to ensure that nothing has been missed.

The flight and operational characteristics of your aircraft 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, II and III are indicated airspeeds. Corresponding calibrated airspeeds may be obtained from the Airspeed Correction Table in Section VI.

Refer to inside back cover of this manual for quantities, materials, and specifications of frequently used service items.



EXTERIOR INSPECTION

Note

Visually check aircraft for general condition during walk-around inspection. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. If a night flight is planned, check operation of all lights, and make sure a flashlight is available.

(1) a. Remove control wheel lock.
b. Check ignition switch OFF.
c. Turn on master switch and check fuel quantity indicators; then turn off master switch.
d. Check that fuel selector valve handle is on fuller tank.

(2) a. Remove rudder gust lock, if installed.
b. Disconnect tail tie-down.
c. Check control surfaces for freedom of movement and security.
d. Check cargo doors securely latched and locked (right side only). If cargo load will not permit access to the front cargo door inside handle, lock the door from the outside by means of the T-handle stored in the map compartment.

Figure 1-1.

IMPORTANT

The cargo doors must be fully closed and latched before operating the electric wing flaps. A switch in the upper door sill of the front cargo door interrupts the wing flap electrical circuit when the front door is opened or removed, thus preventing the flaps being lowered with possible damage to the cargo door or wing flaps when the cargo door is open. If operating with the cargo doors removed and the optional spoiler kit installed, check that the wing flap interrupt switch cover plate is installed so that the wing flaps can be lowered in flight.

(3) a. Check aileron for freedom of movement and security.

(4) a. Disconnect wing tie-down.
b. Check fuel tank vent opening for stoppage.
c. Check main wheel tire for proper inflation.
d. Before first flight of day and after each refueling, use sampler cup and drain small quantity of fuel from fuel tank quick-drain valve to check for water, sediment, and proper fuel grade.
e. Visually check fuel quantity; then check fuel filler cap secure and vent unobstructed.

(5) a. Inspect flight instrument static source opening on side of fuselage for stoppage (both sides).
b. Check propeller and spinner for nicks and security, and propeller for oil leaks.
c. Check nose wheel strut and tire for proper inflation.
d. Disconnect nose tie-down.
e. Check oil level. Do not operate with less than nine quarts. Fill to twelve quarts for extended flight.
f. Before first flight of the day and after each refueling, pull out strainer drain knob for about four seconds to clear fuel strainer of possible water and sediment. Check strainer drain closed. If water is observed, the fuel system may contain additional water, and further draining of the system at the strainer, fuel tank sumps and reservoirs will be necessary.

(6) a. Check main wheel tire for proper inflation.
b. Visually check fuel quantity; then check fuel filler cap secure and vent unobstructed.
c. Before first flight of day and after each refueling, use sampler cup and drain small quantity of fuel from fuel tank quick-drain valve to check for water, sediment and proper fuel grade.

(7) a. Remove pitot tube cover, if installed, and check pitot tube opening for stoppage.
b. Disconnect wing tie-down.
c. Check fuel tank vent opening for stoppage.

(8) a. Check aileron for freedom of movement and security.

BEFORE STARTING ENGINE.

(1) Exterior Preflight -- COMPLETE.
(2) Seats, Belts, Shoulder Harnesses -- ADJUST and LOCK.
(3) Brakes -- TEST and SET.
(4) Cowl Flaps -- OPEN (move lever out of locking hole to reposition).
(5) Radios and Electrical Equipment -- OFF.
(6) Master Switch -- ON.
(7) Fuel Selector Valve -- FULLER TANK.

STARTING ENGINE.

(1) Mixture -- RICH.
(2) Propeller -- HIGH RPM.
(3) Throttle -- CLOSED.
(4) Auxiliary Fuel Pump -- ON.
(5) Throttle -- ADVANCE to obtain 8-10 gal/hr fuel flow, then return to CLOSED position.
(6) Auxiliary Fuel Pump -- OFF.
(7) Propeller Area -- CLEAR.
(8) Ignition Switch -- START.
(9) Throttle -- ADVANCE slowly.
(10) Ignition Switch -- RELEASE when engine starts.

NOTE

The engine should start in two or three revolutions. If it does not continue running, start again at step (3) above. If the engine does not start, leave auxiliary fuel pump switch off, set mixture to idle cut-off, open throttle, and crank until engine fires (or for approximately 15 seconds). If still unsuccessful, start again using the normal starting procedure after allowing the starter motor to cool.

(11) Throttle -- IDLE.
(12) Oil Pressure -- CHECK.

BEFORE TAKE-OFF.

(1) Parking Brake -- SET.

(2) Cowl Flaps -- OPEN.
(3) Flight Controls -- FREE and CORRECT.
(4) Elevator and Rudder Trim -- TAKE-OFF setting.
(5) Mixture -- RICH (below 3000 ft.).
(6) Throttle -- 1700 RPM.
a. Magnetos -- CHECK (RPM drop should not exceed 150 RPM on either magneto or 50 RPM differential between magnetos).
b. Propeller -- CYCLE from high to low RPM; return to high RPM, FULL FORWARD.
c. Engine Instruments and Ammeter -- CHECK.
d. Suction Gage -- CHECK (4.6 to 5.4 In.Hg).
(7) Flight Instruments and Radios -- SET.
(8) Optional Autopilot -- OFF.
(9) Cabin Doors and Window -- CLOSED and LOCKED.
(10) Throttle Friction Lock -- ADJUST.
(11) Wing Flaps -- 0°- 20°.

TAKE-OFF.

NORMAL TAKE-OFF.

(1) Wing Flaps -- 0°- 20°.
(2) Power -- FULL THROTTLE and 2850 RPM.
(3) Mixture -- LEAN for field elevation per fuel flow indicator placard.
(4) Elevator Control -- LIFT NOSE WHEEL at 60 MPH.
(5) Climb Speed -- 90-100 MPH.
(6) Wing Flaps -- RETRACT after obstacles are cleared.

MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps -- 20°.
(2) Brakes -- APPLY.
(3) Power -- FULL THROTTLE and 2850 RPM.
(4) Mixture -- LEAN for field elevation per fuel flow indicator placard.
(5) Brakes -- RELEASE.
(6) Elevator Control -- SLIGHTLY TAIL-LOW ATTITUDE.
(7) Climb Speed -- 78 MPH until all obstacles are cleared.
(8) Wing Flaps -- RETRACT after obstacles are cleared and 90 MPH is reached.

NOTE

Do not reduce power until wing flaps have been retracted.

ENROUTE CLIMB.

NORMAL CLIMB.

(1) Airspeed -- 110-120 MPH.
(2) Power -- 25 INCHES Hg. and 2550 RPM.
(3) Mixture -- LEAN to 18.0 gal./hr fuel flow.
(4) Cowl Flaps -- OPEN as required.

MAXIMUM PERFORMANCE CLIMB.

(1) Airspeed -- 100 MPH at sea level to 93 MPH at 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.

CRUISE.

(1) Power -- 15-25 INCHES Hg, 2200-2550 RPM (no more than 75%).
(2) Mixture -- LEAN for cruise fuel flow as determined from your Cessna Power Computer, or in accordance with the Cruise procedures in Section II.
(3) Elevator and Rudder Trim -- ADJUST.
(4) Cowl Flaps -- AS REQUIRED.

LET-DOWN.

(1) Power -- AS DESIRED.
(2) Mixture -- LEAN for smoothness in power descents. Use full rich mixture for idle power.
(3) Cowl Flaps -- CLOSED.

BEFORE LANDING.

(1) Fuel Selector Valve -- FULLER TANK.

(2) Mixture -- RICH (below 3000 ft.).
(3) Propeller -- HIGH RPM.
(4) Wing Flaps -- DOWN 0°-10° (below 160 MPH), 10°- 40° (below 120 MPH).
(5) Airspeed -- 85-95 MPH (flaps UP), 75-85 MPH (flaps DOWN).
(6) Elevator Trim -- ADJUST for landing.
(7) Optional Autopilot -- OFF.

BALKED LANDING.

(1) Power -- FULL THROTTLE and 2850 RPM.
(2) Wing Flaps -- RETRACT to 20°.
(3) Airspeed -- 90 MPH.
(4) Wing Flaps -- RETRACT slowly.
(5) Cowl Flaps -- OPEN.

NORMAL LANDING.

(1) Touchdown -- MAIN WHEELS FIRST.
(2) Landing Roll -- LOWER NOSE WHEEL GENTLY.
(3) Braking -- MINIMUM REQUIRED.

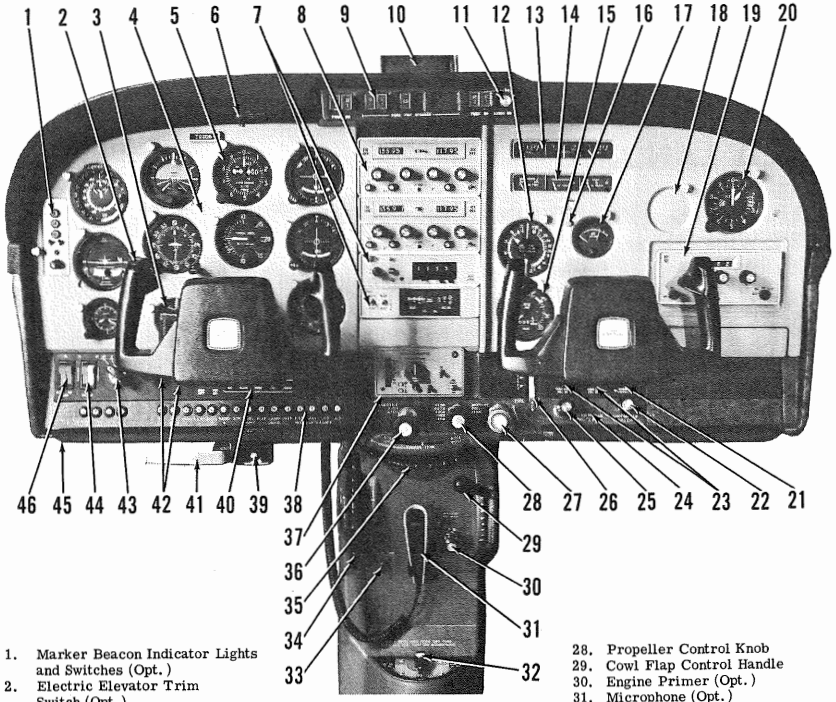
AFTER LANDING.

(1) Cowl Flaps -- OPEN.
(2) Wing Flaps -- RETRACT.

SECURING AIRCRAFT.

(1) Parking Brake -- SET.
(2) Radios and Electrical Equipment -- OFF.
(3) Mixture -- IDLE CUT-OFF (pulled full out).
(4) Ignition Switch -- OFF.
(5) Master Switch -- OFF.
(6) Control Lock -- INSTALL.

INSTRUMENT PANEL



1. Marker Beacon Indicator Lights and Switches (Opt.)
2. Electric Elevator Trim Switch (Opt.)
3. Electric Elevator Trim Disengage Switch (Opt.)
4. Flight Instrument Group
5. Encoding Altimeter (Opt.)
6. Map Light Switch and Light
7. Transponder and DME (Opt.)
8. Radios (Opt.)
9. Radio Selector Switches (Opt.)
10. Rear View Mirror (Opt.)
11. Radio Selector Switch Dimming Rheostat (Opt.)
12. Manifold Pressure/Fuel Flow Indicator
13. Fuel Quantity Indicators and Ammeter
14. Cylinder Head Temperature, Oil Temperature, and Oil Pressure Gages
15. Tachometer
16. Over-Voltage Warning Light
17. Economy Mixture Indicator (Opt.)
18. Optional Instrument Space
19. Radio (Opt.)
20. Standby Altimeter
21. Defrost Control Knob
22. Auxiliary Cabin Air Control Knob
23. Cabin Heat and Cabin Air Control Knobs
24. Stowable Rudder Pedal Control Space (Opt.)
25. Cigar Lighter
26. Wing Flap Switch and Indicator
27. Mixture Control Knob
28. Propeller Control Knob
29. Cowl Flap Control Handle
30. Engine Primer (Opt.)
31. Microphone (Opt.)
32. Fuel Selector Valve Handle
33. Electric Elevator Trim Circuit Breaker (Opt.)
34. Elevator Trim Control Wheel
35. Rudder Trim Control Wheel
36. Throttle (With Friction Lock)
37. Autopilot Control Unit (Opt.)
38. Circuit Breakers
39. Alternate Static Source Valve (Opt.)
40. Electrical Switches
41. Parking Brake Handle
42. Radio and Instrument Panel Light Rheostats
43. Ignition Switch
44. Auxiliary Fuel Pump Switch
45. Phone and Auxiliary Mike Jack Location
46. Master Switch

Figure 2-1.

Section II

DESCRIPTION AND OPERATING DETAILS

The following paragraphs describe the systems and equipment whose function and operation is not obvious when sitting in the aircraft. This section also covers in somewhat greater detail some of the items listed in Checklist 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 31.5 gallons for standard 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 aircraft to remain in uncoordinated flight for periods in excess of one minute.

Fuel from each 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 by-pass in the electric auxiliary fuel pump (when it is not operating) and fuel strainer 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.

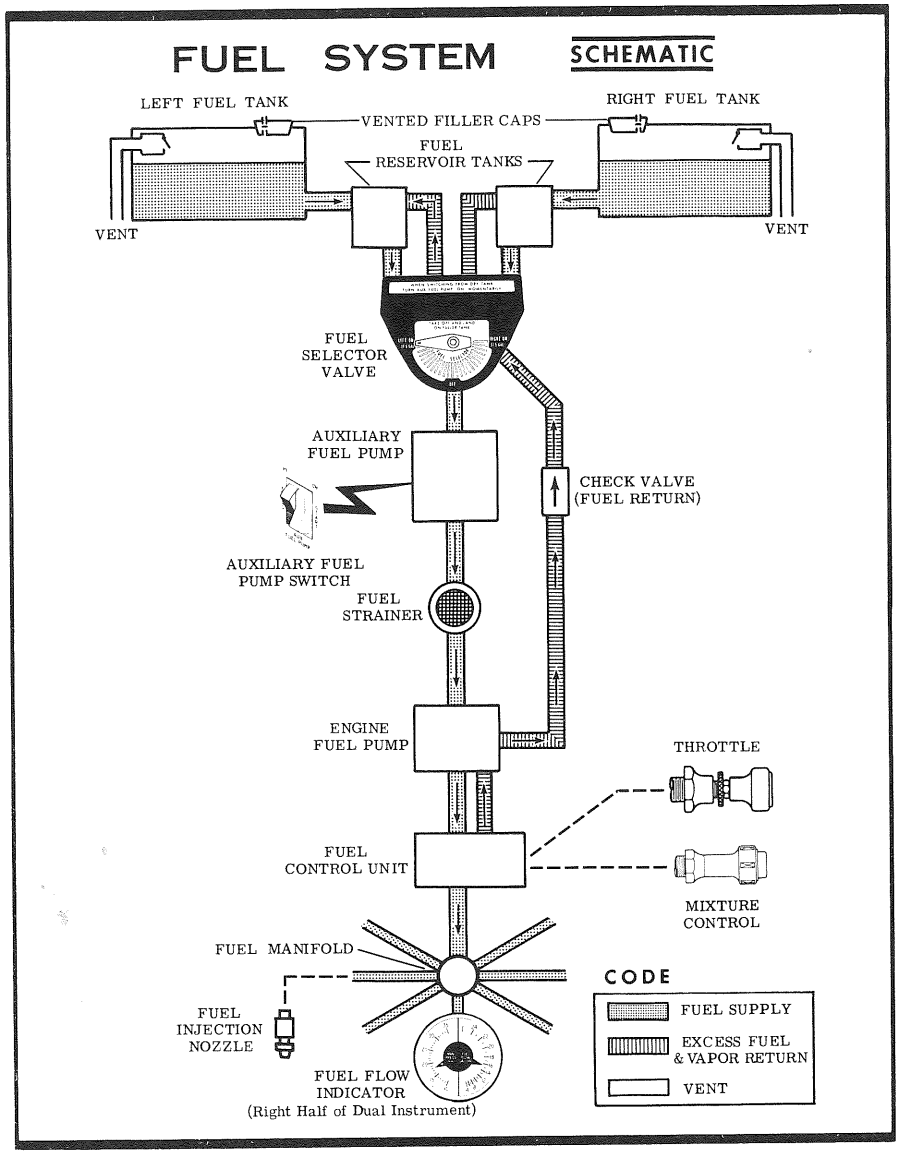


Figure 2-2.

FUEL TANK SUMP AND RESERVOIR QUICK-DRAIN VALVES.

Each fuel tank sump is equipped with a fuel quick-drain valve to facilitate draining and/or examination of fuel for contamination and grade. The valve extends through the lower surface of the wing just outboard of the cabin. A sampler cup stored in the aircraft is used to examine the fuel. Insert the probe in the sampler cup into the center of the quick-drain valve and push. Fuel will drain from the tank sump into the sampler cup until pressure on the valve is released.

The fuel reservoir tanks, located under the floorboards near the wing strut attach points are also equipped with quick-drain valves. The valves are located under plug buttons in the aircraft belly skin and are used to facilitate purging of the fuel system in the event water is discovered during the preflight fuel system inspection.

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.

AUXILIARY FUEL PUMP SWITCH.

The auxiliary fuel pump switch is located on the left side of the instrument panel and is a yellow and red split-rocker type switch.

The yellow right half of the switch is labeled START, and its upper ON position is used for normal starting, minor vapor purging and continued engine operation in the event of an engine-driven fuel pump failure. With the right half of the switch in the ON position, the pump operates at one of two flow rates that are dependent upon the setting of the throttle. With the throttle open to a cruise setting, the pump operates at a high enough capacity to supply sufficient fuel flow to maintain flight with an inoperative engine-driven fuel pump. When the throttle is moved toward the closed position (as during letdown, landing, and taxiing), the fuel pump flow rate is automatically reduced, preventing an excessively rich mixture during these periods of reduced engine speed.

NOTE

If the engine-driven fuel pump is functioning and the auxiliary fuel pump switch is placed in the ON position, a fuel/air ratio considerably richer than best power is

produced unless the mixture is leaned. Therefore, this switch should be turned off during take-off.

NOTE

If the auxiliary fuel pump switch is accidentally placed in the ON position with the master switch on and the engine stopped, the intake manifolds will be flooded.

The red left half of the switch is labeled EMERG, and its upper HI position is used in the event of an engine-driven fuel pump failure during take-off or high power operation. The HI position may also be used for extreme vapor purging. Maximum fuel flow is produced when the left half of the switch is held in the spring-loaded HI position. In this position, an interlock within the switch automatically trips the right half of the switch to the ON position. When the spring-loaded left half of the switch is released, the right half will remain in the ON position until manually returned to the off position.

If it is desired to completely exhaust a fuel tank quantity in flight, the auxiliary fuel pump will be needed to assist in restarting the engine when fuel exhaustion occurs. Therefore, it is recommended that proper operation of the auxiliary fuel pump be verified prior to running a fuel tank dry by turning the auxiliary fuel pump ON momentarily and checking for a slight rise in fuel flow indication.

To ensure a prompt engine restart in flight after running a fuel tank dry, immediately switch to the tank containing fuel at the first indication of fuel pressure fluctuation and/or power loss. Then place the right half of the auxiliary fuel pump switch in the ON position momentarily (3 to 5 seconds) with the throttle at least 1/2 open. Excessive use of the ON position at high altitude and full rich mixture can cause flooding of the engine as indicated by a short (1 to 2 seconds) period of power followed by a loss of power. This can later be detected by a fuel flow indication accompanied by a lack of power. If flooding does occur, turn off the auxiliary fuel pump switch, and normal propeller windmilling should start the engine in 1 to 2 seconds.

If the propeller should stop (possible at very low airspeeds) before the tank containing fuel is selected, place the auxiliary fuel pump switch in the ON position and advance the throttle promptly until the fuel flow indicator registers approximately 1/2 way into the green arc for 1 to 2 seconds duration. Then retard the throttle, turn off the auxiliary fuel pump, and use the starter to turn the engine over until a start is obtained.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 14-volt, direct-current system powered by an engine-driven alternator (see figure 2-3). An optional 28-volt direct current system is also available and is discussed in Section VII, Optional Systems. The 14-volt system utilizes a 12-volt battery which is located on the upper left-hand forward portion of the firewall. Power is supplied to all electrical circuits through a split bus bar, one side containing electronic system circuits and the other side having general electrical circuits. Both sides of the bus are on at all times except when either an external power source is connected or the ignition switch is turned to the START position; then a power contactor is automatically activated to open the circuit to the electronics bus. Isolating the electronic circuits in this manner prevents harmful transient voltages from damaging the transistors in the electronics equipment.

MASTER SWITCH.

The master switch is a split-rocker type switch labeled MASTER, and is ON in the up position and off in the down position. The right half of the switch, labeled BAT, controls all electrical power to the aircraft. The left half, labeled ALT, controls the alternator.

Normally, both sides of the master switch should be used simultaneously; however, the BAT side of the switch could be turned ON separately to check equipment while on the ground. The ALT side of the switch, when placed in the off position, removes the alternator from the electrical system. With this switch in the off position, the entire electrical load is placed on the battery. Continued operation with the alternator switch off will reduce battery power low enough to open the battery contactor, remove power from the alternator field, and prevent alternator restart.

AMMETER.

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

OVER-VOLTAGE SENSOR AND WARNING LIGHT.

The aircraft is equipped with an automatic over-voltage protection

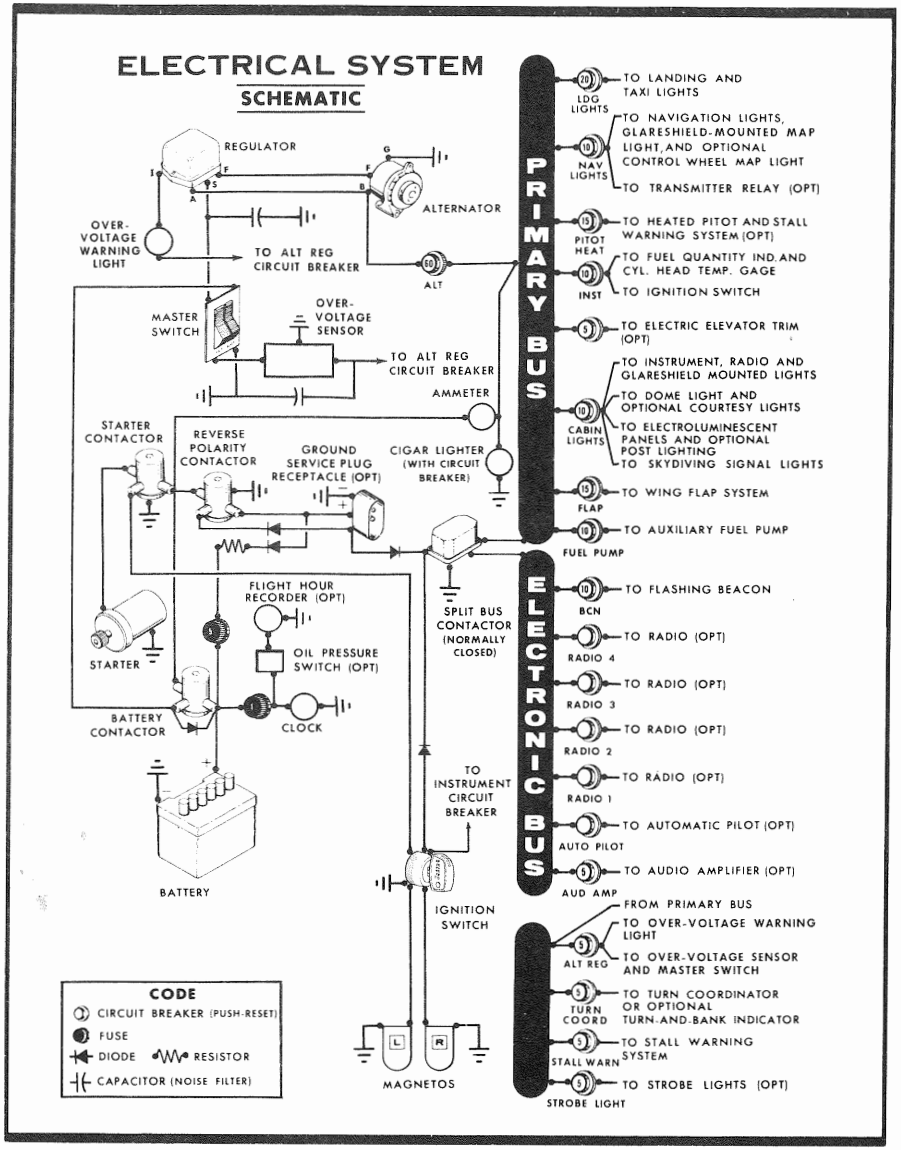


Figure 2-3.

system consisting of an over-voltage sensor behind the instrument panel and a red warning light, labeled HIGH VOLTAGE, below the engine instrument cluster.

In the event an over-voltage condition occurs, the over-voltage sensor automatically removes alternator field current and shuts down the alternator. The red warning light will then turn on, indicating to the pilot that the alternator is not operating and the aircraft battery is supplying all electrical power.

The over-voltage sensor may be reset by turning the master switch off and back on again. If the warning light does not illuminate, normal alternator charging has resumed; however, if the light does illuminate again, a malfunction has occurred, and the flight should be terminated as soon as practical.

The over-voltage warning light may be tested by momentarily turning off the ALT portion of the master switch and leaving the BAT portion turned on.

CIRCUIT BREAKERS AND FUSES.

Most of the electrical circuits in the aircraft are protected by "push-to-reset" circuit breakers mounted on the left side of the instrument panel. Exceptions to this are the battery contactor closing (external power) circuit which has a fuse mounted near the ground service plug receptacle, and the clock and optional flight hour recorder circuits which have a fuse mounted near the battery. Also the cigar lighter is protected by a manually-reset type circuit breaker mounted directly on the back of the lighter behind the instrument panel. The optional electric elevator trim system is protected by a circuit breaker mounted on the control pedestal near the elevator trim wheel.

When more than one radio is installed, the radio transmitter relay (which is a part of the radio installation) is protected by the navigation lights circuit breaker labeled NAV LIGHTS. It is important to remember that any malfunction in the navigation lights system which causes the circuit breaker to open will de-activate both the navigation lights and the transmitter relay. In this event, the navigation light switch should be turned off to isolate the circuit; then reset the circuit breaker to reactivate the transmitter relay and permit its usage. Do not turn on the navigation lights switch until the malfunction has been corrected.

LIGHTING EQUIPMENT.

EXTERIOR LIGHTING.

Standard exterior lighting consists of navigation lights on the wing tips and stinger, a flashing beacon on top of the vertical fin, and landing and taxi lights mounted in the nose cap. Optional lighting includes a strobe light on each wing tip and a courtesy light under each wing just outboard of the cabin. The courtesy lights are operated by a switch on the aft side of the rear door post. To turn on the courtesy lights, push up on the switch labeled UTILITY LIGHTS. All exterior lights, except the courtesy lights, are controlled by rocker type switches on the left switch and control panel. The switches are ON in the up position and turned off in the down position.

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

The two high intensity strobe lights will enhance anti-collision protection. However, the lights should be turned off when taxiing in the vicinity of other aircraft, or during night flight through clouds, fog or haze.

INTERIOR LIGHTING

Instrument and control panel lighting is provided by electroluminescent lighting, flood lighting, optional post lighting, and integral lighting. Two concentric rheostat control knobs, labeled LWR PANEL, ENG-RADIO and a rheostat control knob labeled INSTRUMENTS control the intensity of instrument and control panel lighting. A rocker-type switch labeled POST-FLOOD LIGHTS is used to select either standard flood lighting or optional post lighting. These controls are located on the left switch and control panel.

Switches and controls on the lower part of the instrument panel are lighted by electroluminescent panels which do not require light bulbs for illumination. To operate this lighting, turn on the NAV LIGHTS switch and adjust light intensity with the inner control knob labeled LWR PANEL.

Instrument panel flood lighting consists of four lights located in the glare shield above the instrument panel and two lights in the overhead console. To use flood lighting, place the POST-FLOOD LIGHTS selector

switch in the FLOOD LIGHTS position and adjust light intensity with the INSTRUMENTS control knob.

The instrument panel may be equipped with optional post lights which are mounted at the edge of each instrument or control and provide direct lighting. The lights are operated by placing the POST-FLOOD LIGHTS selector switch in the POST position and adjusting intensity with the INSTRUMENTS control knob. Switching to post lights will automatically turn off flood lighting.

The magnetic compass, engine instrument cluster, radios and radio selector switches have integral lighting and operate independently of post or flood lighting. Compass light intensity is controlled by the INSTRUMENTS control knob. Integral lighting in the engine instrument cluster and radios is controlled by the ENG-RADIO control knob. For information concerning radio selector switch lighting, refer to Section VII.

The control pedestal and optional overhead oxygen console are lighted separately by post lights. This lighting is controlled by the ENG-RADIO control knob.

Map lighting may be provided by three different sources: standard overhead console map lights, a standard glare shield mounted map light, and an optional control wheel map light. The console map lights operate in conjunction with instrument panel flood lighting and consist of two additional openings just aft of the overhead flood light openings. These openings have sliding covers controlled by small round knobs. To use the map lights, slide the covers open by moving the two knobs toward each other. Close the covers when the map lights are no longer required. A map light, mounted in the lower surface of the glare shield, is used for illuminating approach plates or other charts when using a control wheel mounted approach plate holder. The map light switch, labeled MAP LIGHT, is located adjacent to the light. To use the light, turn on the MAP LIGHT switch and adjust intensity with the INSTRUMENTS control knob. The optional map light mounted on the bottom of the pilot's control wheel illuminates the lower portion of the cabin in front of the pilot, and is used when checking maps and other flight data during night operation. To operate the light, turn on the NAV LIGHT switch and adjust map light intensity with the rheostat control knob on the bottom of the control wheel on the right side.

The cabin interior is lighted by a dome light in the ceiling of the cabin. The light is operated by a rocker-type switch adjacent to the light lens.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM.

The temperature and volume of airflow into the cabin can be regulated 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 three ducts from the manifold, one extending down each side of the cabin to an outlet at the front door post area at floor level and one extending under the center of the cabin floor to an outlet in the cabin floor behind the pilot and copilot seats. This outlet is flush mounted and incorporates a removable diverting cover to direct airflow. 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.

SHOULDER HARNESSES.

Shoulder harnesses are standard equipment for the pilot and front seat passenger, and optional equipment for the center and aft passengers.

Each front seat harness is attached just aft of the forward side window and is stowed behind a stowage sheath mounted above the side window. To stow each front seat harness, fold the free end and place it behind the sheath. The optional center and aft seat shoulder harnesses are attached above the windows. Each harness is stowed behind a retaining clip.

To use the shoulder harnesses, fasten and adjust the seat belt first. Remove the harness from the stowed position, and lengthen as required by pulling on the end of the harness and the narrow release strap. Snap the harness metal stud firmly into the retaining slot adjacent to the seat belt buckle. Then adjust to length by pulling down on the free end of the harness. A properly adjusted harness will permit the occupant to lean forward enough to sit completely erect, but is tight enough to prevent ex-

cessive forward movement and contact with objects during sudden deceleration. Also, the pilot will want the freedom to reach all controls easily.

Releasing and removing the shoulder harness is accomplished by pulling upward on the narrow release strap, and removing the harness stud from the slot in the seat belt buckle. In an emergency, the shoulder harness may be removed by releasing the seat belt first, and then pulling the harness over the head by pulling up on the release strap.

INTEGRATED SEAT BELT/SHOULDER HARNESSES WITH INERTIA REELS.

Optional integrated seat belt/shoulder harnesses with inertia reels are available for the pilot and front seat passenger. The seat belt/shoulder harnesses extend from inertia reels in the cabin ceiling to attach points inboard of the two front seats. A separate seat belt half and buckle is located outboard of the seats. The inertia reels are located in the aft overhead console, and are labeled PILOT and COPILOT. Inertia reels allow complete freedom of body movement. However, in the event of a sudden deceleration, they will lock up automatically to protect the occupants.

To use the seat belt/shoulder harness, adjust the metal buckle half on the harness up far enough to allow it to be drawn across the lap of the occupant and be fastened into the outboard seat belt buckle. Adjust seat belt tension by pulling up on the shoulder harness. To remove the seat belt/shoulder harness, release the seat belt buckle and allow the inertia reel to draw the harness to the inboard side of the seat.

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 it is effective under nearly all operating 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, place the auxiliary fuel pump switch in the ON position and advance the throttle to obtain 8-10 gal/hr fuel flow. Then, close the throttle and turn off the auxiliary fuel pump. Place the ignition switch in the START position. 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. When the engine has started, reset the throttle to the desired idle speed.

When the engine is hot or outside air temperatures are high, the engine may die after running several seconds because the mixture became either too lean due to fuel vapor, or too rich due to excessive prime fuel. The following procedure will prevent over-priming and alleviate fuel vapor in the system:

(1) Set the throttle 1/3 to 1/2 open.
(2) When the ignition key is on BOTH and you are ready to engage the starter, place the right half of the auxiliary fuel pump switch ON until the indicated fuel flow comes up to 4 to 6 gal/hr; then turn the switch off.

NOTE

During a restart after a brief shutdown in extremely hot weather, the presence of fuel vapor may require the auxiliary fuel pump to operate in the ON position for up to 1 minute or more before the vapor is cleared sufficiently to obtain 4 to 6 gal/hr for starting. If the above procedure does not obtain sufficient fuel flow, fully depress and hold the left half of the switch in the HI position to obtain additional fuel pump capability.

(3) Without hesitation, engage the starter and the engine should start in 3 to 5 revolutions. Adjust throttle for 1200 to 1400 RPM.
(4) If there is fuel vapor in the lines, it will pass into the injector nozzles in 2 to 3 seconds and the engine will gradually slow down and stop. When engine speed starts to decrease, hold the left half of the auxiliary fuel pump switch in the HI position for approximately one second to clear out the vapor. Intermittent use of HI boost is necessary since prolonged use of the HI position after vapor is cleared will flood out the engine during a starting operation.
(5) Let the engine run at 1200 to 1400 RPM until the vapor is eliminated and the engine idles normally.

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

After starting, if the oil pressure gage does not begin to show pressure within 30 seconds in normal temperatures and 60 seconds in very cold weather, shut off the engine and investigate. Lack of oil pressure can cause serious engine damage.

TAXIING.

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 2-4 for additional taxiing instructions.

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 ignition switch first to R position and note RPM. Next move switch back to BOTH to clear the other set of plugs. Then move switch to the L position, note RPM and return the switch to the BOTH position. RPM drop should not exceed 150 RPM on either magneto or show greater than 50 RPM differential between magnetos. If there is a doubt concerning operation of the ignition system, RPM checks at higher engine speeds will usually confirm whether a deficiency exists.

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

Prior to flights where verification of proper alternator and voltage regulator operation is essential (such as night or instrument flights), a positive verification can be made by loading the electrical system momentarily (3 to 5 seconds) with the landing light during the engine runup (1700 RPM). The ammeter will remain within a needle width of zero if the alternator and voltage regulator are operating properly.

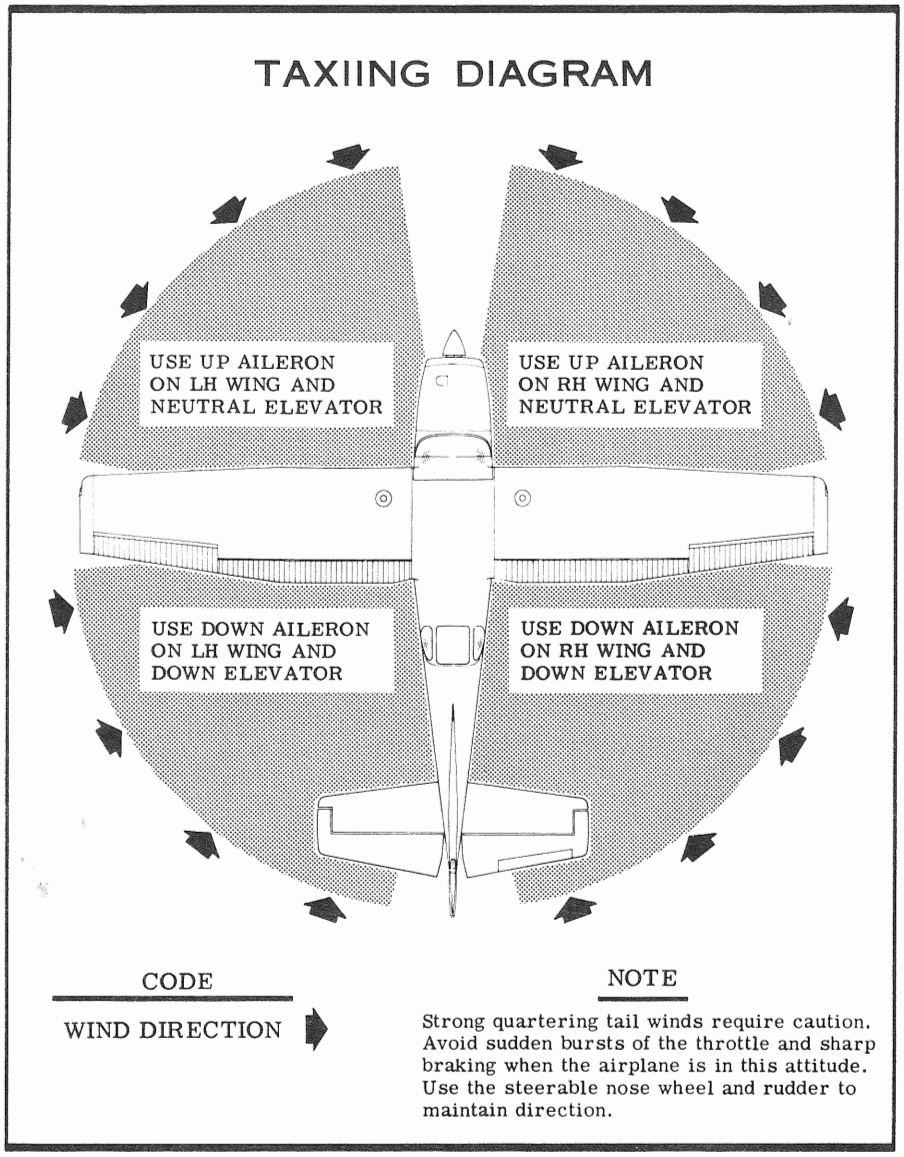


Figure 2-4.

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 aircraft to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it.

After full throttle is applied, adjust the throttle friction lock clockwise to prevent the throttle from creeping back from a maximum power position. Similar friction lock adjustments should be made as required in other flight conditions to maintain a fixed throttle setting.

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 nose wheel off the ground as soon as practical and leaving the ground in a slightly tail-low attitude. However, the aircraft should be leveled off immediately to accelerate to a safe climb speed.

If 20° wing flaps are used for take-off, they should be left down until all obstacles are cleared. To clear an obstacle with 20° flaps, a 78 MPH climb speed should be used. If no obstructions are ahead, a best flaps up rate-of-climb speed of 100 MPH would be most efficient. Flap deflections greater than 20° are not recommended at any time for take-off.

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 aircraft 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.

ENROUTE CLIMB.

A cruising climb at 25 inches of manifold pressure, 2550 RPM and 110 to 120 MPH is recommended to save time and fuel for the overall trip. In addition, this type of climb provides better engine cooling, less engine wear, and more passenger comfort due to lower noise level.

Cruising climbs should be conducted at approximately 18.0 gal/hr up to 5000 feet and at 1 gal/hr more than the 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 continuous power (full throttle and 2700 RPM). This speed is 100 MPH at sea level, decreasing approximately 1 MPH for each 1000 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 dictates the use of a steep climb angle, climb with flaps retracted and maximum continuous power at 85 MPH at sea level to 90 MPH at 10,000 feet.

CRUISE.

Normal cruising is performed between 55% and 75% power. The corresponding power settings and fuel consumption for various altitudes can be determined by using your Cessna Power Computer or the Operational Data in Section VI.

NOTE

Cruising should be done at 65% to 75% power until a total of 50 hours has accumulated or oil consumption has stabilized. This is to ensure proper seating of the rings and is applicable to new engines, and engines in service following cylinder replacement or top overhaul of one or more cylinders.

The Cruise Performance table on the following page illustrates the advantage of higher altitude on both true airspeed and miles per gallon. In addition, the beneficial effect of lower cruise power on miles per gallon at a given altitude can be observed. This table should be used as a guide,

CRUISE PERFORMANCE

	75% POWER		65% POWER		55% POWER	
ALTITUDE	TAS	MPG	TAS	MPG	TAS	MPG
3,000 Feet	163	10.4	154	11.3	143	12.2
6,500 Feet	169	10.7	159	11.7	147	12.5
10,000 Feet	---	----	163	12.0	150	12.8
Standard Conditions						Zero Wind

Figure 2-5.

along with the available winds aloft information, to determine the most favorable altitude and power setting for a given trip. The selection of cruise altitude on the basis of the most favorable wind conditions and the use of low power settings are significant factors that should be considered on every trip to reduce fuel consumption.

For reduced noise levels, it is desirable to select the lowest RPM in the green arc range for a given percent power that will provide smooth engine operation. The cowl flaps should be opened, if necessary, to maintain the cylinder head temperature at approximately two-thirds of the normal operating range (green arc).

Cruise performance data in this manual and on the power computer is based on an extended range mixture setting which is approximately one gallon per hour less than the best power mixture setting. This extended range mixture setting results in a one MPH speed loss and an average increase of 6% in range compared to a best power mixture setting.

For best fuel economy at 55% power or less, the engine may be operated at one gallon per hour leaner than shown in this manual and on the power computer. This will result in approximately 6% greater range than shown in the cruise tables of this manual accompanied by approximately 5 MPH decrease in speed.

The fuel injection system employed on this engine is considered to be

non-icing. In the event that unusual conditions cause the intake air filter to become clogged or iced over, an alternate intake air valve opens automatically for the most efficient use of either normal or alternate air, depending on the amount of filter blockage. Due to the lower intake pressure available through the alternate air valve or a partially blocked filter, full throttle manifold pressure can decrease approximately 1.5 in. Hg.

LEANING WITH A CESSNA ECONOMY MIXTURE INDICATOR (EGT).

Exhaust gas temperature (EGT) as shown on the optional Cessna Economy Mixture Indicator may be used as an aid for mixture leaning in cruising flight at 75% power or less. To adjust the mixture, using this indicator, lean to establish the peak EGT as a reference point and then enrichen the mixture by a desired increment based on the table below.

Continuous operation at peak EGT is authorized only at 55% power or less. This best economy mixture setting results in approximately 6% greater range than shown in the cruise tables of this manual accompanied by approximately 5 MPH decrease in speed.

NOTE

Operation on the lean side of peak EGT is not approved.

When leaning the mixture, if a distinct peak is not obtained, use the corresponding maximum EGT as a reference point for enrichening the mixture to the desired cruise setting. Any change in altitude or power will require a recheck of the EGT indication.

MIXTURE DESCRIPTION	EXHAUST GAS TEMPERATURE	RANGE INCREASE FROM BEST POWER
BEST POWER	Peak EGT Minus 75°F (Enrichen)	0%
EXTENDED RANGE (Owner's Manual and Computer Performance)	Peak EGT Minus 25°F (Enrichen)	6%
BEST ECONOMY (55% Power or Less)	Peak EGT	12%

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.

LANDINGS.

Landings should be 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 approach at 75 MPH with full flaps. After all approach obstacles are cleared, progressively reduce power. Maintain 75 MPH approach speed by lowering the nose of the aircraft. Touchdown should be made with the throttle closed, and on the 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 ensure 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.

BALKED LANDING.

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.

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.

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.

FLIGHT WITH CARGO DOORS REMOVED.

When operating with the cargo doors removed, an optional spoiler kit must be installed to minimize strong air flow buffeting within the cabin. In addition, all loose equipment, including head rests, rear window sun shade, removable arm rests, safety belts, etc., should be removed or secured. Fifth and sixth seat passengers will receive a strong air blast, and face protection in the form of goggles, hard hat, or helmet is recommended.

The electric wing flap circuit is interrupted by a push-button switch (mounted on the upper sill of the cargo door opening) when the front cargo door is open or removed. Therefore, to have the use of wing flaps when the cargo doors are removed, it is necessary to install a switch depressor plate over the door switch button. Two screws secure the plate in position, depressing the switch button. Without this plate, the wing flaps could not be used unless a rear passenger was available to manually depress the door switch button during flap operation.

With the cargo doors removed, flight characteristics are essentially unchanged, except that a slightly different directional trim setting may be needed.

NOISE ABATEMENT.

Increased emphasis on improving the quality of our environment requires renewed effort on the part of all pilots to minimize the effect of aircraft noise on the public.

We, as pilots, can demonstrate our concern for environmental improvement, by application of the following suggested procedures, and thereby tend to build public support for aviation:

(1) Pilots operating aircraft under VFR over outdoor assemblies of persons, recreational and park areas, and other noise-sensitive areas should make every effort to fly not less than 2,000 feet above the surface, weather permitting, even though flight at a lower level may be consistent with the provisions of government regulations.
(2) During departure from or approach to an airport, climb after take-off and descent for landing should be made so as to avoid prolonged flight at low altitude near noise-sensitive areas.

NOTE

The above recommended procedures do not apply where they would conflict with Air Traffic Control clearances or instructions, or where, in the pilot's judgment, an altitude of less than 2,000 feet is necessary for him to adequately exercise his duty to see and avoid other aircraft.

Section III

EMERGENCY PROCEDURES

Emergencies caused by aircraft or engine malfunctions are extremely rare if proper pre-flight inspections and maintenance are practiced. En-route weather emergencies can be minimized or eliminated by careful flight planning and good judgement when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

ENGINE FAILURE.

ENGINE FAILURE AFTER TAKE-OFF.

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after take-off. In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstructions. Altitude and airspeed are seldom sufficient to execute a 180° gliding turn necessary to return to the runway. The following procedures assume that adequate time exists to secure the fuel and ignition systems prior to touchdown.

(1) Airspeed -- 90 MPH.
(2) Mixture -- IDLE CUT-OFF.
(3) Fuel Selector Valve -- OFF.
(4) Ignition Switch -- OFF.
(5) Wing Flaps -- AS REQUIRED (40° recommended).
(6) Master Switch -- OFF.

ENGINE FAILURE DURING FLIGHT.

While gliding toward a suitable landing area, an effort should be made to identify the cause of the failure. If time permits, and an engine re-start is feasible, proceed as follows:

(1) Airspeed -- 85 MPH.

(2) Fuel Selector Valve and Quantity -- CHECK.
(3) Mixture -- RICH.
(4) Auxiliary Fuel Pump -- ON for 3 - 5 seconds with throttle 1/2 open; then OFF.
(5) Ignition Switch -- BOTH (or START if propeller is not windmilling).
(6) Throttle -- SLOWLY ADVANCE.

If the engine cannot be restarted, a forced landing without power must be executed. A recommended procedure for this is given in the following paragraph.

FORCED LANDINGS.

EMERGENCY LANDING WITHOUT ENGINE POWER.

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for the landing as follows:

(1) Airspeed -- 90 MPH (flaps UP).
80 MPH (flaps DOWN).
(2) Mixture -- IDLE CUT-OFF.
(3) Fuel Selector Valve -- OFF.
(4) Ignition Switch -- OFF.
(5) Wing Flaps -- AS REQUIRED (40° recommended).
(6) Master Switch -- OFF.
(7) Doors -- UNLATCH PRIOR TO TOUCHDOWN.
(8) Touchdown -- SLIGHTLY TAIL LOW.
(9) Brakes -- APPLY HEAVILY.

PRECAUTIONARY LANDING WITH ENGINE POWER.

Before attempting an "off airport" landing, one should drag the landing area at a safe but low altitude to inspect the terrain for obstructions and surface conditions, proceeding as follows:

(1) Perform the Before Landing checklist.
(2) Drag over selected field with flaps 20° and 90 MPH airspeed, noting the preferred area for touchdown for the next landing approach. Then retract flaps upon reaching a safe altitude and airspeed.
(3) Radio, Electrical Switches -- OFF (on downwind leg).
(4) Wing Flaps -- 40°.

(5) Airspeed -- 80 MPH.
(6) Master Switch -- OFF.
(7) Doors -- UNLATCH PRIOR TO TOUCHDOWN.
(8) Touchdown -- SLIGHTLY TAIL LOW.
(9) Ignition Switch -- OFF.
(10) Brakes -- APPLY HEAVILY.

DITCHING.

Prepare for ditching by securing or jettisoning heavy objects located in the baggage area, and collect folded coats or cushions for protection of occupant's face at touchdown. Transmit Mayday message on 121.5 MHz giving location and intentions.

(1) Plan approach into wind if winds are high and seas are heavy. With heavy swells and light wind, land parallel to swells.
(2) Approach with flaps 40° and sufficient power for a 300 ft/min rate of descent at 75 MPH.
(3) Unlatch the cabin and front cargo doors.
(4) Maintain a continuous descent until touchdown in level attitude. Avoid a landing flare because of difficulty in judging aircraft height over a water surface.
(5) Place a folded coat or cushion in front of face at time of touchdown.
(6) Evacuate aircraft through cabin and cargo doors. If necessary, open window to flood cabin compartment for equalizing pressure so that doors can be opened.
(7) Inflate life vests and raft (if available) after evacuation of cabin. The aircraft cannot be depended on for flotation for more than a few minutes.

FIRES.

ENGINE FIRE IN FLIGHT.

Although engine fires are extremely rare in flight, the following steps should be taken if one is encountered:

(1) Mixture -- IDLE CUT-OFF.
(2) Fuel Selector Valve -- OFF.
(3) Master Switch -- OFF.
(4) Cabin Heat and Air -- OFF (except overhead vents).

(5) Airspeed -- 120 MPH. If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture.

Execute a forced landing as outlined in preceding paragraphs.

ELECTRICAL FIRE IN FLIGHT.

The initial indication of an electrical fire is usually the odor of burning insulation. The following procedure should then be used:

(1) Master Switch -- OFF.
(2) All Other Switches (except ignition switch) -- OFF.
(3) Vents/Cabin Air/Heat -- CLOSED.
(4) Fire Extinguisher -- ACTIVATE (if available).

NOTE

If an oxygen system is available and breathing is difficult, occupants should use oxygen masks until smoke and discharged dry powder clears.

If fire appears out and electrical power is necessary for continuance of flight:

(5) Master Switch -- ON.
(6) Circuit Breakers -- CHECK for faulty circuit; do not reset.
(7) Electrical/Radio Switches -- ON one at a time, with delay after each until short circuit is localized.
(8) Vents/Cabin Air/Heat -- OPEN when it is ascertained that fire is completely extinguished.

DISORIENTATION IN CLOUDS.

In the event of a vacuum system failure during flight in marginal weather, the directional gyro and gyro horizon will be disabled, and the pilot will have to rely on the turn coordinator or the turn and bank indicator if he inadvertently flies into clouds. The following instructions assume that only the electrically-powered turn coordinator or the turn and bank indicator is operative, and that the pilot is not completely proficient in partial panel instrument flying.

EXECUTING A 180° TURN IN CLOUDS.

Upon entering the clouds, an immediate plan should be made to turn back as follows:

(1) Note the time of the minute hand and observe the position of the sweep second hand on the clock.
(2) When the sweep second hand indicates the nearest half-minute, initiate a standard rate left turn, holding the turn coordinator symbolic aircraft wing opposite the lower left index mark for 60 seconds. Then roll back to level flight by leveling the miniature aircraft.
(3) Check accuracy of the turn by observing the compass heading which should be the reciprocal of the original heading.
(4) If necessary, adjust heading primarily with skidding motions rather than rolling motions so that the compass will read more accurately.
(5) Maintain altitude and airspeed by cautious application of elevator control. Avoid overcontrolling by keeping the hands off the control wheel and steering only with rudder.

EMERGENCY LET-DOWNS THROUGH CLOUDS.

If possible, obtain radio clearance for an emergency descent through clouds. To guard against a spiral dive, choose an easterly or westerly heading to minimize compass card swings due to changing bank angles. In addition, keep hands off the control wheel and steer a straight course with rudder control by monitoring the turn coordinator. Occasionally check the compass heading and make minor corrections to hold an approximate course. Before descending into the clouds, set up a stabilized let-down condition as follows:

(1) Reduce power to set up a 500 to 800 ft/min rate of descent.
(2) Adjust mixture for smooth operation.
(3) Adjust the elevator and rudder trim for a stabilized descent at 110 MPH.
(4) Keep hands off the control wheel.
(5) Monitor turn coordinator and make corrections by rudder alone.
(6) Readjust rudder trim to relieve unbalanced rudder force if present.
(7) Check trend of compass card movement and make cautious corrections with rudder to stop the turn.
(8) Upon breaking out of clouds, resume normal cruising flight.

RECOVERY FROM A SPIRAL DIVE.

If a spiral is encountered, proceed as follows:

(1) Close the throttle and place propeller control in high RPM.
(2) Stop the turn by using coordinated aileron and rudder control to align the symbolic aircraft in the turn coordinator with the horizon reference line.
(3) Cautiously apply control wheel back pressure to slowly reduce the indicated airspeed to 110 MPH.
(4) Adjust the elevator trim control to maintain a 110 MPH glide.
(5) Keep hands off the control wheel, using rudder control to hold a straight heading. Adjust rudder trim to relieve unbalanced rudder force, if present.
(6) Clear engine occasionally, but avoid using enough power to disturb the trimmed glide.
(7) Upon breaking out of clouds apply normal cruising power and resume flight.

SPINS.

Intentional spins are prohibited in this aircraft. Should an inadvertent spin occur, the following recovery technique should be used.

(1) Retard throttle to idle position.
(2) Apply full rudder opposite to the direction of rotation.
(3) After one-fourth turn, move the control wheel forward of neutral in a brisk motion.
(4) As rotation stops, neutralize rudder, and make a smooth recovery from the resulting dive.

FLIGHT IN ICING CONDITIONS.

Although flying in known icing conditions is prohibited, an unexpected icing encounter should be handled as follows:

(1) Turn pitot heat switch ON (if installed).
(2) Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.
(3) Pull cabin heat control full out and rotate defrost knob clockwise to obtain maximum windshield defroster effectiveness.
(4) Increase engine speed to minimize ice build-up on propeller

blades. If excessive vibration is noted, momentarily reduce engine speed to 2200 RPM with the propeller control, and then rapidly move the control full forward.

NOTE

Cyling the RPM flexes the propeller blades and high RPM increases centrifugal force, causing ice to shed more readily.

(5) Watch for signs of induction air filter ice and regain manifold pressure by increasing the throttle setting.

NOTE

If ice accumulates on the intake filter (causing the alternate air valve to open), a decrease of 1 to 2 inches of full throttle manifold pressure will be experienced.

(6) If icing conditions are unavoidable, plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.
(7) With an ice accumulation of 1/4 inch or more on the wing leading edges, be prepared for a significantly higher power requirement, approach speed, stall speed, and landing roll.
(8) Open the window and, if practical, scrape ice from a portion of the windshield for visibility in the landing approach.
(9) Use a 10 - 20° landing flap setting for ice accumulations of 1 inch or less. With heavier ice formations, approach with flaps retracted to ensure adequate elevator effectiveness in the approach and landing.
(10) Approach at 110 to 120 MPH with 20° flaps and 120 to 130 MPH with 0 - 10° flaps, depending upon the amount of ice accumulation. If ice accumulation is unusually large, decelerate to the planned approach speed while in the approach configuration at a high enough altitude which would permit recovery in the event that a stall buffet is encountered.
(11) Land on the main wheels first, avoiding the slow and high type of flare-out.
(12) Missed approaches should be avoided wherever possible because of severely reduced climb capability. However, if a go-around is mandatory, make the decision much earlier in the approach than normal. Apply maximum power and maintain 110 MPH while retracting the flaps slowly in 10° increments.

ROUGH ENGINE OPERATION OR LOSS OF POWER.

SPARK PLUG FOULING.

A slight engine roughness in flight may be caused by one or more spark plugs becoming fouled by carbon or lead deposits. This may be verified by turning the ignition switch momentarily from BOTH to either L or R position. An obvious power loss in single ignition operation is evidence of spark plug or magneto trouble. Assuming that spark plugs are the more likely cause, lean the mixture to the normal lean setting for cruising flight. If the problem does not clear up in several minutes, determine if a richer mixture setting will produce smoother operation. If not, proceed to the nearest airport for repairs using the BOTH position of the ignition switch unless extreme roughness dictates the use of a single ignition position.

MAGNETO MALFUNCTION.

A sudden engine roughness or misfiring is usually evidence of magneto problems. Switching from BOTH to either L or R ignition switch position will identify which magneto is malfunctioning. Select different power settings and enrichen the mixture to determine if continued operation on BOTH magnetos is practicable. If not, switch to the good magneto and proceed to the nearest airport for repairs.

ENGINE-DRIVEN FUEL PUMP FAILURE.

Failure of the engine-driven fuel pump will be evidenced by a sudden reduction in the fuel flow indication prior to a loss of power, while operating from a fuel tank containing adequate fuel.

In the event of an engine-driven fuel pump failure during take-off, immediately hold the left half of the auxiliary fuel pump switch in the HI position until the aircraft is well clear of obstacles. Upon reaching a safe altitude, and reducing the power to a cruise setting, release the HI side of the switch. The ON position will then provide sufficient fuel flow to maintain engine operation while maneuvering for a landing.

If an engine-driven fuel pump failure occurs during cruising flight, apply full rich mixture and hold the left half of the auxiliary fuel pump switch in the HI position to re-establish fuel flow. Then the normal ON position (the right half of the fuel pump switch) may be used to sustain level flight. If necessary, additional fuel flow is obtainable by holding the left half of the pump switch in the HI position.

LOW OIL PRESSURE.

If low oil pressure is accompanied by normal oil temperature, there is a possibility the oil pressure gage or relief valve is malfunctioning. A leak in the line to the gage is not necessarily cause for an immediate precautionary landing because an orifice in this line will prevent a sudden loss of oil from the engine sump. However, a landing at the nearest airport would be advisable to inspect the source of trouble.

If a total loss of oil pressure is accompanied by a rise in oil temperature, there is good reason to suspect that an engine failure is imminent. Reduce engine power immediately and select a suitable forced landing field. Leave the engine running at low power during the approach, using only the minimum power required to reach the desired touchdown spot.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS.

Malfunctions in the electrical power supply system can be detected by periodic monitoring of the ammeter and over-voltage warning light; however, the cause of these malfunctions is usually difficult to determine. A broken alternator drive belt or wiring is the most likely cause of alternator failures, although other factors could cause the problem. A damaged or improperly adjusted voltage regulator can also cause malfunctions. Problems of this nature constitute an electrical emergency and should be dealt with immediately. Electrical power malfunctions usually fall into two categories: excessive rate of charge and insufficient rate of charge. The paragraphs below describe the recommended remedy for each situation.

EXCESSIVE RATE OF CHARGE.

After engine starting and heavy electrical usage at low engine speeds (such as extended taxiing) the battery condition will be low enough to accept above normal charging during the initial part of a flight. However, after thirty minutes of cruising flight, the ammeter should be indicating less than two needle widths of charging current. If the charging rate were to remain above this value on a long flight, the battery would overheat and evaporate the electrolyte at an excessive rate. Electronic components in the electrical system could be adversely affected by higher than normal voltage if a faulty regulator setting is causing the overcharging. To preclude these possibilities, an over-voltage sensor will automatically shut down the alternator, and the over-voltage warning light will illuminate if the charge voltage reaches approximately 16 volts on a 14-volt

system and 31.5 volts on the optional 28-volt system. Assuming that the malfunction was only momentary, an attempt should be made to reactivate the alternator system. To do this, turn both sides of the master switch off and then on again. If the problem no longer exists, normal alternator charging will resume and the warning light will go off. If the light comes on again, a malfunction is confirmed. In this event, the flight should be terminated and/or the current drain on the battery minimized because the battery can supply the electrical system for only a limited period of time. If the emergency occurs at night, power must be conserved for later use of the landing light and flaps during landing.

INSUFFICENT RATE OF CHARGE.

If the ammeter indicates a continuous discharge rate in flight, the alternator is not supplying power to the system and should be shut down since the alternator field circuit may be placing an unnecessary load on the system. All non-essential equipment should be turned off and the flight terminated as soon as practical.

CARGO DOOR EMERGENCY EXIT.

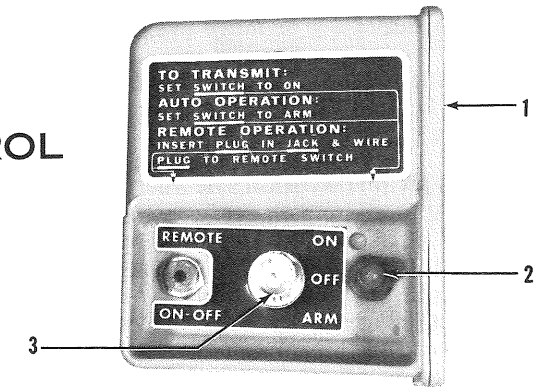
If it is necessary to use the cargo doors as an emergency exit and the wing flaps are not extended, open the forward door and exit. If the wing flaps are extended, open the doors in accordance with the instructions shown on the placard which is mounted on the forward cargo door.

EMERGENCY LOCATOR TRANSMITTER (ELT).

The ELT consists of a self-contained dual-frequency radio transmitter and battery power supply, and is activated by an impact of 5 g or more as may be experienced in a crash landing. The ELT emits an omni-directional signal on the international distress frequencies of 121.5 and 243.0 MHz. General aviation and commercial aircraft, the FAA, and CAP monitor 121.5 MHz, and 243.0 MHz is monitored by the military. Following a crash landing, the ELT will provide line-of-sight transmission up to 100 miles at 10,000 feet. The duration of ELT transmissions is affected by ambient temperature. At temperatures of +70° to +130°F, continuous transmission for 115 hours can be expected; a temperature of -40°F will shorten the duration to 70 hours.

The ELT is readily identified as a bright orange unit mounted behind

ELT CONTROL PANEL



1. COVER - Removable for access to battery.

2. FUNCTION SELECTOR SWITCH (3-position toggle switch):

   ON - Activates transmitter instantly. Used for test purposes and if "g" switch is inoperative.

   OFF - Deactivates transmitter. Used during shipping, storage and following rescue.

   ARM - Activates transmitter only when "g" switch receives 5g or more impact.

3. ANTENNA RECEPTACLE - Connection to antenna mounted on top of the tailcone.

Figure 3-1.

the baggage compartment wall on the right side of the fuselage. To gain access to the unit, grasp the edge of the baggage wall and pull. The ELT is operated by a control panel at the forward facing end of the unit (see figure 3-1).

ELT OPERATION.

(1) NORMAL OPERATION: As long as the function selector switch

remains in the ARM position, the ELT automatically activates following an impact of 5 g or more over a short time period.

(2) ELT FAILURE: If "g" switch actuation is questioned following a minor crash landing, gain access to the ELT and place the function selector switch in the ON position.

(3) PRIOR TO SIGHTING RESCUE AIRCRAFT: Conserve aircraft battery. Do not activate radio transceiver.

(4) AFTER SIGHTING RESCUE AIRCRAFT: Place ELT function selector switch in the OFF position, preventing radio interference. Attempt contact with rescue aircraft with the radio transceiver set to a frequency of 121.5 MHz. If no contact is established, return the function selector switch to ON immediately.

(5) FOLLOWING RESCUE: Place ELT function selector switch in the OFF position, terminating emergency transmissions.

(6) INADVERTENT ACTIVATION: Following a lightning strike or an exceptionally hard landing, the ELT may activate although no emergency exists. Select 121.5 MHz on your radio transceiver. If the ELT can be heard transmitting, place the function selector switch in the OFF position; then immediately return the switch to ARM.

Section IV

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED.

Your Cessna exceeds the requirements of airworthiness as set forth by the United States Government, and is certificated under FAA Type Certificate No. A4CE as Cessna Model No. U206F.

The aircraft may be equipped for day, night, VFR, or IFR operation. Your Cessna Dealer will be happy to assist you in selecting equipment best suited to your needs.

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

MANEUVERS - NORMAL CATEGORY.

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

Gross Weight	3600 lbs.	
Flight Load Factor *Flaps Up	+3.8	-1.52
Flight Load Factor *Flaps Down	+2.0	

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

AIRSPEED LIMITATIONS (CAS).

The following is a list of the certificated calibrated airspeed (CAS) limitations for the aircraft:

Never Exceed Speed (glide or dive, smooth air)	210 MPH
Maximum Structural Cruising Speed	170 MPH
Maximum Speed, Flaps Extended	
Flaps 10°	160 MPH
Flaps 10° -40°	120 MPH
*Maneuvering Speed	139 MPH

*The maximum speed at which you may use abrupt control travel.

AIRSPEED INDICATOR MARKINGS.

The following is a list of the certificated calibrated airspeed markings (CAS) for the aircraft:

Never Exceed (glide or dive, smooth air)	210 MPH (red line)
Caution Range	170-210 MPH (yellow arc)
Normal Operating Range	77-170 MPH (green arc)
Flap Operating Range	66-120 MPH (white arc)

ENGINE OPERATION LIMITATIONS.

Power and Speed	300 BHP at 2850 RPM (5-Minute Take-Off) 285 BHP at 2700 RPM (Maximum Continuous)

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)

FUEL QUANTITY INDICATORS.

Empty (1.0 gallon unusable each standard tank) (2.0 gallons unusable each long range tank)	E (red line)

CYLINDER HEAD TEMPERATURE GAGE.

Normal Operating Range	200-460°F (green arc)
Do Not Exceed	460°F (red line)

MANIFOLD PRESSURE GAGE.

Normal Operating Range	15-25 in.Hg (green arc)

TACHOMETER.

Normal Operating Range	2200-2550 RPM (green arc)
Caution Range	2700-2850 RPM (yellow arc)
Maximum (Engine rated speed)	2850 RPM (red line)

FUEL FLOW INDICATOR.

Normal Operating Range	7.0-17.0 gal/hr (green arc)
Minimum and Maximum	3.5 and 19.5 psi (25.2 gal/hr)(red lines)

NOTE

A placard, located adjacent to the fuel flow indicator, provides maximum performance take-off/climb fuel flow settings at altitude. These settings, as called out on the placard, are as follows:

FUEL FLOW AT FULL THROTTLE

	2700 RPM	2850 RPM
Sea Level	23 gal/hr	24 gal/hr
4000 Feet	21 gal/hr	22 gal/hr
8000 Feet	19 gal/hr	20 gal/hr

SUCTION GAGE (GYRO SYSTEM).

Normal Operating Range	4.6 to 5.4 in. Hg. (green arc)

WEIGHT AND BALANCE.

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

Take the licensed empty weight and moment from appropriate weight and balance records carried in your airplane, and write them down in the column titled YOUR AIRPLANE on the Sample Loading Problem.

NOTE

The licensed empty weight and moment are recorded on the Weight and Balance and Installed Equipment Data sheet, or on revised weight and balance records, and are included in the aircraft file. In addition to the licensed empty weight and moment noted on these records, the c.g. arm (fuselage station) is also shown, but need not be used on the Sample Loading Problem. The moment which is shown must be divided by 1000 and this value used as the moment/1000 on the loading problem.

Use the Loading Graph to determine the moment/1000 for each additional item to be carried; then list these on the loading problem.

NOTE

Loading Graph information for the pilot, passengers and baggage or cargo is based on seats positioned for average occupants and baggage or cargo loaded in the center of these areas as shown on the Loading Arrangements diagram. For loadings which may differ from these, the Sample Loading Problem lists fuselage stations for these items to indicate their forward and aft c.g. range limitation (seat travel or baggage/cargo area limitation). Additional moment calculations, based on the actual weight and c.g. arm (fuselage station) of the item being loaded, must be made if the position of the load is different from that shown on the Loading Graph. The arm for any location in the aircraft can be determined from the diagram on page 4-10 (the c.g. arm is the same as the station). Multiply the weight of the object by the arm and divide by 1000 to get the moment/1000.

When an optional cargo pack is installed, it is necessary to determine the c.g. arm and calculate the moment/1000 of items carried in the pack. The arm for any location in the pack can be determined from the diagram on page 4-12. Multiply the weight of the item by the c.g. arm, then divide by 1000 to get the moment/1000. The maximum loading capacity of the pack is 300 pounds.

NOTE

Each loading should be figured in accordance with the above paragraphs. When the loading is light (such as pilot and co-pilot, and no rear seats or cargo), be sure to check the forward balance limits. When loading is heavy (near gross weight), be sure to check the aft balance limits.

To avoid time consuming delays in cargo and/or passenger shifting, plan your load so that the heaviest cargo and/or passengers are in the forward part of the aircraft or cargo pack, and the lightest in the rear. Always plan to have any vacant space at the rear of the aircraft or pack. For example, do not have passengers occupy the aft seat unless the front and center seats are to be occupied.

Total the weights and moments/1000 and plot these values on 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 (lbs.)	Moment (lb.-ins. /1000)
1. Licensed Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel)	2018	73.9		
2. Oil (The weight of full oil may be used for all calculations): No Oil Filter: 12 Qts. = 22 Lbs. at -0.4 Moment/1000	22	-0.4		
With Oil Filter: 13 Qts. = 24 Lbs. at -0.5 Moment/1000				
3. Usable Fuel (At 6 Lbs./Gal.) Standard Tanks (63 Gal. Maximum)				
Long Range Tanks (80 Gal. Maximum)	480	23.0		
4. Pilot and Copilot (Sta. 34 to 48)	340	12.6		
5. Center Passengers (Sta. 69 to 79)	340	23.8		
Aft Passengers (Sta. 92 to 100)	340	34.0		
Baggage IV (Sta. 109 to 145; 120 Lbs. Max.)	60	7.6		
6. *Cargo "A" (Sta. 10 to 50)				
*Cargo "B" (Sta. 50 to 84)				
*Cargo "C" (Sta. 84 to 109)				
*Cargo "D" (Sta. 109 to 145)				
7. Cargo Pack (Sta. 10 to 84; 300 Lbs. Max.)				
8. TOTAL WEIGHT AND MOMENT	3600	174.5		

9. Locate this point (3600 at 174.5) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.

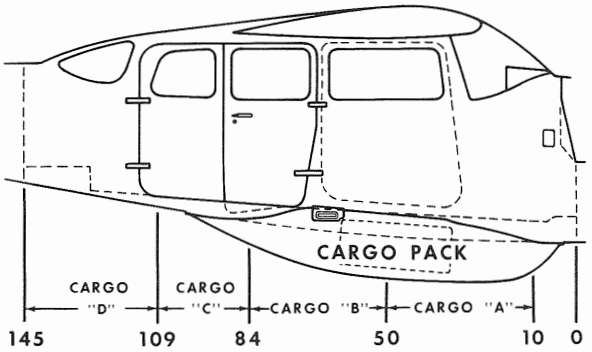
*Maximum allowable cargo loads will be determined by the type and number of tie-downs used, as well as by the airplane weight and C.G. limitations. Floor loading must not exceed 200 lbs. per square foot.

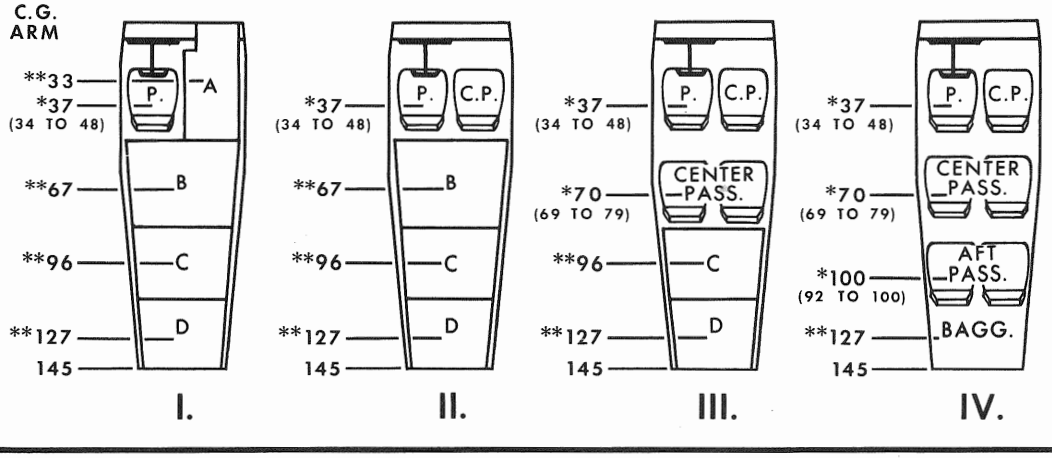
LOADING ARRANGEMENTS

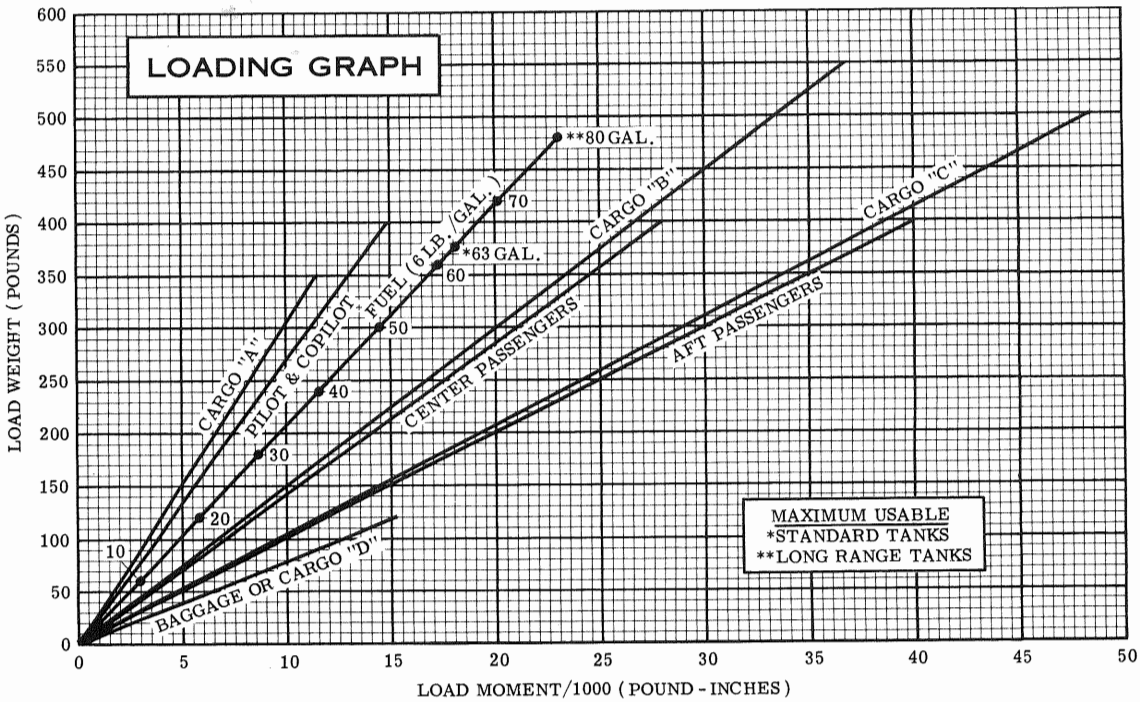
* Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.

** Arms measured to the center of the areas shown.

NOTE: The aft baggage wall (approximate station 145) can be used as a convenient interior reference point for determining the location of baggage area fuselage stations.

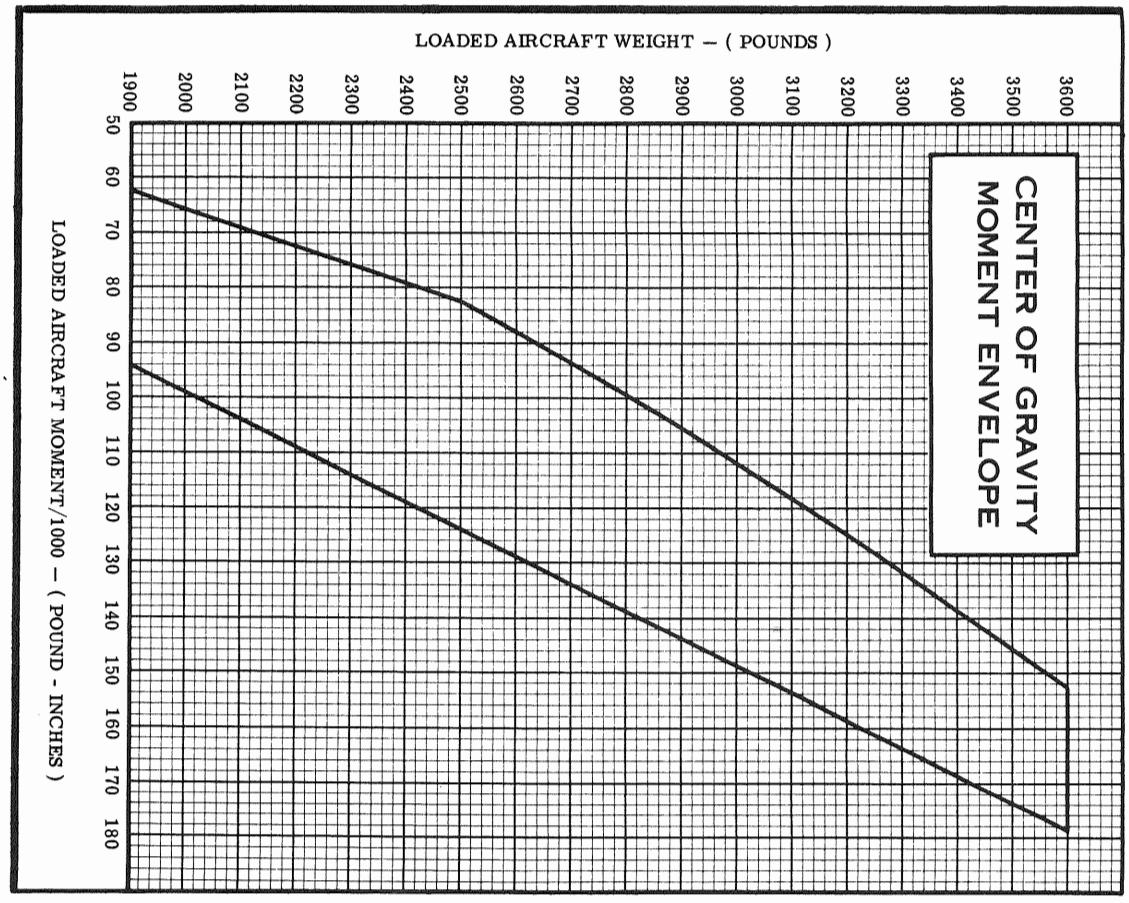




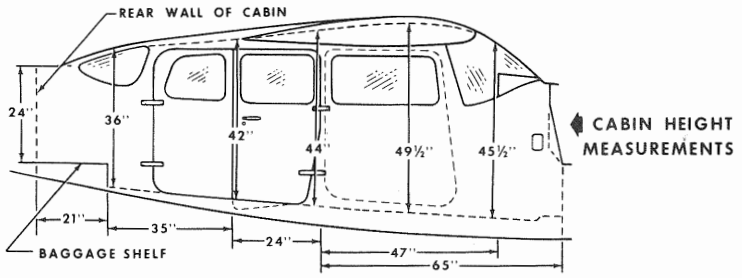


NOTES: (1) Lines representing adjustable seats show the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant c.g. range.

(2) Engine Oil: No oil filter; 12 Qts. = 22 Lbs. at -0.4 Moment/1000.
With optional oil filter; 13 Qts. = 24 Lbs. at -0.5 Moment/1000.



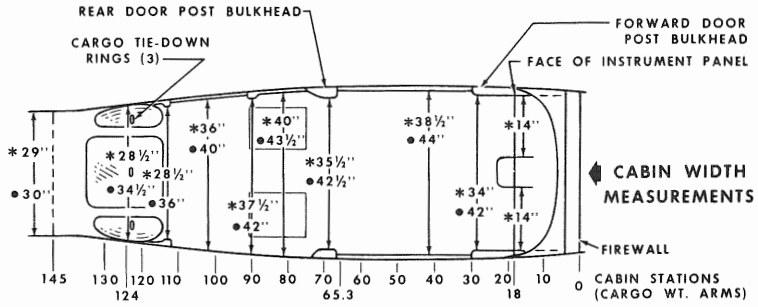
INTERNAL CABIN DIMENSIONS
FOR CARGO LOADING



WIDTH
*CABIN FLOOR
•LWR. WINDOW LINE

DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (REAR)
CABIN DOOR	32½"	37"	41"	39"
CARGO DOORS	43"	40"	39¼"	37½"



NOTES:

1. Use the forward face of the rear door post as a reference point to locate C. G. arms. For example, a box with its center of weight located 13 inches aft of the rear door post would have a C. G. arm of (65. 3+13. 0 = 78. 3) 78. 3 inches.
2. Maximum allowable floor loading: 200 pounds/square foot. However, when items with small or sharp support areas are carried, the installation of a 1/4" spruce or fir plywood floor is highly recommended to protect the aircraft structure.

CARGO LOADING

Since your Cessna is capable of carrying large amounts of cargo, it will be necessary to properly secure this load before flight. An optional tie-down kit is available from any Cessna dealer. Provided in this kit are 12 tie-down blocks that fasten to the seat rails and three "D" rings on the floor at fuselage station 124. If more tie-down points are needed, the seat belt attaching points, as well as shoulder harness attaching points, may be used. Rope, strap, or cable used for tie-down should be rated at a minimum of ten times the load weight capacity of the tie-down fittings used.

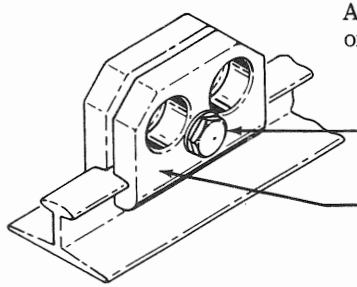
The following table shows the maximum allowable cargo weight for each type of attachment:

ITEM	LOCATION	*MAXIMUM LOAD (LBS.)
Seat Rail Tie-Down Assy	On Seat Rail Section Without Lock Pin Holes	200
Seat Rail Tie-Down Assy	On Seat Rail Section With Lock Pin Holes	100
"D" Rings	Floor only	60
Seat Belt Attachment	Floor or Side-Wall	200
Shoulder Strap	Cabin Top	175

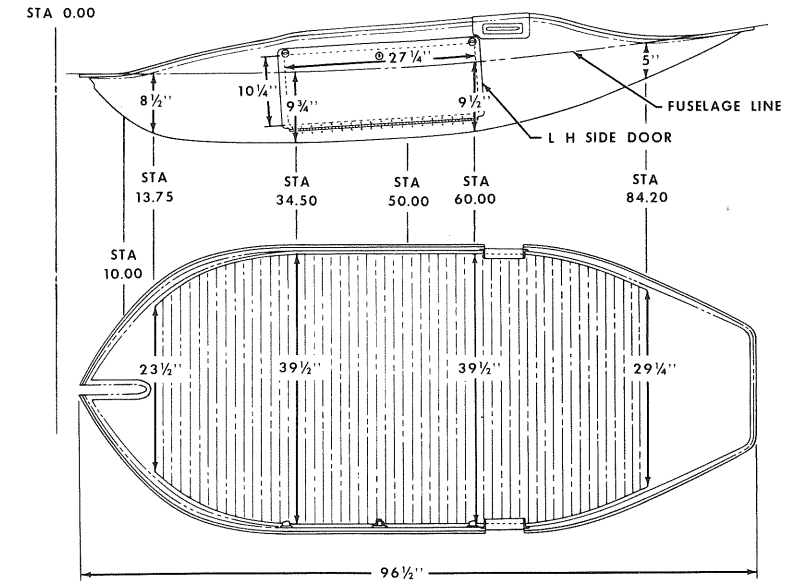
*Rated load per attachment (Cargo Item Wt. ÷ No. Tie-Downs). A sufficient number of attachments to restrain the cargo from shifting should be used in addition to load requirements.

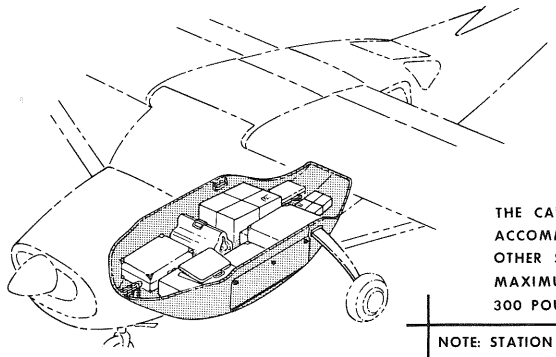
FOR EXAMPLE:

A 400# load would require a minimum of four (4) tie-downs rated at 100# each.



CARGO PACK





THE CARGO PACK WAS DESIGNED TO ACCOMMODATE THREE "TWO-SUITERS", PLUS OTHER SMALL MISCELLANEOUS ARTICLES. MAXIMUM LOADING FOR CARGO PACK IS 300 POUNDS.

NOTE: STATION LOCATION AND C.G. ARM ARE IDENTICAL

Section V

CARE OF THE AIRPLANE

If your aircraft 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 preventive 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 aircraft 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 aircraft is most easily and safely maneuvered by hand with the tow-bar attached to the nose wheel. When towing with a vehicle, do not exceed the nose gear turning angle of 35° either side of center, or damage to the gear will result. If the aircraft is towed or pushed over a rough surface during hangaring, watch that the normal cushioning action of the nose strut does not cause excessive vertical movement of the tail and the resulting contact with low hangar doors or structure. A flat nose tire or deflated strut will also increase tail height.

MOORING YOUR AIRPLANE.

Proper tie-down procedure is your best precaution against damage to your parked aircraft by gusty or strong winds. To tie down your aircraft 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 secure each rope or chain to a ramp tie-down.
(4) Tie a sufficiently strong rope to the nose gear torque link, and secure it to a ramp tie-down.
(5) Install a pitot tube cover.

WINDSHIELD-WINDOWS.

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

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

NOTE

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

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

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

ALUMINUM SURFACES.

The clad aluminum surfaces of your Cessna may be washed with clear water to remove dirt; oil and grease may be removed with gasoline, naphtha, carbon tetrachloride or other non-alkaline solvents. Dulled aluminum surfaces may be cleaned effectively with an aircraft aluminum polish.

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

PAINTED SURFACES.

The painted exterior surfaces of your new Cessna have a durable, long lasting finish and, under normal conditions, require no polishing or

buffing. Approximately 15 days are required for the paint to cure completely; in most cases, the curing period will have been completed prior to delivery of the aircraft. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by someone experienced in handling uncured paint. Any Cessna Dealer can accomplish this work.

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

Waxing is unnecessary to keep the painted surfaces bright. However, if desired, the aircraft may be waxed with a good automotive wax. A heavier coating of wax on the leading edges of the wings and tail and on the engine nose cap and propeller spinner will help reduce the abrasion encountered in these areas.

When the aircraft is parked outside in cold climates and it is necessary to remove ice before flight, care should be taken to protect the painted surfaces during ice removal with chemical liquids. A 50-50 solution of isopropyl alcohol and water will satisfactorily remove ice accumulation without damaging the paint. A solution with more than 50% alcohol is harmful and should be avoided. While applying the de-icing solution, keep it away from the windshield and cabin windows since the alcohol will attack the plastic and may cause it to craze.

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. Small nicks on the propeller, particularly near the tips and on the leading edges, should be dressed out as soon as possible since these nicks produce stress concentrations, and if ignored, may result in cracks. Never use an alkaline cleaner on the blades; remove grease and dirt with carbon tetrachloride or Stoddard solvent.

INTERIOR CARE.

To remove dust and loose dirt from the upholstery 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.

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

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.

If your aircraft 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 headliner, instrument panel, plastic trim 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 Stoddard solvent. Volatile solvents, such as mentioned in paragraphs on care of the windshield, must never be used since they soften and craze the plastic.

On aircraft equipped with a cargo interior, materials used on the cabin floor and sidewalls are not easily soiled or stained. Dust and loose dirt should be picked up with a vacuum cleaner. Stubborn dirt can be wiped off with a cloth moistened in clean water. Mild soap suds, used sparingly, will remove grease. The soap should be removed with a clean damp cloth.

MAA PLATE/FINISH AND TRIM PLATE.

Information concerning the Type Certificate Number (TC), Production Certificate Number (PC), Model Number and Serial Number of your particular aircraft can be found on the MAA (Manufacturers Aircraft Association) plate located on the left forward doorpost.

A Finish and Trim Plate contains a code describing the interior color scheme and exterior paint combination of the aircraft. The code may be

used in conjunction with an applicable Parts Catalog if finish and trim information is needed. This plate is located adjacent to the MAA plate on the left forward doorpost.

AIRCRAFT FILE.

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

A. To be displayed in the aircraft at all times:
   (1) Aircraft Airworthiness Certificate (FAA Form 8100-2).
   (2) Aircraft Registration Certificate (FAA Form 8050-3).
   (3) Aircraft Radio Station License, if transmitter installed (FCC Form 556).

B. To be carried in the aircraft at all times:
   (1) Weight and Balance, and associated papers (latest copy of the Repair and Alteration Form, FAA Form 337, if applicable).
   (2) Aircraft Equipment List.

C. To be made available upon request:
   (1) Aircraft Log Book.
   (2) Engine Log Book.

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

Cessna recommends that these items, plus the Owner's Manual, Power Computer, Pilot's Checklist, Customer Care Program book and Customer Care Card, be carried in the aircraft at all times.

FLYABLE STORAGE.

Aircraft placed in non-operational storage for a maximum of 30 days or those which receive only intermittent operational use for the first 25 hours are considered in flyable storage status. Every seventh day during

these periods, the propeller should be rotated by hand through five revolutions. This action "limbers" the oil and prevents any accumulation of corrosion on engine cylinder walls.

IMPORTANT

For maximum safety, check that the ignition switch is OFF, the throttle is closed, the mixture control is in the idle cut-off position, and the airplane is secured before rotating the propeller by hand. Do not stand within the arc of the propeller blades while turning the propeller.

After 30 days, the aircraft should be flown for 30 minutes or a ground runup should be made just long enough to produce an oil temperature within the lower green arc range. Excessive ground runup should be avoided.

Engine runup also helps to eliminate excessive accumulations of water in the fuel system and other air spaces in the engine. Keep fuel tanks full to minimize condensation in the tanks. Keep the battery fully charged to prevent the electrolyte from freezing in cold weather. If the aircraft is to be stored temporarily, or indefinitely, refer to Service Manual for proper storage procedures.

INSPECTION REQUIREMENTS.

As required by Federal Aviation Regulations, all civil aircraft of U. S. registry must undergo a complete inspection (annual) each twelve calendar months. In addition to the required ANNUAL inspection, aircraft operated commercially (for hire) must have a complete inspection every 100 hours of operation.

In lieu of the above requirements, an aircraft may be inspected in accordance with a progressive inspection schedule, which allows the work load to be divided into smaller operations that can be accomplished in shorter time periods.

The CESSNA PROGRESSIVE CARE PROGRAM has been developed to provide a modern progressive inspection schedule that satisfies the complete aircraft inspection requirements of both the 100 HOUR and ANNUAL inspections as applicable to Cessna aircraft.

CESSNA PROGRESSIVE CARE.

The Cessna Progressive Care Program has been designed to help you realize maximum utilization of your aircraft at a minimum cost and downtime. Under this program, your aircraft is inspected and maintained in four operations at 50-hour intervals during a 200-hour period. The operations are recycled each 200 hours and are recorded in a specially provided Aircraft Inspection Log as each operation is conducted.

The Cessna Aircraft Company recommends Progressive Care for aircraft that are being flown 200 hours or more per year, and the 100-hour inspection for all other aircraft. The procedures for the Progressive Care Program and the 100-hour inspection have been carefully worked out by the factory and are followed by the Cessna Dealer Organization. The complete familiarity of Cessna Dealers with Cessna equipment and factory-approved procedures provides the highest level of service possible at lower cost to Cessna owners.

CESSNA CUSTOMER CARE PROGRAM.

Specific benefits and provisions of the CESSNA WARRANTY plus other important benefits for you are contained in your CUSTOMER CARE PROGRAM book supplied with your aircraft. You will want to thoroughly review your Customer Care Program book and keep it in your aircraft at all times.

Coupons attached to the Program book entitle you to an initial inspection and either a Progressive Care Operation No. 1 or the first 100-hour inspection within the first 6 months of ownership at no charge to you. If you take delivery from your Dealer, the initial inspection will have been performed before delivery of the aircraft to you. If you pick up your aircraft at the factory, plan to take it to your Dealer reasonably soon after you take delivery, so the initial inspection may be performed allowing the Dealer to make any minor adjustments which may be necessary.

You will also want to return to your Dealer either at 50 hours for your first Progressive Care Operation, or at 100 hours for your first 100-hour inspection depending on which program you choose to establish for your aircraft. 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 aircraft accomplish this work.

SERVICING REQUIREMENTS.

For quick and ready reference, quantities, materials, and specifications for frequently used service items (such as fuel, oil, etc.) are shown on the inside back cover of this manual.

In addition to the EXTERIOR INSPECTION covered in Section I, COMPLETE servicing, inspection, and test requirements for your aircraft are detailed in the aircraft Service Manual. The Service Manual outlines all items which require attention at 50, 100, and 200 hour intervals plus those items which require servicing, inspection, and/or testing at special intervals.

Since Cessna Dealers conduct all service, inspection, and test procedures in accordance with applicable Service Manuals, it is recommended that you contact your Dealer concerning these requirements and begin scheduling your aircraft for service at the recommended intervals.

Cessna Progressive Care ensures that these requirements are accomplished at the required intervals to comply with the 100-hour or ANNUAL inspection as previously covered.

Depending on various flight operations, your local Government Aviation Agency may require additional service, inspections, or tests. For these regulatory requirements, owners should check with local aviation officials where the aircraft is being operated.

OWNER FOLLOW-UP SYSTEM.

Your Cessna Dealer has an Owner Follow-Up System to notify you when he receives information that applies to your Cessna. In addition, if you wish, you may choose to receive similar notification, in the form of Service Letters, directly from the Cessna Customer Services Department. A subscription form is supplied in your Customer Care Program book for your use, should you choose to request this service. Your Cessna Dealer will be glad to supply you with details concerning these follow-up programs, and stands ready, through his Service Department, to supply you with fast, efficient, low-cost service.

PUBLICATIONS.

Various publications and flight operation aids are furnished in the aircraft when delivered from the factory. These items are listed below.

- CUSTOMER CARE PROGRAM BOOK
- OWNER'S MANUALS FOR YOUR
  AIRCRAFT
  AVIONICS AND AUTOPILOT
- POWER COMPUTER
- SALES AND SERVICE DEALER DIRECTORY
- DO'S AND DON'TS ENGINE BOOKLET

The following additional publications, plus many other supplies that are applicable to your aircraft, are available from your Cessna Dealer.

- SERVICE MANUALS AND PARTS CATALOGS FOR YOUR
  AIRCRAFT
  ENGINE AND ACCESSORIES
  AVIONICS AND AUTOPILOT

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

Section 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 aircraft 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 aircraft 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. Speeds shown in the Cruise Performance charts reflect a standard aircraft equipped with speed fairings, which increase the cruise speeds by 3 to 4 MPH.

Remember that the charts contained herein are based on standard day conditions. For more precise power, fuel consumption, and endurance information, consult the Cessna Power Computer supplied with your aircraft. With the Power Computer, 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	67	82	100	119	137	156	176	195
***FLAPS 20°**								
IAS - MPH	50	60	70	80	90	100	110	120
CAS - MPH	63	69	75	82	90	99	109	119
***FLAPS 40°**								
IAS - MPH	50	60	70	80	90	100	110	120
CAS - MPH	63	69	76	84	92	101	110	119

*MAXIMUM FLAP SPEED 120 MPH - CAS

Figure 6-1.

STALL SPEEDS - MPH CAS

GROSS WEIGHT 3600 LBS.	ANGLE OF BANK			
CONFIGURATION	0°	20°	40°	60°
FLAPS UP	70	72	80	99
FLAPS 20°	64	66	73	90
FLAPS 40°	61	63	70	86

POWER OFF - AFT CG

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
3600	78	0	900	1780	1040	2055	1245	2450	1470	2925
		10	645	1400	760	1630	920	1960	1105	2365
		20	435	1055	525	1245	645	1515	785	1850
3100	72	0	645	1350	750	1535	895	1795	1055	2095
		10	455	1045	535	1195	645	1410	775	1660
		20	295	770	355	890	435	1065	530	1270
2600	62	0	400	790	470	895	555	1045	655	1220
		10	265	580	315	665	380	785	455	925
		20	155	395	190	460	235	550	285	660

NOTES: 1. Increase distance 10% for each 20°F above standard temperature for particular altitude.
2. For operation on a dry, grass runway, increase distances (both "ground run" and "total to clear 50 ft. obstacle") by 5% of the "total to clear 50 ft. obstacle" figure.

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
3600	100	920	2	96	640	4.3	93	360	7.6	90	90	15.1	—	—	—
3100	95	1190	2	91	890	3.7	87	585	5.9	83	280	9.3	—	—	—
2600	90	1560	2	85	1205	3.3	81	855	4.8	77	515	6.9	71	150	10.9

NOTES: 1. Full throttle, 2700 RPM, mixture at recommended leaning schedule, flaps up.
2. With full throttle, 2850 RPM, mixture at recommended leaning schedule, rate of climb is increased by 30 ft/min.
3. Fuel used includes warm-up and take-off allowance.
4. For hot weather, decrease rate of climb 30 ft./min. for each 10°F above standard day temperature for particular altitude.
5. With cargo pack, climb performance is 45 ft/min less than shown.

Figure 6-3.

CRUISE PERFORMANCE

EXTENDED RANGE MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight - 3600 Pounds

2500 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE) ENDR. HOURS	63 GAL (NO RESERVE) RANGE MILES	80 GAL (NO RESERVE) ENDR. HOURS	80 GAL (NO RESERVE) RANGE MILES
2550	25	78	166	16.4	3.8	640	4.9	810
	24	74	162	15.5	4.1	660	5.2	835
	23	70	158	14.6	4.3	680	5.5	865
	22	66	154	13.8	4.6	700	5.8	890
2500	25	76	164	15.9	4.0	650	5.0	825
	24	72	160	15.0	4.2	670	5.3	850
	23	68	156	14.2	4.4	690	5.6	880
	22	64	152	13.4	4.7	715	6.0	905
2400	25	71	159	14.8	4.2	675	5.4	855
	24	67	155	14.1	4.5	695	5.7	880
	23	63	151	13.3	4.7	715	6.0	910
	22	60	147	12.6	5.0	740	6.4	935
2300	25	67	155	14.0	4.5	700	5.7	885
	24	63	151	13.2	4.8	720	6.0	910
	23	59	147	12.5	5.0	740	6.4	940
	22	56	143	11.8	5.3	760	6.8	965
2200	25	61	149	12.9	4.9	725	6.2	925
	24	58	146	12.3	5.1	745	6.5	950
	23	55	142	11.7	5.4	765	6.9	970
	22	52	137	11.1	5.7	785	7.2	995
	21	48	133	10.4	6.0	805	7.7	1020
	20	45	128	9.8	6.4	820	8.2	1045
	19	42	122	9.2	6.9	840	8.7	1065
	18	38	116	8.5	7.4	855	9.4	1085

NOTE: For cargo pack performance, refer to Section VII.

Figure 6-4 (Sheet 1 of 5).

CRUISE PERFORMANCE

EXTENDED RANGE MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight - 3600 Pounds

5000 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE) ENDR. HOURS	63 GAL (NO RESERVE) RANGE MILES	80 GAL (NO RESERVE) ENDR. HOURS	80 GAL (NO RESERVE) RANGE MILES
2550	24	77	168	16.0	3.9	660	5.0	840
	23	72	164	15.1	4.2	680	5.3	865
	22	68	160	14.3	4.4	705	5.6	895
	21	64	155	13.5	4.7	725	5.9	920
2500	25	78	169	16.3	3.9	650	4.9	830
	24	74	166	15.5	4.1	670	5.2	855
	23	70	162	14.7	4.3	695	5.4	880
	22	66	158	13.9	4.5	715	5.8	905
2400	25	73	164	15.2	4.1	680	5.3	865
	24	69	161	14.5	4.3	700	5.5	890
	23	66	157	13.8	4.6	720	5.8	910
	22	62	153	13.0	4.8	740	6.2	940
2300	25	69	160	14.3	4.4	705	5.6	890
	24	65	156	13.6	4.6	720	5.9	915
	23	61	152	12.9	4.9	745	6.2	945
	22	58	148	12.2	5.1	765	6.5	970
2200	25	63	154	13.3	4.7	730	6.0	930
	24	60	151	12.7	5.0	750	6.3	955
	23	57	147	12.0	5.2	770	6.6	975
	22	54	143	11.4	5.5	790	7.0	1000
	21	50	138	10.8	5.8	805	7.4	1025
	20	47	133	10.2	6.2	825	7.9	1045
	19	44	128	9.5	6.6	840	8.4	1070
	18	40	121	8.9	7.1	855	9.0	1085
	17	37	113	8.3	7.6	865	9.7	1095

NOTE: For cargo pack performance, refer to Section VII.

Figure 6-4 (Sheet 2 of 5).

CRUISE PERFORMANCE

EXTENDED RANGE MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight - 3600 Pounds

7500 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE) ENDR. HOURS	63 GAL (NO RESERVE) RANGE MILES	80 GAL (NO RESERVE) ENDR. HOURS	80 GAL (NO RESERVE) RANGE MILES
2550	22	71	166	14.8	4.3	705	5.4	895
	21	67	161	14.0	4.5	730	5.7	925
	20	62	157	13.1	4.8	755	6.1	955
	19	58	151	12.3	5.1	775	6.5	985
2500	22	69	164	14.4	4.4	715	5.6	910
	21	65	159	13.6	4.6	740	5.9	940
	20	60	154	12.7	4.9	765	6.3	970
	19	56	149	11.9	5.3	785	6.7	1000
2400	22	64	159	13.4	4.7	745	6.0	945
	21	60	154	12.7	5.0	765	6.3	970
	20	56	149	12.0	5.3	785	6.7	1000
	19	53	144	11.3	5.6	810	7.1	1025
2300	22	60	154	12.6	5.0	765	6.3	975
	21	56	149	12.0	5.3	785	6.7	1000
	20	53	144	11.3	5.6	805	7.1	1025
	19	49	139	10.6	5.9	825	7.5	1050
2200	22	55	148	11.8	5.3	790	6.8	1005
	21	52	144	11.2	5.6	810	7.2	1030
	20	49	139	10.5	6.0	825	7.6	1050
	19	46	133	9.9	6.4	845	8.1	1075
	18	42	127	9.3	6.8	860	8.6	1090
	17	39	119	8.6	7.3	870	9.3	1100

NOTE: For cargo pack performance, refer to Section VII.

Figure 6-4 (Sheet 3 of 5).

CRUISE PERFORMANCE

EXTENDED RANGE MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight - 3600 Pounds

10,000 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE) ENDR. HOURS	63 GAL (NO RESERVE) RANGE MILES	80 GAL (NO RESERVE) ENDR. HOURS	80 GAL (NO RESERVE) RANGE MILES
2550	20	65	163	13.6	4.6	755	5.9	960
	19	61	158	12.8	4.9	780	6.3	990
	18	56	152	11.9	5.3	805	6.7	1020
	17	52	146	11.1	5.7	825	7.2	1050
2500	20	63	161	13.2	4.8	765	6.1	970
	19	59	155	12.4	5.1	790	6.5	1000
	18	54	150	11.6	5.4	815	6.9	1030
	17	50	143	10.8	5.8	835	7.4	1060
2400	20	59	155	12.4	5.1	790	6.5	1000
	19	55	150	11.7	5.4	810	6.9	1030
	18	51	144	10.9	5.8	830	7.3	1055
	17	47	138	10.2	6.2	850	7.9	1080
2300	20	55	150	11.7	5.4	810	6.9	1030
	19	51	145	11.0	5.7	830	7.3	1055
	18	48	139	10.3	6.1	850	7.8	1080
	17	44	132	9.6	6.6	865	8.3	1100
2200	20	51	144	10.9	5.8	830	7.3	1055
	19	48	139	10.3	6.1	850	7.8	1080
	18	44	132	9.6	6.5	865	8.3	1095
	17	41	125	9.0	7.0	875	8.9	1110
	16	37	115	8.3	7.6	875	9.6	1110

NOTE: For cargo pack performance, refer to Section VII.

Figure 6-4 (Sheet 4 of 5).

CRUISE PERFORMANCE

EXTENDED RANGE MIXTURE

Standard Conditions — Zero Wind — Gross Weight - 3600 Pounds

12,500 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL (NO RESERVE) ENDR. HOURS	63 GAL (NO RESERVE) RANGE MILES	80 GAL (NO RESERVE) ENDR. HOURS	80 GAL (NO RESERVE) RANGE MILES
2550	18	59	159	12.4	5.1	805	6.4	1025
	17	54	152	11.6	5.4	830	6.9	1050
	16	50	145	10.7	5.9	850	7.5	1080
2500	18	57	156	12.0	5.2	815	6.6	1035
	17	53	149	11.2	5.6	840	7.1	1065
	16	48	142	10.4	6.1	860	7.7	1090
2400	18	53	150	11.4	5.5	835	7.0	1060
	17	49	144	10.6	5.9	855	7.5	1085
	16	45	136	9.8	6.4	870	8.1	1105
2300	18	50	145	10.7	5.9	855	7.5	1085
	17	46	137	10.0	6.3	870	8.0	1105
	16	42	129	9.2	6.8	880	8.7	1115
2200	18	46	138	10.0	6.3	865	8.0	1100
	17	43	130	9.4	6.7	880	8.5	1115
	16	39	121	8.7	7.3	880	9.2	1120

NOTE: For cargo pack performance, refer to Section VII.

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 GROUND ROLL	@ SEA LEVEL & 59° F TOTAL TO CLEAR 50 FT. OBS.	@ 2500 FEET & 50° F GROUND ROLL	@ 2500 FEET & 50° F TOTAL TO CLEAR 50 FT. OBS.	@ 5000 FEET & 41° F GROUND ROLL	@ 5000 FEET & 41° F TOTAL TO CLEAR 50 FT. OBS.	@ 7500 FEET & 32° F GROUND ROLL	@ 7500 FEET & 32° F TOTAL TO CLEAR 50 FT. OBS.
3600	75	735	1395	780	1480	825	1570	875	1665

NOTES:
1. Distances shown are based on zero wind, power off, and heavy braking.
2. Reduce landing distances 10% for each 4 knots headwind.
3. For operation on a dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 22% of the "total to clear 50 ft. obstacle" figure.

Figure 6-5.

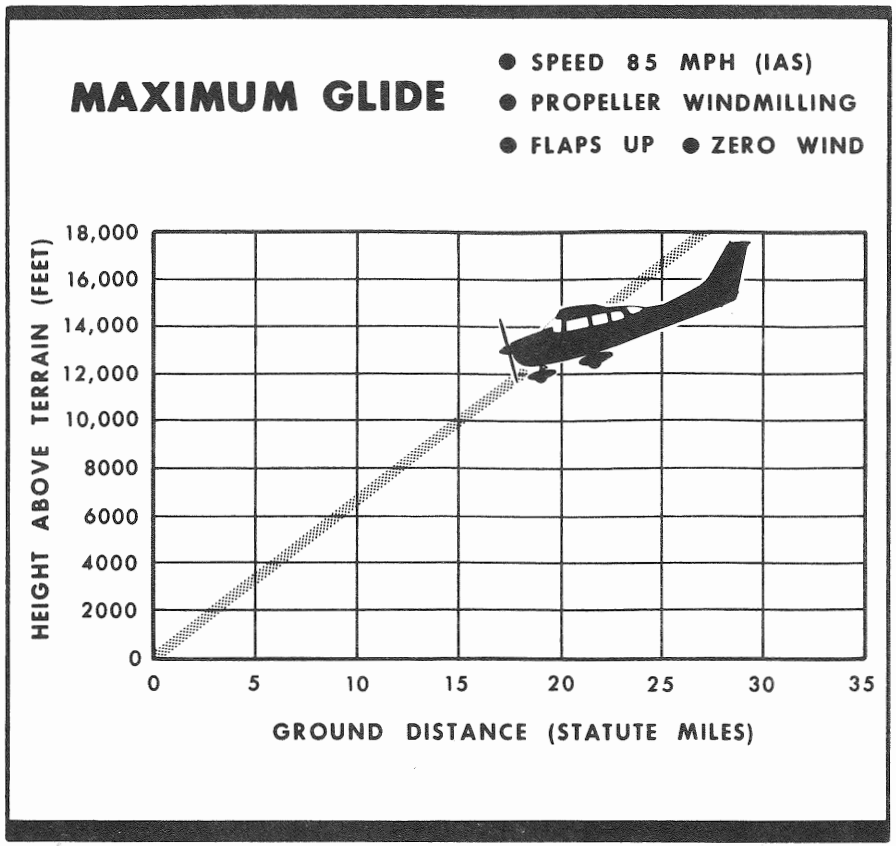


Figure 6-6.

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 aircraft. Contact your Cessna Dealer for a complete list of available optional equipment.

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 should be installed to improve engine operation. The winterization kit consists of two shields to partially cover the cowl nose cap opening and insulation for the crankcase breather line. Once installed, the crankcase breather insulation is approved for permanent use in both cold and hot weather. The non-congealing oil cooler replaces the standard oil cooler and provides improved oil flow through the cooler in cold weather.

GROUND SERVICE PLUG RECEPTACLE.

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

maintenance work on the aircraft electrical system (with the exception of electronic equipment).

NOTE

Electrical power for the aircraft electrical circuits is provided through a split bus bar having all electronic circuits on one side of the bus and other electrical circuits on the other side of the bus. When an external power source is connected, a contactor automatically opens the circuit to the electronic portion of the split bus bar as a protection against damage to the transistors in the electronic equipment by transient voltages from the power source. Therefore, the external power source can not be used as a source of power when checking electronic components.

Just before connecting an external power source (generator type or battery cart), the master switch should be turned ON.

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

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to close it for charging a completely "dead" battery. A special fused circuit in the external power system supplies the needed "jumper" across the contacts so that with a "dead" battery and an external power source applied, turning the master switch ON will close the battery contactor.

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 place the auxiliary fuel pump switch in the ON position while cranking. After priming make sure the primer is full in and locked.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

A static pressure alternate source valve provides continued operation of the airspeed indicator, altimeter and vertical speed indicator in the event that the static system ports or lines become obstructed. If erroneous instrument readings are suspected due to water or ice in the static pressure lines, the alternate static source valve should be opened to close off the standard system and vent the instruments to the cabin. Cabin pressures will be affected by open ventilators and window and varying airspeeds, and this will affect the instrument readings. Since an open window will cause large errors, it is recommended that it be closed whenever the alternate static system is in use.

When using the alternate static source with the window closed, the airspeed and altimeter readings will be higher than corresponding readings when using the primary source. In cruising flight, the airspeed indicator and altimeter will read approximately 4 MPH and 50 feet higher, respectively. In the climb and approach speed range, the variations are negligible.

28-VOLT ELECTRICAL SYSTEM

An optional 28-volt, direct-current electrical system is available for this aircraft. The system consists of a 24-volt 17 amp-hour battery, different circuit breakers, different gage wiring, additional resistors, minor wiring differences, and 24-volt electrical and electronic equipment.

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. Audio switching is accomplished by a series of radio selector switches located at the top-center of the instrument panel. They are rectangular in shape, internally lighted, and the face of each switch is labeled to define the system it controls. The selector switches have one function when depressed and another function when extended. They are designed to lock when pushed in to the depressed position; they can be extended by pressing full in and allowing them to release to the extended position. Certain combinations of switches are interlocked to prevent more than one system from being utilized at the same time. Depressing one interlocked switch automatically disengages the others. All of the selector switches are lighted anytime the master switch is turned on. When a switch is depressed, its light becomes brighter. The light intensity of a depressed switch can be controlled with the rheostat labeled AUDIO SW BRT to the right of the selector switches. The following information describes the various selector switch functions.

TRANSMITTER SELECTOR SWITCHES.

When two transmitters are installed, the microphone must be switched to the transmitter the pilot has selected for use. To accomplish this, interlocking transmitter selector switches labeled TR 1 and TR 2 are provided. TR 1 selects the upper transmitter and TR 2 selects the lower transmitter.

The installation of Cessna radio equipment provides certain audio back-up capabilities and transmitter selector switch functions that the pilot should be familiar with. When the transmitter selector switch labeled TR 1 or TR 2 is depressed, the audio amplifier of the corresponding transceiver is utilized to provide the speaker audio for all radios. If the audio amplifier in the selected transceiver fails, as evidenced by loss of speaker audio for all radios, depress the transmitter selector switch for the transceiver not in use. Since an audio amplifier is not utilized for headphones, a malfunctioning amplifier will not affect headphone operation.

RADIO SELECTOR SWITCHES

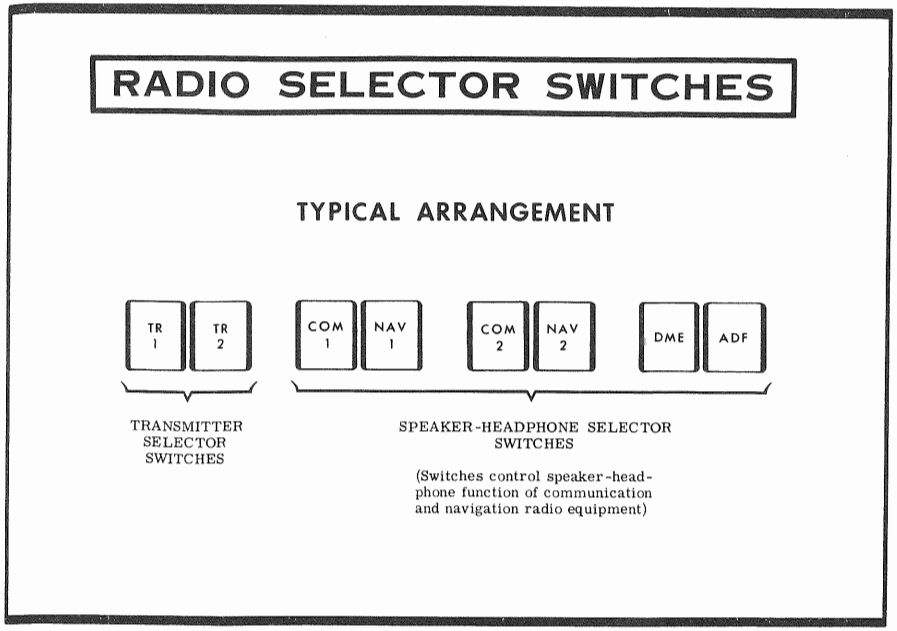


Figure 7-1.

SPEAKER-PHONE SWITCHES.

The speaker-phone switches such as COM 1, NAV 1 (400 series radios), or REC 1, REC 2 (300 series radios) determine whether the output of the receiver in use is fed to the headphones or through the audio amplifier to the speaker. Depress the switch for the desired receiver to obtain speaker operation, or release it if headphone operation is desired.

AUTOPILOT-OMNI SWITCHES.

When a Navomatic 400 autopilot is installed with two compatible omni receivers, two autopilot-omni switches labeled AP 1 and AP 2 are utilized. These switches select the omni receiver to be used for the omni course sensing function of the autopilot. This is accomplished by depressing the selector switch corresponding to the receiver which is to be used.

MICROPHONE-HEADSET

A microphone-headset combination is offered as optional equipment. Using the microphone-headset and a microphone keying switch on the left side of the pilot's control wheel, the pilot can conduct radio communications without interrupting other control operations to handle a hand-held microphone. Also, passengers need not listen to all communications. The microphone and headset jacks are located near the lower left corner of the instrument panel.

STATIC DISCHARGERS

If frequent IFR flights are planned, installation of optional static dischargers is recommended to improve radio communications during flight through dust or various forms of precipitation (rain, freezing rain, snow or ice crystals). Under these conditions, the build-up and discharge of static electricity from the wing tips, trailing edges of the wings, rudder, elevators, propeller tips and radio antennas, can result in loss of usable radio signals on all communications and navigation radio equipment. (Usually the ADF is first to be affected and VHF communication equipment is the last to be affected).

Installation of the static dischargers reduces interference from precipitation static, but it is possible to encounter severe precipitation static conditions which might cause the loss of radio signals, even with static dischargers installed. Whenever possible, avoid known severe precipitation areas to prevent loss of dependable radio signals. If avoidance is impractical, minimize airspeed and anticipate temporary loss of radio signals while in these areas.

OXYGEN SYSTEM

An oxygen cylinder, located in the fuselage tailcone, 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 shutoff valve is included as part of the regulator assembly. An oxygen cylinder filler valve is located on the left side of the fuselage tailcone (under a cover plate). Cylinder pressure is indicated by a pressure gage located in the overhead oxygen console above the pilot's and front seat passenger's seats.

Six oxygen outlets are provided; two in the overhead oxygen console and four in the cabin ceiling just above the side windows (one at each of the rear seating positions). One permanent, microphone equipped mask is provided for the pilot, and five disposable type masks are provided for the passengers. All masks are the partial rebreathing type, equipped with vinyl plastic hoses and flow indicators.

A remote shutoff valve control, located adjacent to the pilot's oxygen outlet in the overhead oxygen console, is used to shut off the supply of oxygen to the system when not in use. The control is mechanically connected to the shutoff valve at the cylinder. With the exception of the shutoff 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 Chart (figure 7-2). Also, check that the face masks and hoses are accessible and in good condition.

Supplemental oxygen should be used by all occupants when cruising above 10,000 feet. As described in the Cessna booklet "Man At Altitude," it is often advisable to use oxygen at altitudes lower than 10,000 feet under conditions of night flying, fatigue, or periods of physiological or emotional disturbances. Also, the habitual and excessive use of tobacco or alcohol will usually necessitate the use of oxygen at less than 10,000 feet.

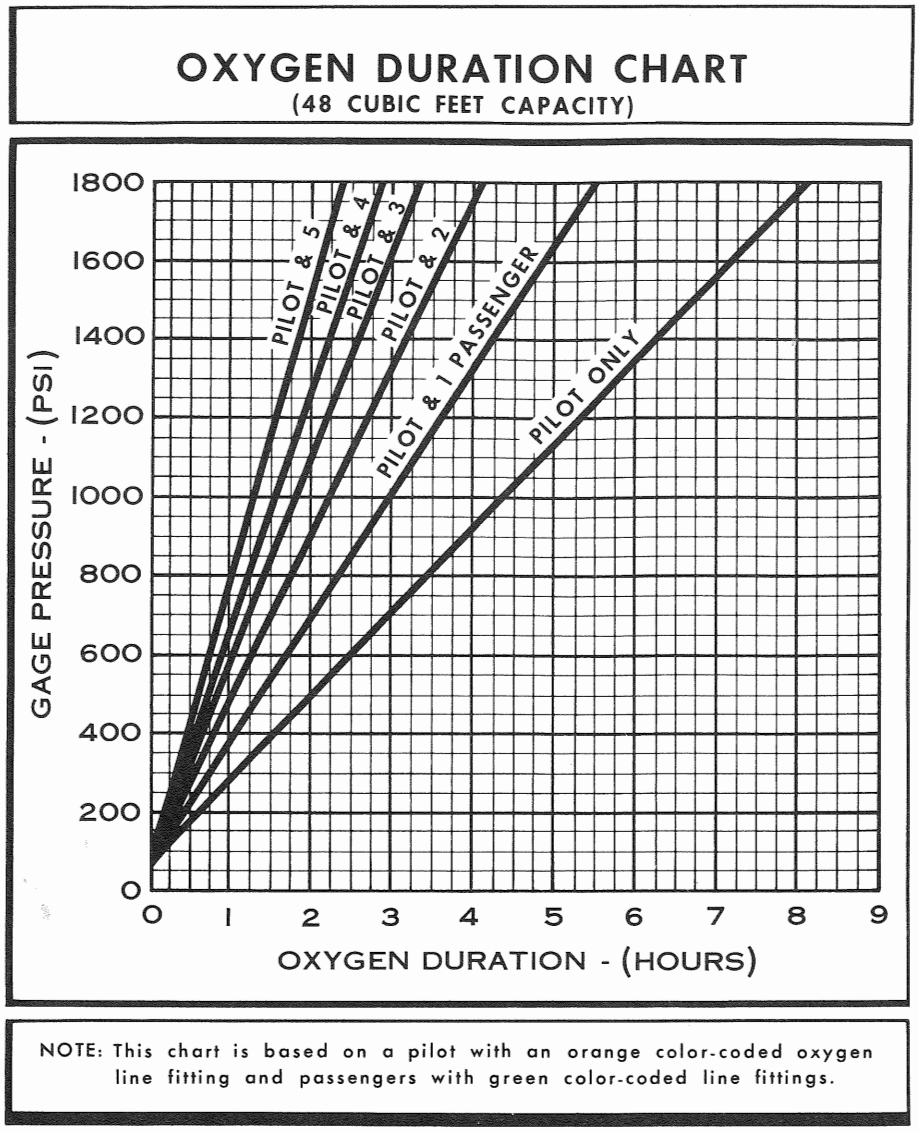


Figure 7-2.

NOTE

For safety reasons, no smoking should be allowed in the aircraft while oxygen is being used.

When ready to use the oxygen system, proceed as follows:

(1) Select mask and hose.

NOTE

The hose provided for the pilot is of a higher flow rate than those for the passengers; it is color-coded with an orange band adjacent to the plug-in fitting. The passenger hoses are color-coded with a green band. If the aircraft owner prefers, he may provide higher flow hoses for all passengers. In any case, it is recommended that the pilot use the larger capacity hose. The pilot's mask is equipped with a microphone to facilitate use of the radio while using oxygen. An adapter cord is furnished with the microphone-equipped mask to mate the mask microphone lead to the AUX MIKE JACK located under the left side of the instrument panel. To connect the oxygen mask microphone, connect the mask lead to the adapter cord and plug the cord into the AUX MIKE JACK. (If an optional microphone-headset combination has been in use, the microphone lead from this equipment is already plugged into the AUX MIKE JACK. It will be necessary to disconnect this lead from the AUX MIKE JACK so that the adapter cord from the oxygen mask microphone can be plugged into the jack.) A switch is incorporated on the left hand control wheel to operate the microphone.

(2) Attach mask to face and adjust metallic nose strap for snug mask fit.
(3) Select oxygen outlet located nearest to the seat you are occupying, and plug delivery hose into it. When the oxygen supply is turned on, oxygen will flow continuously at the proper rate of flow for any altitude without any manual adjustments.
(4) Position oxygen supply control knob ON.
(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.
(7) Position oxygen supply control knob OFF.

OXYGEN DURATION CALCULATION.

The Oxygen Duration Chart (figure 7-2) should be used in determining the usable duration (in hours) of the oxygen supply in your aircraft. The following procedure outlines the method of finding duration from the chart.

(1) Note the available oxygen pressure shown on the pressure gage.
(2) Locate this pressure on the scale on the left side of the chart, then go across the chart horizontally to the right until you intersect the line representing the number of persons making the flight. After intersecting the line, drop down vertically to the bottom of the chart and read the duration in hours given on the scale.
(3) As an example of the above procedure, 1400 psi of pressure will safely sustain the pilot only for nearly 6 hours and 15 minutes. The same pressure will sustain the pilot and three passengers for approximately 2 hours and 30 minutes.

NOTE

The Oxygen Duration Chart is 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 pilot and passengers, it will be necessary to compute new oxygen duration figures due to the greater consumption of oxygen with these hoses. This is accomplished by computing the total duration available to the pilot only (from PILOT ONLY line on chart), then dividing this duration by the number of persons (pilot and passengers) using oxygen.

OXYGEN SYSTEM SERVICING.

The oxygen cylinder, when fully charged, contains approximately 48 cubic feet of oxygen, under a pressure of 1800 psi at 70°F. Filling pressures will vary, however, due to the ambient temperatures in the filling area, and because of the temperature rise resulting from compression of the oxygen. Because of this, merely filling to 1800 psi will not result in a properly filled cylinder. Fill to the pressures indicated in the table on the following page for the ambient temperature.

AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG	AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG
0	1600	50	1825
10	1650	60	1875
20	1700	70	1925
30	1725	80	1975
40	1775	90	2000

IMPORTANT

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

CARGO PACK

FLIGHT OPERATION WITH A CARGO PACK.

All flight characteristics for a cargo pack equipped aircraft are identical to an aircraft without a cargo pack. There is, however, a slight climb and cruise performance differential between the two aircraft.

The climb performance of the aircraft equipped with a cargo pack is approximately 45 ft/min less than that shown in the Maximum Rate-of-Climb Data table for the standard aircraft.

To obtain the speed performance for the aircraft equipped with a cargo pack, the speed differentials shown in the table below should be subtracted from the TAS MPH figures shown in the Cruise Performance tables for the standard aircraft. Cruising range is computed by multiplying the cargo pack TAS by the endurance.

For cargo loading, refer to Section IV.

SPEED DIFFERENTIAL TABLE

% BHP	SPEED DIFFERENTIAL MPH
75	-5
65	-5
55	-5
45	-6
35	-8

Figure 7-3.

TRUE AIRSPEED INDICATOR

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

TO OBTAIN TRUE AIRSPEED, rotate ring until pressure altitude is aligned with outside air temperature in degrees Fahrenheit. Then read true airspeed on rotatable ring opposite airspeed needle.

NOTE

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

CESSNA ECONOMY MIXTURE INDICATOR

The Cessna Economy Mixture Indicator is an exhaust gas temperature (EGT) sensing device which visually aids the pilot in adjusting the cruise mixture. Exhaust gas temperature varies with fuel-to-air ratio, power and RPM. However, the difference between the peak EGT and the EGT at the cruise mixture setting is essentially constant and this provides a useful leaning aid. Operating instructions are included in Section II.

SKYDIVING KIT

A kit is available as optional equipment to facilitate skydiving operations. The kit consists of a spoiler, skydiver steering switch, and a steering signal light console. The spoiler is installed on the door hinges of the removed front cargo door to minimize the strong air flow buffeting within the cabin when the cargo doors are removed. The rocker-type steering switch is mounted inside the cabin on the upper sill of the cargo door opening and is used by the skydiver to signal the pilot of his desired flight path over the drop zone. A steering signal light console, with red and green lights controlled by operation of the steering switch, is mounted on top of the instrument panel. Illumination of the red light indicates to the pilot that the diver desires that the aircraft be steered left; conversely, a green light shows that the pilot is to steer right.

OPERATING DETAILS

For skydiving operations, removal of both cargo doors is suggested, since exit through a single door would be difficult with the spoiler obstructing part of the door opening. Installation of the spoiler substantially reduces air flow buffeting in the cabin; however, all loose equipment, including head rests, rear window sun shade, removable arm rests, safety belts, etc., should be removed or secured. Fifth and sixth seat passengers will receive a strong air blast, and face protection in the form of goggles and helmet is recommended.

Removal of the cargo doors also necessitates the installation of a depressor plate over the wing flap circuit interrupt switch to permit flap operation with doors removed. (Under normal operations with the cargo doors installed, the switch prevents flap operation whenever the front cargo door is open to prevent accidental damage to the door or wing flap if the flaps are lowered.)

With the cargo doors removed, flight characteristics are essentially unchanged, except that slightly different directional trim may be needed.

Seating accommodations for as many as five skydivers are more easily provided by removing the right center seat and the copilot seat, and allowing these divers to sit on the floor back-to-back. An extra long seat belt (attached to the copilot seat belt anchor points) is needed to restrain the rearward facing diver having a back-pack parachute.

STOWABLE RUDDER PEDALS

Stowable right-hand rudder pedals are available as part of the optional right-hand flight controls installation. The pedals fold forward and stow against the firewall, thereby permitting the right front passenger to extend his feet forward for greater comfort.

NOTE

When the rudder pedals are in the stowed position, the toe brakes will still operate.

A push-pull control on the instrument panel actuates the pedal unlocking mechanism. The pedals are stowed simply by squeezing the double buttons of the control knob and pulling the knob out to release the pedals; the pedals can then be pushed forward against the firewall where they are retained by spring clips within a bracket. The pedals are restored to their operating positions by pushing the control knob full in, and inserting the toe of the shoe underneath each pedal and pulling each pedal aft until it snaps into position. The pedals are again ready for flight use by the right front passenger.

ELECTRIC ELEVATOR TRIM SYSTEM

An electric trim system is available to facilitate trimming the aircraft. The system is controlled by a slide-type trim switch on the top of the left control wheel grip and a disengage switch located on the left side of the control wheel pad. Pushing the trim switch to the forward position, labeled DN, moves the elevator trim tab in the "nose down" direction; conversely, pulling the switch aft to the UP position moves the tab in the "nose up" direction. When the switch is released, it automatically returns to the center off position, and elevator trim tab motion stops. The disengage switch, labeled ELECT TRIM DISENGAGE, removes all electrical power from the system when placed in the DISENGAGE position.

A servo unit (which includes a motor and chain-driven, solenoid-operated clutch) actuates the trim tab to the selected position. When the clutch is not energized (trim switch off) the electric portion of the trim system freewheels so that manual operation is not affected. The electric trim system can be overridden at any time by manually rotating the trim wheel, thus overriding the servo that drives the trim tab.

NORMAL OPERATION.

To operate the electric elevator trim system, proceed as follows:

(1) Master Switch -- ON.
(2) Elevator Trim Disengage Switch -- ON.
(3) Trim Switch -- ACTUATE as desired.
(4) Elevator Trim Position Indicator -- CHECK.

NOTE

To check the operation of the disengage switch, actuate the elevator trim switch with the disengage switch in the DISENGAGE position. Observe that the manual trim wheel and indicator do not rotate when the elevator trim switch is activated.

EMERGENCY OPERATION.

(1) Elevator Trim Disengage Switch -- DISENGAGE.
(2) Manual Trim -- AS REQUIRED.

OIL QUICK-DRAIN VALVE

An oil quick-drain valve is optionally offered to replace the drain plug in the oil sump drain port. The valve provides a quicker and cleaner method of draining engine oil. To drain the oil with this valve installed, slip a hose over the end of the valve, route the hose to a suitable container, then push upward on the end of the valve until it snaps into the open position. Spring clips will hold the valve open. After draining, use a screwdriver or suitable tool to snap the valve into the extended (closed) position and remove the drain hose.

ALPHABETICAL INDEX

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SERVICING REQUIREMENTS*

ENGINE OIL:

GRADE -- Aviation Grade SAE 50 Above 40°F.
Aviation Grade SAE 10W30 or SAE 30 Below 40°F.
Multi-viscosity oil with a range of SAE 10W30 is recommended for improved starting in cold weather. Ashless dispersant oil, conforming to Continental Motors Specification MHS-24A, must be used.

NOTE

Your Cessna was delivered from the factory with a corrosion preventive aircraft engine oil. If oil must be added during the first 25 hours, use only aviation grade straight mineral oil conforming to Specification No. MIL-L-6082.

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. These quantities refer to oil dipstick level readings. During oil and oil filter changes, one additional quart is required when the filter element is changed.

OIL AND OIL FILTER CHANGE --
After the first 25 hours of operation, drain engine oil sump and clean the oil pressure screen. If an optional oil filter is installed, change filter element at this time. Refill sump with straight mineral oil and use until a total of 50 hours has accumulated or oil consumption has stabilized; then change to dispersant oil. On aircraft not equipped with an optional oil filter, drain the engine oil sump and clean the oil pressure screen each 50 hours thereafter. On aircraft which have an optional oil filter, the oil change interval may be extended to 100-hour intervals, providing the oil filter element is changed at 50-hour intervals. Change engine oil at least every 6 months even though less than the recommended hours have accumulated. Reduce intervals for prolonged operation in dusty areas, cold climates, or when short flights and long idle periods result in sludging conditions.

SERVICING REQUIREMENTS*

FUEL:

GRADE -- 100/130 Minimum Grade Aviation Fuel.
100/130 low lead aviation fuel with a lead content limited to 2 cc per gallon is also approved.
CAPACITY EACH STANDARD TANK -- 32.5 Gallons.
CAPACITY EACH LONG RANGE TANK -- 42.0 Gallons.

LANDING GEAR:

NOSE WHEEL TIRE PRESSURE -- 49 PSI on 5.00-5, 6-Ply Rated Tire
29 PSI on 6.00-6, 4-Ply Rated Tire
MAIN WHEEL TIRE PRESSURE -- 42 PSI on 6.00-6, 6-Ply Rated Tires
35 PSI on 8.00-6, 6-Ply Rated Tires
NOSE GEAR SHOCK STRUT --
Keep filled with MIL-H-5606 hydraulic fluid and inflated with air to 80 PSI. Do not over-inflate.

OXYGEN:

AVIATOR'S BREATHING OXYGEN -- Spec. No. MIL-O-27210
MAXIMUM PRESSURE (cylinder temperature stabilized after filling) --
1800 PSI at 70°F.
Refer to page 7-11 for filling pressures.

* For complete servicing requirements, refer to the aircraft Service Manual.