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TURBO SKYWAGON 206

OWNER'S MANUAL

PERFORMANCE - SPECIFICATIONS

Turbo Skywagon 206 *

GROSS WEIGHT	3600 lbs	2600 lbs
SPEED, BEST POWER MIXTURE:		
Top Speed at 19,000 ft	200 mph	206 mph
Cruise, 75% Power at 24,000 ft	184 mph	194 mph
Cruise, 75% Power at 10,000 ft	170 mph	176 mph
RANGE, NORMAL LEAN MIXTURE:		
Cruise, 75% Power at 24,000 ft 63 Gallons, No Reserve	700 mi 3.8 hrs 182 mph	740 mi 3.8 hrs 192 mph
Cruise, 75% Power at 10,000 ft 63 Gallons, No Reserve	645 mi 3.8 hrs 168 mph	670 mi 3.8 hrs 174 mph
Cruise, 75% Power at 24,000 ft 80 Gallons, No Reserve	890 mi 4.9 hrs 182 mph	940 mi 4.9 hrs 192 mph
Cruise, 75% Power at 10,000 ft 80 Gallons, No Reserve	820 mi 4.9 hrs 168 mph	850 mi 4.9 hrs 174 mph
Optimum Range at 15,000 ft 63 Gallons, No Reserve	825 mi 5.9 hrs 139 mph	910 mi 6.2 hrs 147 mph
Optimum Range at 10,000 ft 63 Gallons, No Reserve	750 mi 5.8 hrs 129 mph	880 mi 6.4 hrs 138 mph
Optimum Range at 15,000 ft 80 Gallons, No Reserve	1050 mi 7.6 hrs 139 mph	1150 mi 7.9 hrs 147 mph
Optimum Range at 10,000 ft 80 Gallons, No Reserve	950 mi 7.4 hrs 129 mph	1115 mi 8.1 hrs 138 mph
RATE OF CLIMB AT SEA LEVEL	1030 fpm	1660 fpm
SERVICE CEILING	26,300 ft	30,800 ft
TAKE-OFF:		
Ground Run	910 ft	400 ft
Total Distance Over 50-foot Obstacle	1810 ft	760 ft
LANDING:		
Landing Roll	735 ft	735 ft
Total Distance Over 50-foot Obstacle	1395 ft	1395 ft
EMPTY WEIGHT (Approximate)	1840 lbs	1840 lbs
USEFUL LOAD	1760 lbs	760 lbs
WING LOADING: Pounds/Sq Foot	20.5	14.8
POWER LOADING: Pounds/HP	12.6	9.1
FUEL CAPACITY: Total		
Standard Tanks	65 gal.	65 gal.
Optional Long Range Tanks	84 gal.	84 gal.
OIL CAPACITY: Total	13 qts	13 qts
PROPELLER: 2-Bladed Constant Speed (Dia)	82 inches	82 inches
ENGINE:		
Continental Turbocharged Fuel Injection Engine 285 rated BHP at 2700 RPM and 32.5".MP	TSIO-520-C	TSIO-520-C

NOTE: Speed performance data is shown for an airplane equipped with optional speed fairings, which increase the speed by one MPH.

Performance with an optional 3-bladed propeller is essentially the same as above.

* This manual covers operation of the Turbo Skywagon 206 which is certificated as Model TU206D under FAA Type Certificate No. A4CE.

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 Turbo Skywagon 206. 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.

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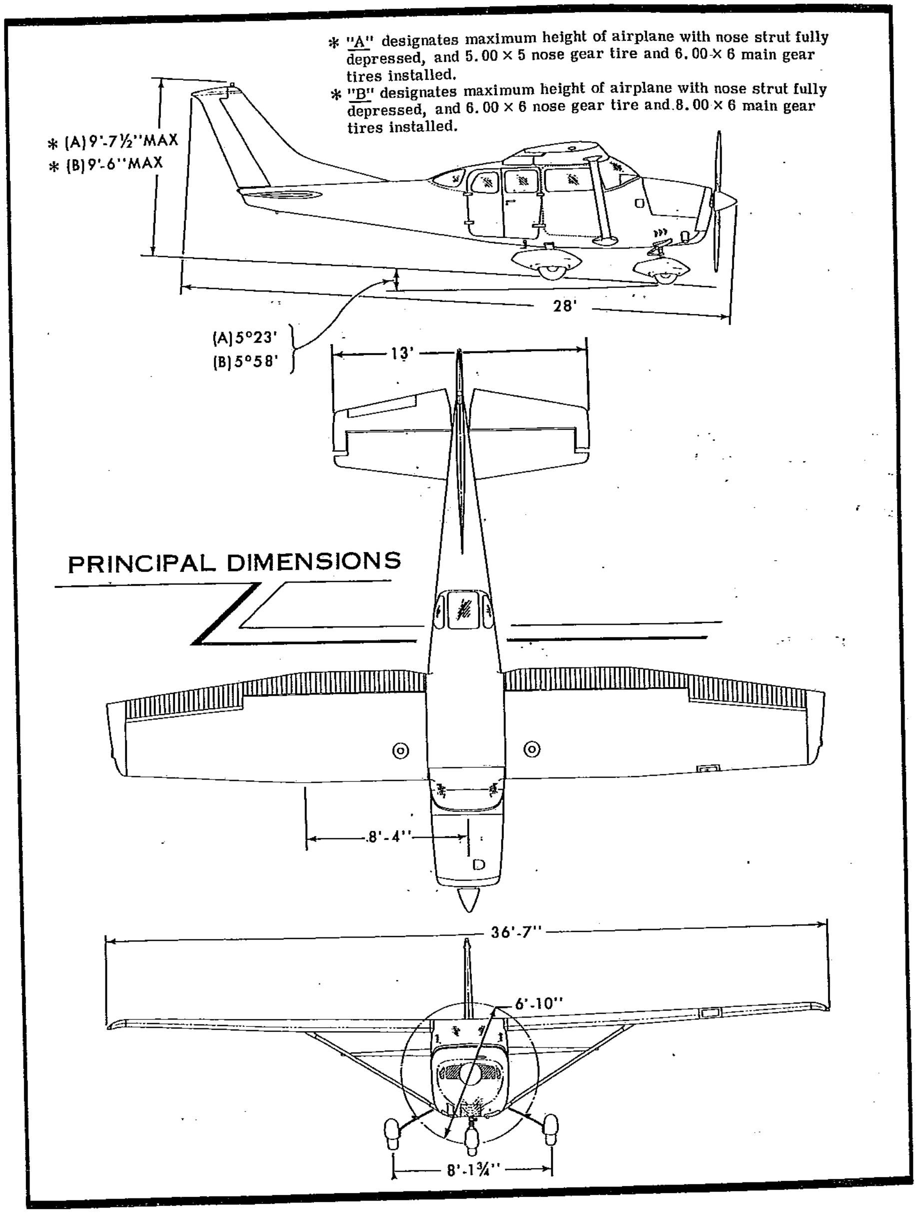

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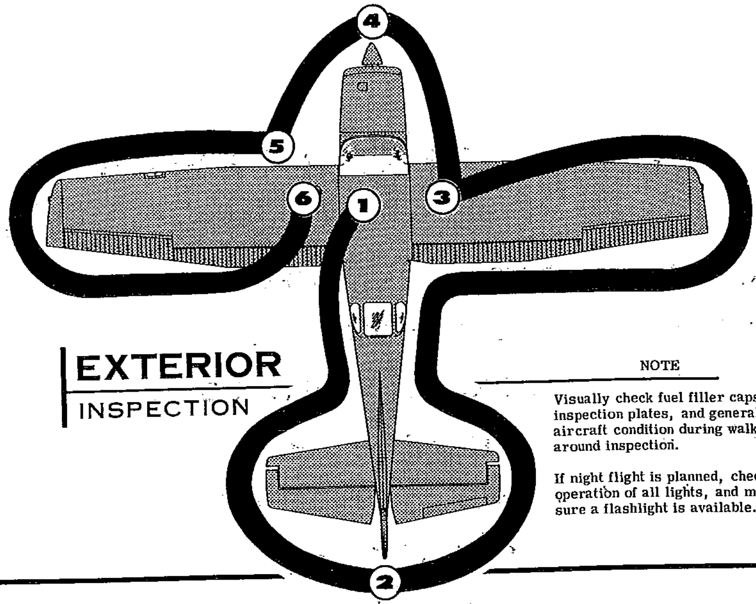


EXTERIOR INSPECTION

NOTE

Visually check fuel filler caps, inspection plates, and general aircraft condition during walk-around inspection.

If night flight is planned, check operation of all lights, and make sure a flashlight is available.

(1)
a. Turn on master switch and check fuel quantity indicators, then turn master switch "OFF."
b. Check ignition switch "OFF."
c. Check that fuel tank selector valve handle is on fullest tank.
d. Remove control wheel lock.
e. Check oxygen supply pressure.
f. Check that oxygen masks are available.

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

(3)
a. Disconnect wing tie-down.
b. Check fuel tank vent opening for stoppage.
c. 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.

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.

d. Check main wheel tire for proper inflation.

(4)
a. Inspect airspeed static source holes on sides of fuselage for stoppage.
b. Check propeller and spinner for nicks and security, and propeller for oil leaks.
c. Check engine induction air inlet and cabin heating air inlet for restrictions.
d. Check nose wheel strut and tire for proper inflation.
e. Disconnect nose tie-down.
f. Check oil level. Do not operate with less than nine quarts. Fill for extended flight.
g. Before first flight of day and after each refueling, pull out strainer drain knob for about four seconds to clear fuel strainer of possible water and sediment. Check strainer drain closed. If water is observed, there is a possibility that the fuel tank sumps contain water. Thus, the fuel tank sump drain plugs and fuel reservoir drain plugs should be removed to check for the presence of water.

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

(6) Same as (3)

Figure 1-1.

Section I

OPERATING CHECK LIST

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

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

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

BEFORE ENTERING THE AIRPLANE.

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

BEFORE STARTING THE ENGINE.

(1) Seats and Seat Belts -- Adjust and lock.
(2) Brakes -- Test and set.
(3) Master Switch -- "ON."
(4) Cowl Flaps -- "OPEN." (Move lever out of locking hole to reposition.)
(5) Fuel Selector -- Fullest tank.
(6) Turn all radio switches "OFF."

STARTING ENGINE.

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

NOTE

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

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

NOTE

If engine fails to continue running, start again from step (3) or use "HI" position of auxiliary fuel pump momentarily to clear vapor from lines.

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

BEFORE TAKE-OFF.

(1) Parking Brake -- Set.
(2) Cowl Flaps -- Check full "OPEN."
(3) Flight Controls -- Check for free and correct movement.
(4) Elevator and Rudder Trim -- "TAKE-OFF" setting.
(5) Throttle Setting -- 1700 RPM.
(6) Magnetos -- Check (50 RPM maximum differential between magnetos).
(7) Propeller -- Cycle from high to low RPM; return to high RPM (full in).
(8) Engine Instruments -- Check.
(9) Ammeter -- Check.
(10) Suction Gage -- Check (4.6 to 5.4 inches of mercury).
(11) Flight Instruments and Radios -- Set.
(12) Optional Autopilot or Wing Leveler -- "OFF."
(13) Cabin Doors and Window -- Closed and locked.

TAKE-OFF.

NORMAL TAKE-OFF.

(1) Wing Flaps -- 0° to 20°.
(2) Power -- Full throttle and 2700 RPM.
(3) Elevator Control -- Lift nose wheel at 60 MPH.
(4) Climb Speed -- 90 to 100 MPH until all obstacles are cleared, then set up climb speed as shown in "NORMAL CLIMB" check list.
(5) Wing Flaps -- Retract (if extended) after obstacles are cleared.

MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps -- 20°.
(2) Brakes -- Apply.
(3) Power -- Full throttle, 2700 RPM and 28 gal/hr fuel flow.
(4) Brakes -- Release.
(5) Elevator Control -- Maintain slightly tail-low attitude.
(6) Climb Speed -- 78 MPH until all obstacles are cleared, then set up climb speed as shown in "MAXIMUM PERFORMANCE CLIMB" check list.
(7) Wing Flaps -- Retract (after obstacles are cleared and 90 MPH is reached).

NOTE

Do not reduce power until wing flaps have been retracted.

CLIMB.

NORMAL CLIMB.

(1) Airspeed -- 110 to 120 MPH.
(2) Power -- 27.5 inches and 2500 RPM.
(3) Mixture -- Lean to 20.0 gal/hr fuel flow.
(4) Cowl Flaps -- Open as required.

MAXIMUM PERFORMANCE CLIMB—SEA LEVEL TO 19,000 FEET.

(1) Airspeed -- 105 MPH.
(2) Power -- Full throttle and 2700 RPM.
(3) Mixture -- Adjust to 28 gal/hr fuel flow.

NOTE

See power and fuel flow placard for maximum manifold pressure and fuel flow above 19,000 feet.

(4) Cowl Flaps -- Full "OPEN."

CRUISING.

(1) Power -- 15-27.5 inches of manifold pressure and 2200-2500 RPM. Select combination to give no more than 75% power.
(2) Cowl Flaps -- Open as required.
(3) Elevator and Rudder Trim -- Adjust.
(4) Mixture -- Lean for cruise fuel flow as determined from your Cessna Power Computer or the OPERATIONAL DATA in Section V.

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 -- Fullest tank.
(2) Mixture -- Rich.
(3) Propeller -- High RPM.
(4) Wing Flaps -- Down 0°-10° (below 160 MPH), 10°-40° (below 110 MPH).
(5) Airspeed -- 85-95 MPH (flaps retracted), 75-85 MPH (flaps extended).
(6) Elevator Trim -- Adjust for landing.

NORMAL LANDING.

(1) Landing Technique -- Conventional for all flap settings.

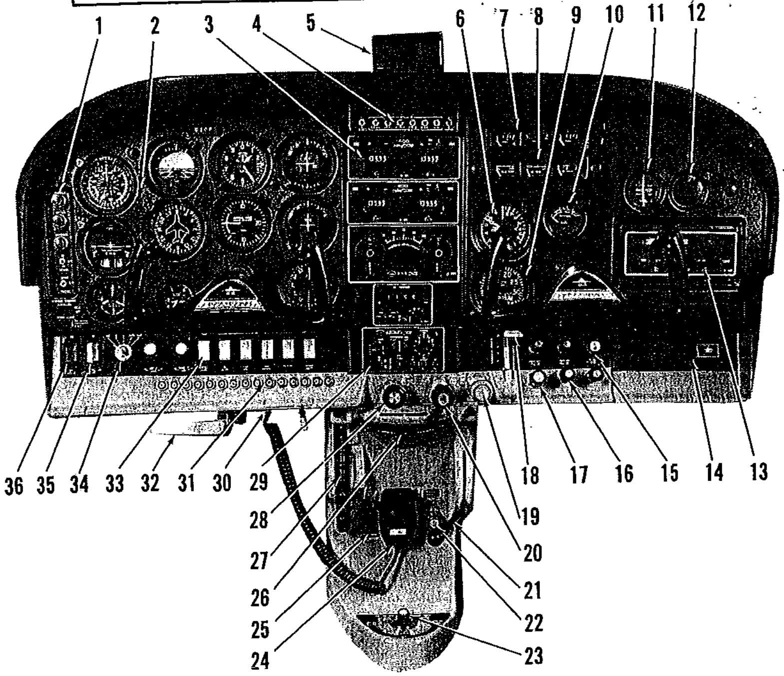
AFTER LANDING.

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

SECURE AIRCRAFT.

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

INSTRUMENT PANEL



1. Marker Beacon Indicator Lights and Switches (Opt.)
2. Flight Instrument Group
3. Radios (Opt.)
4. Radio Selector Switches (Opt.)
5. Rear View Mirror (Opt.)
6. Manifold Pressure/Fuel Flow Indicator
7. Fuel Quantity Indicators and Ammeter
8. Cylinder Head Temperature, Oil Temperature and Pressure Gages
9. Tachometer
10. Economy Mixture Indicator (Opt.)
11. Flight Hour Recorder (Opt.)
12. Optional Instrument Space
13. Radio (Opt.)
14. Map Compartment
15. Cabin Air and Heat Controls
16. Stowable Rudder Pedal Control (Opt.)
17. Cigar Lighter
18. Wing Flap Switch
19. Mixture Control Knob
20. Propeller Control Knob
21. Cowl Flap Control Handle
22. Engine Primer (Opt.)
23. Fuel Selector Valve Handle
24. Microphone
25. Electric Elevator Trim Circuit Breaker Switch (Opt.)
26. Rudder Trim Control Wheel
27. Elevator Trim Control Wheel
28. Throttle
29. Autopilot Control Unit (Opt.)
30. Microphone Jack
31. Circuit Breakers
32. Parking Brake Handle
33. Electrical Switches
34. Ignition/Starter Switch
35. Auxiliary Fuel Pump Switch
36. 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 airplane. This section also covers in somewhat greater detail some of the items listed in Check List form in Section I that require further explanation.

FUEL SYSTEM.

Fuel is supplied to the engine from two tanks, one in each wing. Usable fuel in each tank, for all flight conditions, is 31.5 gallons for standard tanks and 40 gallons for long range tanks.

NOTE

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

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

NOTE

> Fuel cannot be used from both fuel tanks simultaneously.

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

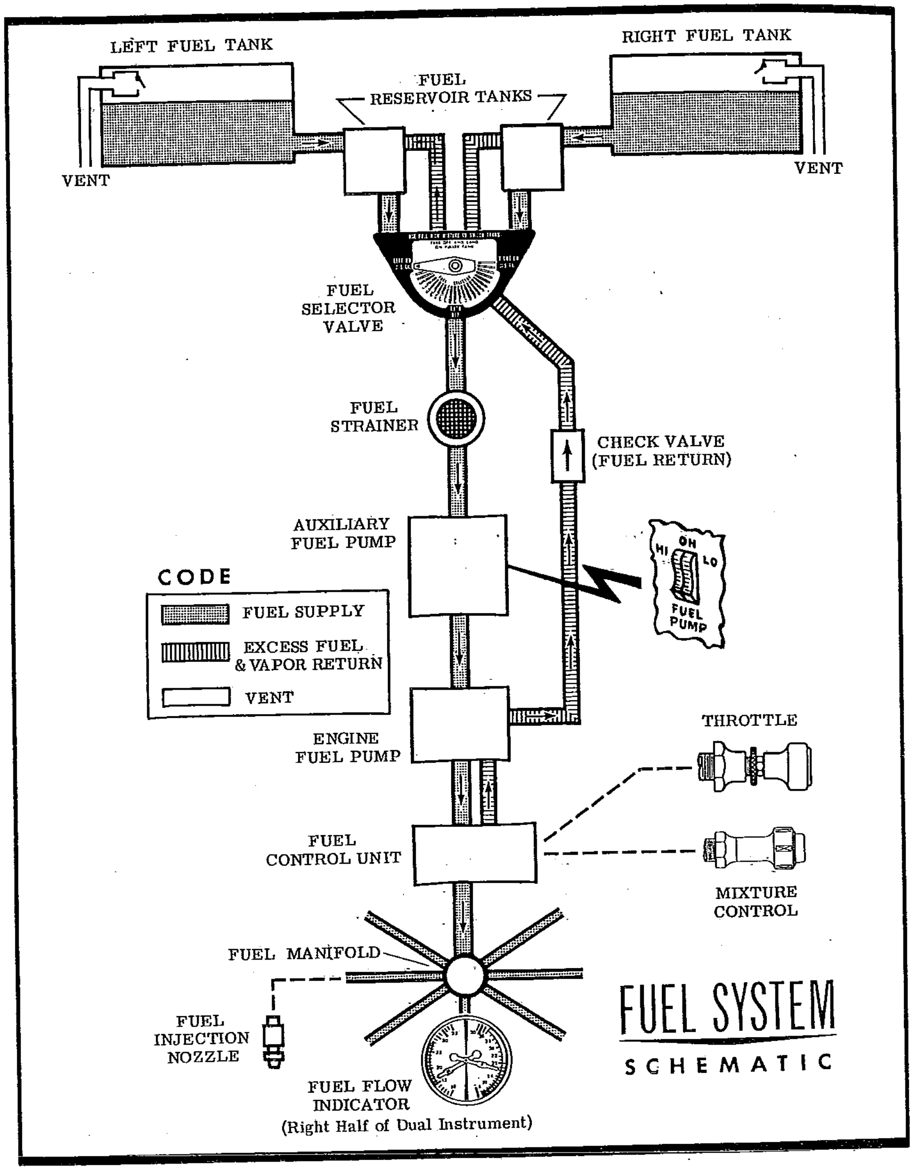


Figure 2-2.

AUXILIARY FUEL PUMP SWITCH.

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

NOTE

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

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

Operation with the auxiliary fuel pump switch in the "HI" position is also used for fuel vapor control during hot engine starting and high altitude climbs in warm temperatures. When the auxiliary fuel pump switch is turned on "HI" during a climb, the fuel flow will increase and the mixture should be manually leaned to obtain the desired fuel flow.

NOTE

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

To ensure a prompt engine restart in flight after running a fuel tank dry, switch to the tank containing fuel and place the auxiliary fuel pump switch in the "HI" position momentarily (3 to 5 seconds) with the throttle at least 1/2 open. Excessive use of the "HI" position of the auxiliary pump can cause flooding of the engine as indicated by a short (1 to 2 second) 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.

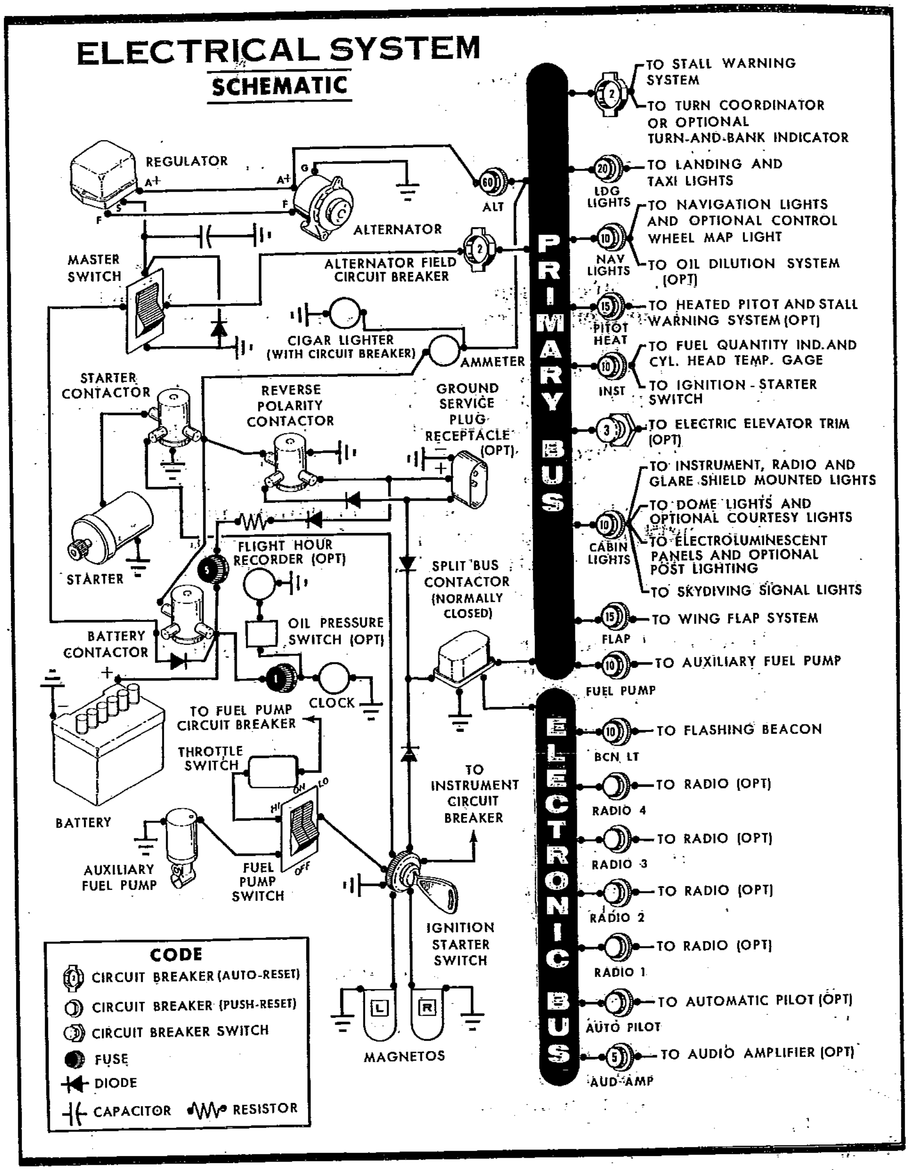


Figure 2-3.

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 "HI" 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). The 12-volt battery 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 system circuits. Both sides of the bus are on at all times except when either an external power source is connected or the starter switch is turned on; then a power contactor is automatically activated to open the circuit to the electronics bus. Isolating the electronic circuits in this manner prevents harmful transient voltages from damaging the semi-conductors in the electronics equipment.

AMMETER.

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

CIRCUIT BREAKERS AND FUSES.

Most of the electrical circuits in the airplane 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 circuit breaker mounted directly on the back of the light behind the instrument panel. Automatically-resetting circuit breakers mounted behind the instrment panel protect the stall warning transmitter and horn circuit, the turn coordinator or optional turn-and-bank-indicator circuit, and the alternator field and wiring circuit. When an optional electric elevator trim system is installed, a circuit breaker switch is mounted on the control pedestal, near the elevator trim control wheel.

ELECTROLUMINESCENT LIGHTING.

Switches and controls on the lower part of the instrument panel are lighted by electroluminescent panels which do not require light bulbs for illumination. This lighting is controlled by the instrument light rheostat.

GLARE SHIELD MOUNTED LIGHTS.

Four flush mounted lights are located in the glare shield above the instrument panel, and are covered by red lenses. (When optional post lighting is installed, the light above the radio selector switch panel is changed to a white lens.) The light above the radio selector switch panel is controlled by the radio light rheostat, and the remaining three lights are controlled by the instrument light rheostat when used with console lighting. When post lights are turned on, all of the glare shield lights will turn off except the light above the radio selector switch panel.

POST LIGHTS (OPT).

The instrument panel may be equipped with optional post lights to further increase night lighting. The post lights are located at the edge of each instrument or control to be lighted, and are controlled by a rocker-type switch labeled "POST-CONSOLE LIGHTS" and the instrument light rheostat. To operate the post lights, place the switch in the upper "POST" position and use the instrument light rheostat to control light intensity.

CONTROL WHEEL MAP LIGHT (OPT).

A map light may be installed on the bottom of the pilot's control wheel. The light illuminates the lower portion of the cabin just forward of the pilot and is helpful when checking maps and other flight data during night operation. To operate the light, first turn the "NAV LIGHTS" switch on, then adjust the map light's intensity with the knurled rheostat knob located at the bottom of the control wheel.

FLASHING BEACON.

The flashing beacon should not be used when flying through clouds or overcast; the flashing light reflected from water droplets or particles

in the atmosphere, particularly at night, can produce vertigo and loss of orientation.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM.

The temperature and volume of airflow into the cabin can be regulated to any degree desired by manipulation of the push-pull "CABIN HEAT" and "CABIN AIR" knobs. When partial cabin heat is desired, blending warm and cold air will result in improved ventilation and heat distribution throughout the cabin. 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 heat manifold just forward of the pilot's and copilot's feet. Rear cabin heat and air are supplied by two ducts from the manifold, one extending down each side of the cabin to an outlet at the front door post area at floor level. 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.

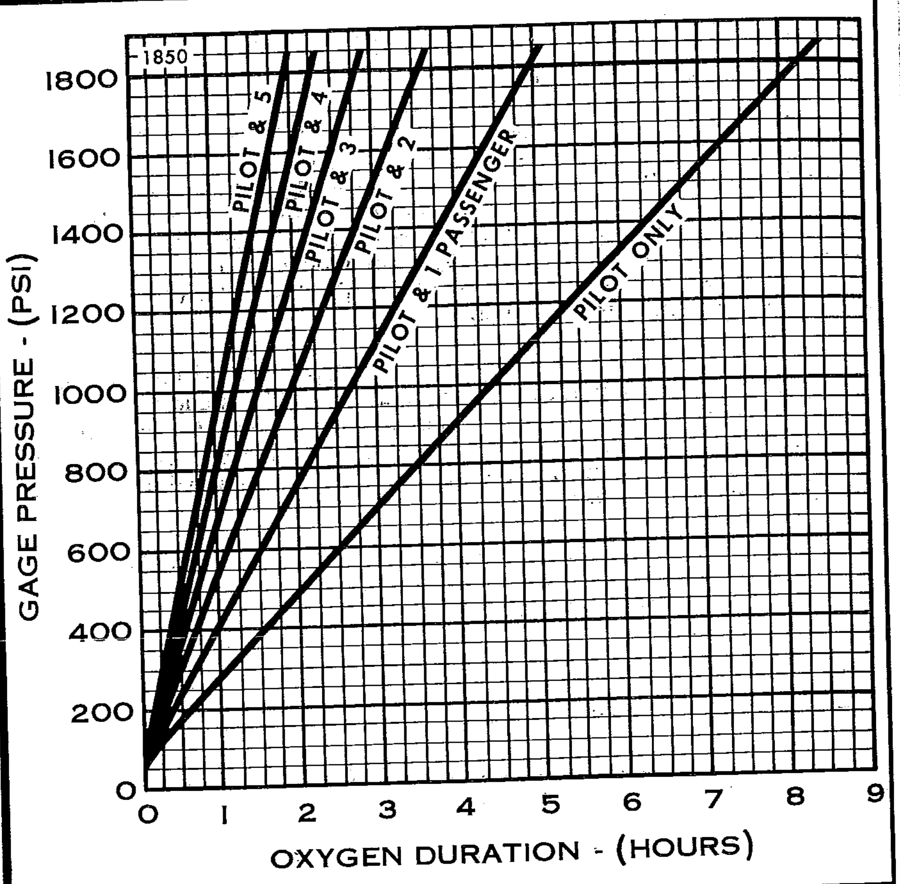
OXYGEN SYSTEM.

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 shut-off 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 copilot'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

OXYGEN DURATION CHART

(76 CUBIC FEET CAPACITY)



NOTE: This chart is based on a pilot with a red color-coded oxygen line fitting and passengers with orange color-coded line fittings.

Figure 2-4.

the passengers. All masks are the partial rebreathing type, equipped with vinyl plastic hoses and flow indicators.

A remote shut-off 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 shut-off valve at the cylinder. With the exception of the shut-off function, the system is completely automatic and requires no manual regulation for change of altitude.

The oxygen system (with the continuous flow masks and color-coded lines noted below) is satisfactory for operation to 25,000 feet. Above 25,000 feet, diluter-demand masks are recommended in lieu of the continuous flow masks and color-coded lines.

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 2-4). Also, check that the face masks and hoses are accessible and in good condition.

To use the oxygen system, proceed as follows:

NOTE

Permit no smoking when using oxygen.

(1) Select mask and hose.

NOTE

The pilot's oxygen hose has a higher flow rate than the passenger hoses; it is color-coded with a red band adjacent to the plug-in fitting. Hoses provided for the passengers are color-coded with an orange band. If the aircraft owner prefers, he may provide higher flow rate 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. A switch is incorporated on the left hand control wheel to operate the microphone.

(2) Attach mask to face; 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 2-4) should be used in determining the usable duration (in hours) of the oxygen supply in your airplane. The following procedure outlines the method of finding the duration from the 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, 1800 psi of pressure will safely sustain the pilot only for 8 hours and 15 minutes. The same pressure will sustain the pilot and three passengers for approximately 2 hours and 50 minutes.

NOTE

The Oxygen Duration Chart is based on a standard configuration oxygen system having one red color-coded hose assembly for the pilot and orange color-coded hoses for the passengers. If red 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.

TURBOCHARGED ENGINE SYSTEM.

Your aircraft is equipped with a turbocharged engine which makes it possible to maintain 75% cruise power to 24,000 feet.

Except for being turbocharged, the engine in your aircraft works and acts just like any normally aspirated engine. However, because the engine is turbocharged, some of the engine characteristics are different. The intent of this section is to point out some of the items that are affected by turbocharging, and outline the correct procedures to be followed so that operation becomes easier and simpler for owners of turbocharged aircraft.

For a better understanding of the turbocharged engine system, let's follow the induction air through the engine until it is expelled as exhaust gases. Reference should be made to the schematic of the turbocharger system shown in figure 2-5 as you read through the following steps:

(1) Engine induction air is taken in through an opening in the nose cap, ducted through a filter and into the compressor where it is compressed to near sea level pressure.

(2) The pressurized induction air then passes through the throttle body and induction manifold into the cylinders.

(3) The air and fuel are burned and exhausted to the supercharger turbine.

(4) The exhaust gases drive the turbine which, in turn, drives the compressor, thus completing the cycle.

At altitudes below 24,000 feet, the turbine has the capability of producing manifold pressures in excess of the maximum allowable 32.5 in. Hg. In order not to exceed 32.5 inches of manifold pressure, a bypass or waste gate is used so that some of the exhaust will be diverted overboard before it passes through the turbine.

It can be seen from studying Steps 1 through 4 that anything that affects the flow of induction air into the compressor or the flow of exhaust gases into the turbine will increase or decrease the speed of the turbocharger. This resultant change in flow will have no effect on the engine if the waste gate is still open because the waste gate position is changed to hold compressor discharge pressure constant. A waste gate controller automatically maintains maximum allowable compressor discharge pressure any time the turbine and compressor are capable of producing that pressure.

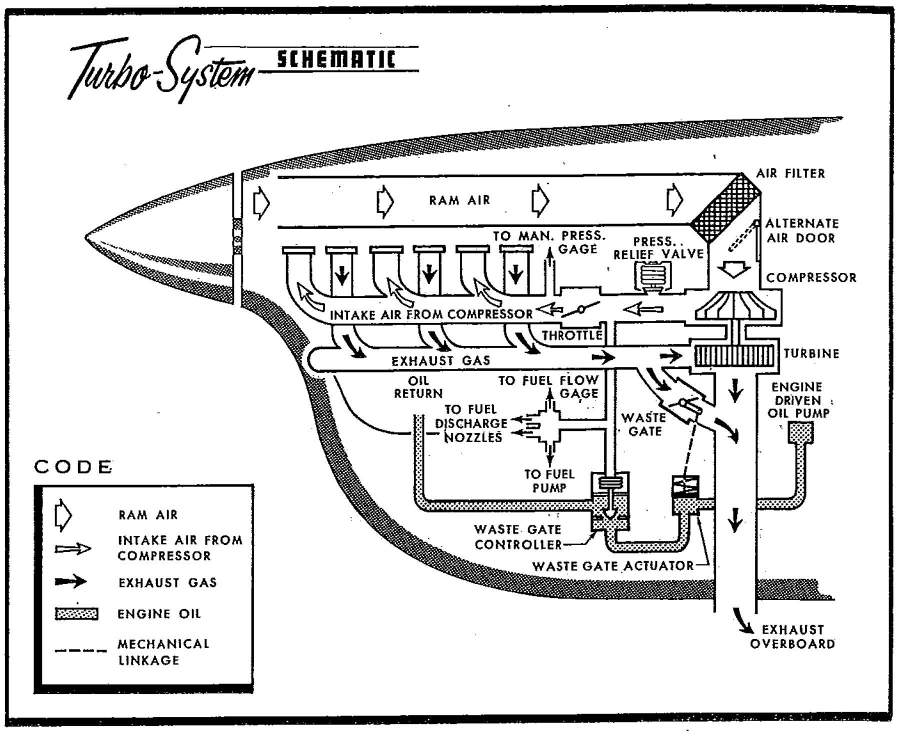


Figure 2-5.

At high altitude, part throttle, or low RPM, the exhaust flow is not capable of turning the turbine and compressor fast enough to maintain maximum compressor discharge pressure, and the waste gate will close to force all of the exhaust flow through the turbine.

When the waste gate is fully closed, any change in turbocharger speed will mean a change in engine operation. Thus, any increase or decrease in turbine speed will cause an increase or decrease in manifold pressure and fuel flow. If turbine speed increases, the manifold pressure increases; if the turbine speed decreases, the manifold pressure decreases. Since the compression ratio approaches 3 to 1 at high altitude, any change in exhaust flow to the turbine or ram induction air pressure will be magnified proportionally by the compression ratio and the change in flow through the exhaust system.

TURBOCHARGED ENGINE OPERATING CHARACTERISTICS.

MANIFOLD PRESSURE VARIATION WITH ENGINE RPM.

When the waste gate is open, the turbocharged engine will react the same as a normally aspirated engine when the engine RPM is varied. That is, when the RPM is increased, the manifold pressure will decrease slightly. When the engine RPM is decreased, the manifold pressure will increase slightly.

However, when the waste gate is closed, manifold pressure variation with engine RPM is just the opposite of the normally aspirated engine. An increase in engine RPM will result in an increase in manifold pressure, and a decrease in engine RPM will result in a decrease in manifold pressure.

MANIFOLD PRESSURE VARIATION WITH ALTITUDE.

At full throttle, your turbocharger is capable of maintaining the maximum allowable manifold pressure of 32.5 in. Hg to well above 19,000 feet. However, engine operating limitations establish the maximum manifold pressure that may be used. Manifold pressure should be reduced with the throttle above 19,000 feet, as noted on the operating placard in the airplane (subtract 1 in. Hg from 32.5 for each 1000 feet above 19,000 feet).

At part throttle, the turbocharger is capable of maintaining cruise climb power of 2500 RPM and 27.5 in. Hg from sea level to 24,000 feet in standard temperatures, and from sea level to 12,000 feet under hot day conditions without changing the throttle position, once the power setting is established after take-off. Under hot day conditions, this climb power setting is maintained above 12,000 feet by advancing the throttle as necessary to maintain 27.5 inches of manifold pressure just as you would a normally aspirated engine during climb.

MANIFOLD PRESSURE VARIATION WITH AIRSPEED.

When the waste gate is closed, manifold pressure will vary with variations in airspeed. This is because the compressor side of your turbocharger operates at pressure ratios of up to 3 to 1 and any change in pressure at the compressor inlet is magnified at the compressor outlet with a resulting effect on the exhaust flow and turbine side of the turbocharger.

FUEL FLOW VARIATIONS WITH CHANGES IN MANIFOLD PRESSURE.

The engine-driven fuel pump output is regulated by engine speed and compressor discharge pressure. Engine fuel flow is regulated by fuel pump output and the metering effects of the throttle and mixture control. When the waste gate is open, fuel flow will vary directly with manifold pressure, engine speed, mixture, or throttle control position. In this case, manifold pressure is controlled by throttle position and the waste gate controller, while fuel flow varies with throttle movement and manifold pressure.

When the waste gate is closed and manifold pressure changes are due to turbocharger output, as discussed previously, fuel flow will follow manifold pressure even though the throttle position is unchanged. This means that fuel flow adjustments required of the pilot are minimized to (1) small initial adjustments on take-off or climb-out for the proper rich climb setting, (2) lean-out in cruise to the recommended normal lean cruise setting, and (3) return to full rich position for approach and landing.

MANIFOLD PRESSURE VARIATION WITH INCREASING OR DECREASING FUEL FLOW.

When the waste gate is open, movement of the mixture control has little or no effect on the manifold pressure of the turbocharged engine.

When the waste gate is closed, any change in fuel flow to the engine will have a corresponding change in manifold pressure. That is, increasing the fuel flow will increase the manifold pressure and decreasing the fuel flow will decrease the manifold pressure. This is because an increased fuel flow to the engine increases the mass flow of the exhaust. This turns the turbocharger faster, increasing the induction air flow and raising the manifold pressure.

MOMENTARY OVERSHOOT OF MANIFOLD PRESSURE.

Under some circumstances (such as rapid throttle movement, especially with cold oil) it is possible that the engine can be overboosted slightly above the maximum allowable manifold pressure of 32.5 inches. This would most likely be experienced during the take-off roll or during a change to full throttle operation in flight. The induction air pressure relief valve will normally limit the overboost to 2 to 3 inches.

A slight overboost of 2 to 3 inches of manifold pressure is not considered detrimental to the engine as long as it is momentary. No corrective

action is required when momentary overboost corrects itself and is followed by normal engine operation. However, if overboosting of this nature persists when oil temperature is normal or if the amount of overboost tends to exceed 3 inches or more, the throttle should be retarded to eliminate the overboost and the controller system, including the waste gate and relief valve, should be checked for necessary adjustment or replacement of components.

ALTITUDE OPERATION.

Because your turbocharged aircraft will climb faster and higher than a normally aspirated aircraft, fuel vaporization may be encountered. When fuel flow variations of ± 1 gal/hr or more are observed (as a "nervous" fuel flow needle), turning the auxiliary fuel pump on "HI" will control vapor. However, it will also increase fuel flow, making it necessary to adjust the mixture control for the desired fuel flow. The auxiliary fuel pump should be left on for the remainder of the climb. It can be turned off whenever fuel flow will remain steady with it off, and the mixture must be adjusted accordingly.

HIGH ALTITUDE ENGINE ACCELERATION.

Your engine will accelerate normally from idle to full throttle with full rich mixture at any altitude below 20,000 feet. At higher altitudes, it is usually necessary to lean the mixture to get smooth engine acceleration from idle to maximum power. At altitudes above 25,000 feet, and with temperatures above standard, it takes one to two minutes for the turbine to accelerate from idle to maximum RPM although adequate power is available in 20 to 30 seconds.

STARTING ENGINE.

Proper fuel management and throttle adjustments are the determining factors in securing an easy start from your turbocharged 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, depress the right half of the auxiliary fuel pump switch to "LO" and turn the ignition-starter switch to "START" position. At the same time the starter engages and turns the engine, the auxiliary fuel pump will operate at a low flow rate, supplying fuel for starting.

While cranking, slowly advance the throttle until the engine starts. Slow throttle advancement is essential since the engine will start readily when the correct fuel/air ratio is obtained. On the other hand, fast throttle movement may prevent starting since an excessively rich mixture will be obtained due to greater fuel flow metered by the throttle position. In this case, another starting attempt must be made. When the engine has started, reset the throttle to the desired idle speed and turn the fuel pump switch off.

When the engine is hot or the 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 take care of 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, turn the fuel pump on "HI" until the fuel flow comes up to 4-6 gal/hr and then turn the pump off.

NOTE

During a restart after a brief shut-down in extremely hot weather, the presence of fuel vapor may require the pump to run on "HI" for up to 1 minute or more before the vapor is cleared sufficiently to obtain 4-6 gal/hr for starting.

(3) Without hesitation, engage the starter and the engine should start in 3 to 5 revolutions. Adjust the throttle for 1200-1400 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, turn the fuel pump on "HI" for approximately one second to clear out the vapor. Intermittent use of "HI" boost is needed since prolonged use of "HI" pump after the vapor is cleared will flood out the engine.
(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.

TAXIING.

Taxiing over loose gravel or cinders should be done at low engine

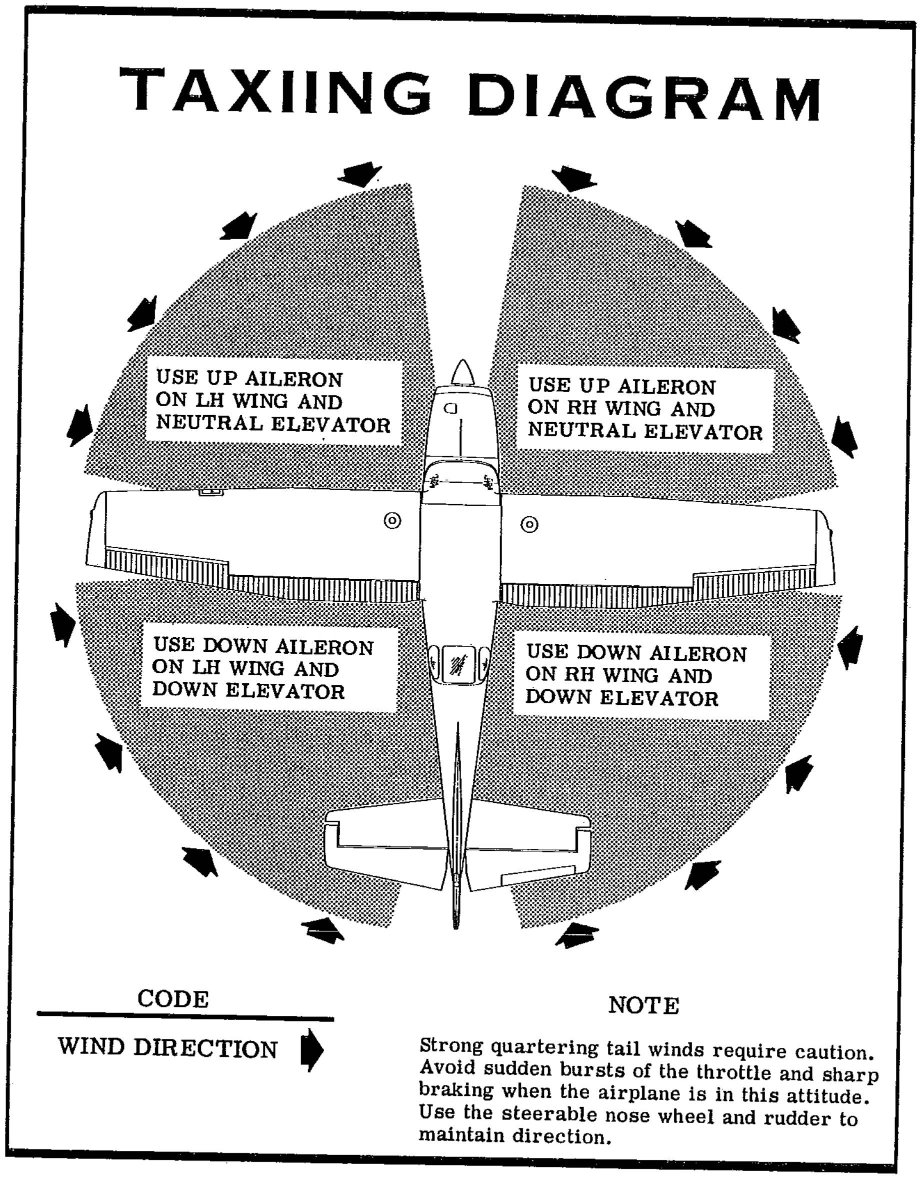


Figure 2-6.

speed to avoid abrasion and stone damage to the propeller tips. Refer to figure 2-6 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 the ignition switch first to "R" position and note RPM. Then move switch back to "BOTH" position to clear the other set of plugs. Then move switch to "L" position and note RPM. The difference between the two magnetos operated singly should not be more than 50 RPM. If there is a doubt concerning the operation of the ignition system, RPM checks at a higher engine speed will usually confirm whether a deficiency exists.

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing 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 run-up (1700 rpm). The ammeter will remain within a needle width of zero if the alternator and voltage regulator are operating properly.

TAKE-OFF.

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

Full throttle runups over loose gravel are especially harmful to propeller tips. When take-offs must be made over a gravel surface, it is

very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it.

Using 20° wing flaps reduces the ground run and total distance over the obstacle by approximately 10 per cent. Soft field take-offs are performed with 20° flaps by lifting the nosewheel off the ground as soon as practical and leaving the ground in a slightly tail-low attitude. However, the airplane should be leveled off immediately to accelerate to a safe climb speed of 70 to 80 MPH.

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

CLIMB.

Power settings for climb must be limited to 32.5 in. Hg and 2700 RPM up to 19,000 feet with decreasing manifold pressure above 19,000 feet as noted on the maximum power placard.

A cruising climb at 27.5 inches of manifold pressure, 2500 RPM (approximately 75% power), 20 gal/hr fuel flow, 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. Higher power settings may be used as desired to reduce time to climb to the higher altitudes for more favorable winds or better weather.

If it is necessary to climb rapidly to clear mountains or reach favorable winds at high altitudes, the best rate-of-climb speed should be used with maximum power. This speed is 105 MPH from sea level to 19,000 feet, decreasing to 96 MPH at 30,000 feet at approximately 1 MPH per 1000 feet.

If an obstruction ahead requires a steep climb angle, the airplane should be flown at the best angle of climb with flaps up and maximum power. This speed is 80 MPH from sea level to 19,000 feet, increasing 1 1/2 MPH for each 1000 feet above 19,000 feet.

CRUISE.

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

Turbocharging allows you to maintain maximum cruise power up to 24,000 feet. The Optimum Cruise Performance table (figure 2-7) shows the increased cruising speed that can be obtained by going to higher altitudes while maintaining constant 75% power. Lower cruise powers will increase range even farther. For increased passenger comfort, use the lowest RPM and highest manifold pressure (within green arc limits) that will give the desired percent cruise power.

Cowl flaps should be adjusted to maintain the cylinder head temperature at approximately two thirds of the green arc range in normal operation. Above 15,000 feet under hot day conditions, it may be necessary to use large cowl flap openings, since the thin air is relatively ineffective in cooling the cylinder heads when using lean mixtures for cruising flight.

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, manifold pressure can decrease up to 10 in. Hg from a cruise power set-

OPTIMUM CRUISE PERFORMANCE

ALTITUDE	TRUE AIRSPEED	RANGE (STD. TANKS)
5000	160	615
15,000	175	670
24,000	182	700

Figure 2-7.

ting. This manifold pressure should be recovered by increased throttle setting or higher RPM as necessary to maintain the desired power. Maximum allowable manifold pressure (32.5 in. Hg) is available up to 16,000 feet under hot day conditions using the alternate air source with a fully blocked filter.

STALLS.

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

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

SPINS.

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

LET-DOWN.

Let-down should be initiated far enough in advance of estimated landing to allow a gradual rate of descent at cruising speed. Descent should be at approximately 500 FPM for passenger comfort, using enough power to keep the engine warm. The optimum engine RPM in a let-down is usually the lowest RPM in the green arc range that will allow cylinder head temperature to remain in the recommended operating range.

The aircraft is equipped with a specially marked altimeter to attract the pilot's attention and prevent misreading the altimeter. A striped warning segment on the face of the altimeter is exposed at all altitudes below 10,000 feet to indicate low altitude.

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.

SHORT 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 airplane. 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, the use of full nose down elevator (control wheel full forward) will raise the main wheels off the ground.

BALKED LANDING (GO-AROUND).

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. If external preheat is not available, the oil should be diluted before stopping the engine when very cold temperatures are anticipated.

Pre-heat will thaw the oil trapped in the oil cooler, which probably will be congealed prior to starting in extremely cold temperatures. When using an external power source, the position of the master switch is important. Refer to Section VI, 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 10 minutes at 1000 RPM), the engine is ready for take-off if it accelerates smoothly and the oil pressure is normal and steady.

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

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

WINTERIZATION KIT.

The Turbo-System engine installation has been designed such that a winterization kit is not required. With the cowl flaps fully closed, engine temperature will be normal (in the lower green arc range) in outside air temperature as low as 40° to 60° below standard. When colder surface temperatures are encountered, the normal air temperature inversion will result in warmer temperatures at cruise altitudes above 5000 feet.

If low altitude cruise in very cold temperature results in engine temperature below the green arc, increasing cruise altitude or cruise power will increase engine temperature into the green arc. Cylinder head temperatures will increase approximately 50° as cruise altitudes increase from 5000 feet to 24,000 feet.

STATIC PRESSURE ALTERNATE SOURCE VALVE.

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

If erroneous instrument readings are suspected due to water or ice in the static pressure lines, the static pressure alternate source valve should be opened, thereby supplying static pressure from the cabin. Cabin pressures will vary, however, with open cabin ventilators or windows. The most adverse combinations will result in airspeed and altimeter variations of no more than 4 MPH and 20 feet, respectively.

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.

Section III

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. TU206D.

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

MANEUVERS — NORMAL CATEGORY.

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

Gross Weight	3600 lbs.	
Flight Load Factor *Flaps Up	+3.8	-1.52
Flight Load Factor *Flaps Down	+2.6	

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

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

AIRSPEED LIMITATIONS (CAS).

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

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°	110 MPH
*Maneuvering Speed	144 MPH

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

AIRSPEED INDICATOR MARKINGS.

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

Never Exceed (glide or dive, smooth air)	210 MPH (red line)
Caution Range	170-210 MPH (yellow arc)
Normal Operating Range	70-170 MPH (green arc)
Flap Operating Range	61-110 MPH (white arc)

ENGINE OPERATION LIMITATIONS.

Power and Speed . . . . 285 BHP at 2700 RPM

NOTE

A placard, located adjacent to the manifold pressure gage and fuel flow indicator, defines the maximum allowable manifold pressure and climb fuel flow settings at altitude. These settings, as called out on the placard, are on the chart on following page.

Altitude (Feet)	Manifold Pressure (In. Hg.)	Fuel Flow (Gal/Hr)
S.L. to 19,000	32.5	28
20,000	31.5	26
22,000	29.5	24
24,000	27.5	22
26,000	25.5	20
28,000	23.5	19
30,000	21.5	18

75% POWER CLIMB: 2500 RPM, 27.5 M.P., 20 GPH

ENGINE INSTRUMENT MARKINGS.

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)

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)

TACHOMETER.

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

MANIFOLD PRESSURE GAGE.

Normal Operating Range	15-27.5 in. Hg (green arc)
Maximum Pressure	32.5 in. Hg (red line)

FUEL FLOW INDICATOR.

Normal Cruise Range	6.0-20.0 gal/hr (green arc)
Normal Climb Range	20.0-28.0 gal/hr (white arc)
Minimum and Maximum	4.0 and 18.5 psi (29.5 gal/hr) (red lines)

WEIGHT AND BALANCE.

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

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

NOTE

> The Weight and Balance Data Sheet noted above is included in the aircraft file. The Loading Graph and Center of Gravity Moment Envelope shown in this section are also on the sheet titled Loading/Center of Gravity Charts and Weighing Procedures which is provided in the aircraft file.

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 (the c.g. arm is the same as the station) for any location in the pack can be determined from the diagram on page 3-10. (The arm for any location in the aircraft can be determined from the diagram on page 3-8.) 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 loading is light (such as pilot and copilot, 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.

SAMPLE LOADING PROBLEM

SAMPLE LOADING PROBLEM	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb.-ins. /1000)	Weight (lbs.)	Moment (lb.-ins. /1000)
1. Licensed Empty Weight (Sample Airplane)	1879	66.4		
2. Oil (13 qts. - Full oil may be assumed for all flights)	24	-0.5	24	-0.5
3. Fuel (Standard - 63 gal. @ 6 lbs./gallon)	378	18.1		
Fuel (Long Range - 80 gal. @ 6 lbs./gallon)				
4. Pilot and Copilot	340	12.2		
5. Center Passengers (III or IV)*				
Aft Passengers (IV)*				
Baggage (IV) (120# Maximum Load)*				
6. Cargo "A"*				
Cargo "B"*	750	50.3		
Cargo "C"*	200	19.2		
Cargo "D"*	29	3.6		
7. TOTAL WEIGHT AND MOMENT	3600	169.3		

8. Locate this point (3600 at 169.3) on the center of gravity moment envelope, and since this point falls within the envelope, the loading is acceptable.

*Refer to the seating and cargo arrangements diagram below for maximum allowable weights in these areas.

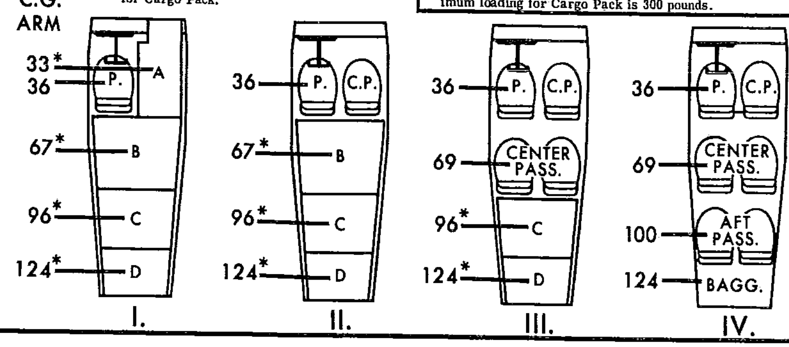
SEATING-CARGO ARRANGEMENTS

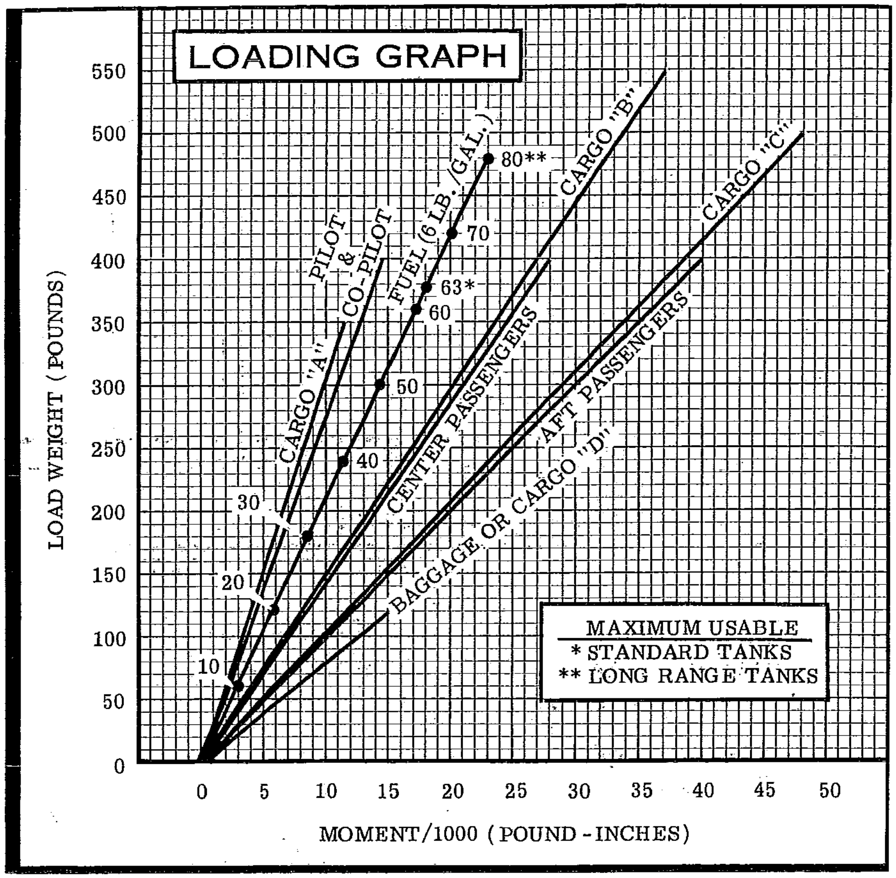
LOADING TABLE: MAXIMUM ALLOWABLE WTS.

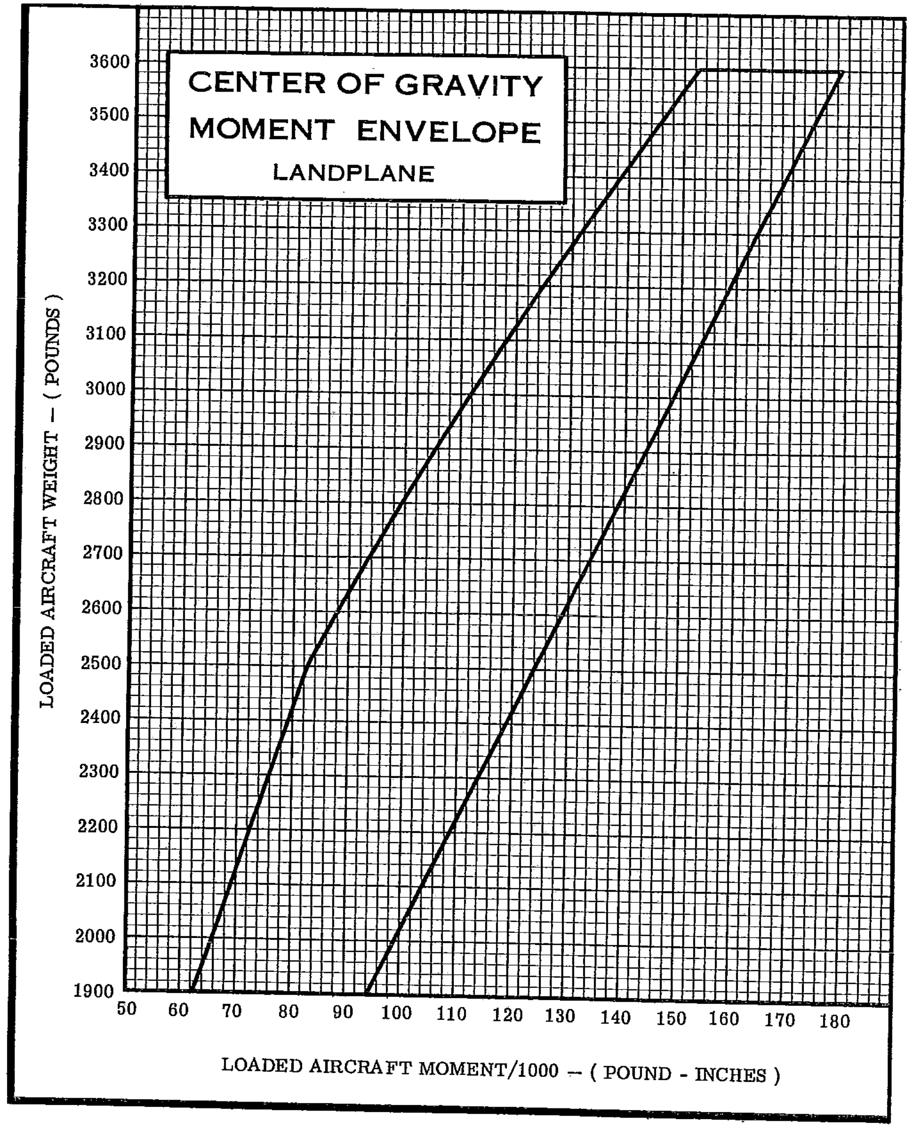
ITEM	WT. (LBS)	ARM (INS.)
Oil (13 qts.)	24	-19.0
Usable Fuel (63.0 Gal.)-Std. Tanks	378	48.0
Usable Fuel (80.0 Gal.)-Opt. Tanks	480	48.0
Pilot and Copilot	—	36.0
Center Seat Passengers	—	69.0
Aft Seat Passengers	—	100.0
Baggage	120	124.0
Cargo "A" (Sta. 10 to 50)	**	33.0*
Cargo "B" (Sta. 50 to 84)	**	67.0*
Cargo "C" (Sta. 84 to 109)	**	96.0*
Cargo "D" (Sta. 109 to 138)	**	124.0*

*Arms measured to center of cargo areas shown.
**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. Maximum loading for Cargo Pack is 300 pounds.

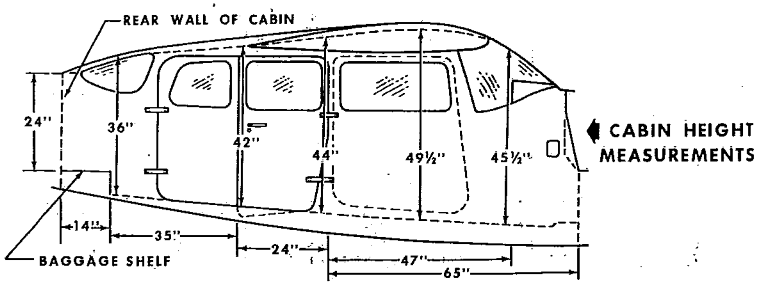
NOTE
Refer to page 3-10 for Cargo Pack.




LOADING GRAPH
LOAD WEIGHT (POUNDS)
MOMENT/1000 (POUND - INCHES)
PILOT & CO-PILOT
CARGO "A"
FUEL (6 LB./GAL.)
CARGO "B"
CENTER PASSENGERS
CARGO "C"
AFT PASSENGERS
BAGGAGE OR CARGO "D"
80**
70
63*
60
50
40
30
20
10
MAXIMUM USABLE
* STANDARD TANKS
** LONG RANGE TANKS


CENTER OF GRAVITY
MOMENT ENVELOPE
LANDPLANE
LOADED AIRCRAFT WEIGHT – (POUNDS)
LOADED AIRCRAFT MOMENT/1000 – (POUND - INCHES)

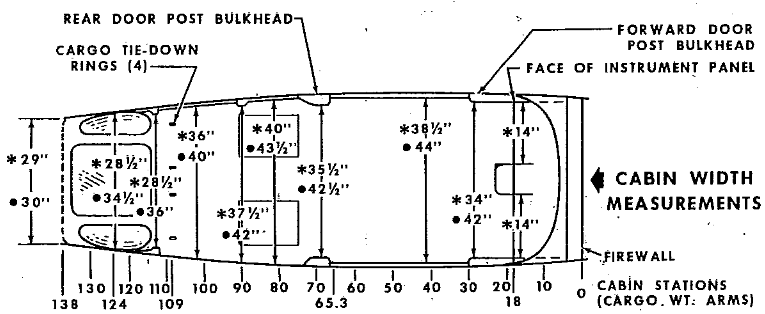
INTERNAL CABIN DIMENSIONS
FOR CARGO LOADING



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 twenty tie-down rings that fasten to the seat rails and four rings that fasten to floor buttons at fuselage station 109. If more tie-down points are needed, the seat belt attaching points, as well as shoulder harness attaching points, may be used. The tie-down strap, rope or cable used should be rated for at least five times the load it ties down.

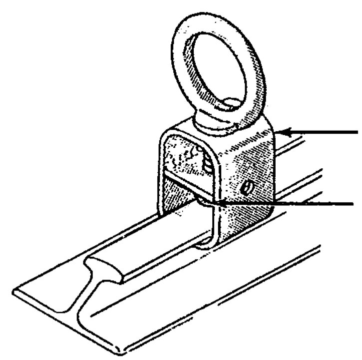
The following table shows the maximum allowable cargo weight for each type of attachment:

ITEM	LOCATION	MAXIMUM *LOAD (LBS.)
Seat Rail Tie-Down Assy	Any rail hole	100
Seat Rail Tie-Down Assy	On seat rail	50
Anchor Assembly	Floor button-sta. 109	220
Baggage Net Ring	Baggage Shelf	60
Seat Belt Attachment	Floor or side-wall	250
Shoulder Strap	Cabin top	175

*Rated load per single attachment (Cargo Item Wt. ÷ No. Tie-Downs)

FOR EXAMPLE:

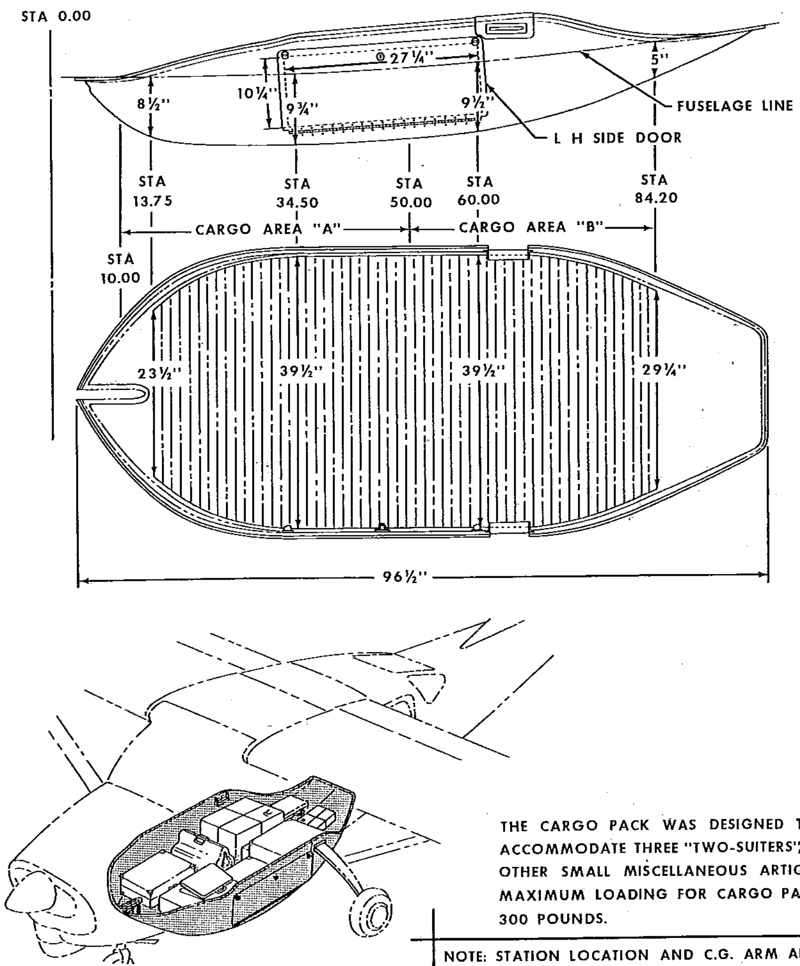
A 400# load would require four (4) tie-downs rated at 100# each or eight (8) tie-downs rated at 50# each.



SEAT RAIL TIE-DOWN ASSEMBLY

Rated at 50# when the ring is tightened against the top of the seat rail. Rated at 100# when the ring is threaded to the bottom of any seat latching hole in the rail.

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 IV

CARE OF THE AIRPLANE

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

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

GROUND HANDLING.

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

NOTE

When using the tow-bar, do not exceed the nose wheel turning angle of 35° either side of center.

MOORING YOUR AIRPLANE.

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

(1) Set the parking brake and install the control wheel lock.
(2) Install a surface control lock over the fin and rudder.
(3) Tie sufficiently strong ropes or chains (700 pounds tensile strength) to the wing and tail tie-down fittings, and 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 airc 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 c

If a windshield cleaner is not available, the plastic can be cleaned 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 whic attracts dust. Waxing with a good commercial wax will finish the clean job. A thin, even coat of wax, polished out by hand with clean soft flan 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 cle water to remove dirt; oil and grease may be removed with gasoline, nap tha, carbon tetrachloride or other non-alkaline solvents. Dulled alumin surfaces may be cleaned effectively with an aircraft aluminum polish.

After cleaning, and periodically thereafter, waxing with a good auto motive wax will preserve the bright appearance and retard corrosion. Regular waxing is especially recommended for airplanes operated in sal 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 airplane. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by someone experienced in handling uncured paint. Any Cessna Dealer can accomplish this work.

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

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

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

INTERIOR CARE.

The interior of your airplane is furnished with wear-resistant, hard surface materials designed for maximum usage with minimum upkeep.

However, as with any furnishing, the measure of lasting appearance endurance afforded by the interior is dependent upon the degree of ca

Materials used on the cabin floor and sidewalls are impervious t absorption and, therefore, are not easily soiled or stained. Dust an loose dirt should be picked up with a vacuum cleaner. Stubborn dirt be wiped off with a cloth moistened in clean water. Mild soap suds, sparingly, will remove grease. The soap should be removed with a damp cloth.

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

Care of the seating materials is identical to care of the furnishin your home. Vacuum clean regularly to remove dust and loose dirt.

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 s eral seconds. Continue blotting until no more liquid is taken up. Scr off sticky materials with a dull knife, then spot-clean the area.

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

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

INSPECTION SERVICE AND INSPECTION PERIODS.

With your airplane you will receive an Owner's Service Policy. (pons attached to the policy entitle you to an initial inspection and the fi 100-hour inspection at no charge. If you take delivery from your Dea he will perform the initial inspection before delivery of the airplane to you. If you pick up the airplane at the factory, plan to take it to your Dealer reasonably soon after you take delivery on it. This will perm

him to check it over and to make any minor adjustments that may appear necessary. Also, plan an inspection by your Dealer at 100 hours or 180 days, whichever comes first. This inspection also is performed by your Dealer for you at no charge. While these important inspections will be performed for you by any Cessna Dealer, in most cases you will prefer to have the Dealer from whom you purchased the airplane accomplish this work.

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

AIRCRAFT FILE.

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

A. To be displayed in the aircraft at all times:
   (1) Aircraft Airworthiness Certificate (Form FAA-1362B).
   (2) Aircraft Registration Certificate (Form FAA-500A).
   (3) Aircraft Radio Station License (Form FCC-404, if transmitter installed.)

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

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

NOTE

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

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

LUBRICATION AND SERVICING PROCEDURES

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

DAILY

FUEL TANK FILLERS:

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

FUEL STRAINER:

Before the first flight of the day and after each refueling, pull out fuel strainer drain knob for about four seconds to clear fuel strainer of possible water and sediment. Release drain knob, then check that strainer drain is closed after draining. If water is observed, there is a possibility that the fuel tank sumps contain water. Thus, the fuel tank sump drain plugs and fuel reservoir drain plugs should be removed to check for the presence of water.

OIL FILLER:

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

NOTE

To promote faster ring seating and improved oil control, your Cessna was delivered from the factory with straight mineral oil (non-detergent). This "break-in" oil should be used only for the first 20 to 30 hours of operation, at which time it must be replaced with detergent oil.

LUBRICATION AND SERVICING PROCEDURES

DAILY (Continued)

OIL DIPSTICK:

Check oil level before each flight. Do not operate on less than 9 quarts. To minimize loss of oil through breather, fill to 10 quart level for normal flights of less than 3 hours. For extended flight, fi to 12 quarts. (Quantities shown above are oil dipstick level readings only. Actual system capacity is one quart more than shown due to the installation of a standard oil filter on this engine. During oil and filter changes, a total of 13 quarts of oil should be added.)

OXYGEN CYLINDER AND FILLER VALVE:

Check oxygen pressure gage for anticipated requirements before eacl flight. Use filler valve on left side of fuselage tailcone (under cover plate) to refill cylinder with aviator's breathing oxygen (Spec. No. MIL-O-27210). The cylinder, when fully charged, contains approximately 76 cubic feet of oxygen, under a pressure of 1850 psi at 70°F. Filling pressures will vary, however, due to the ambient temperatur in the filling area, and because of the temperature rise resulting from compression of the oxygen. Because of this, merely filling to 1850 psi will not result in a properly filled cylinder. Fill to the pressures indicated in the following table for the ambient temperatur

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.

AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG	AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG
0	1650	50	1875
10	1700	60	1925
20	1750	70	1975
30	1775	80	2025
40	1825	90	2050

SERVICING INTERVALS CHECK LIST

EACH 50 HOURS

BATTERY -- Check and service. Check more often (at least every 30 days) if operating in hot weather.

ENGINE OIL AND OIL FILTER -- Change engine oil and replace filter element. Change engine oil at least every four months even though less than 50 hours have accumulated. Reduce periods for prolonged operation in dusty areas, cold climates, or when short flights and long idle periods result in sludging conditions.

NOTE

After first 20 to 30 hours of engine operation, an initial oil change should be made to remove "break-in" oil and change the filter.

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

NOSE GEAR TORQUE LINKS -- Lubricate. When operating under dusty conditions, more frequent lubrication is recommended.

SHIMMY DAMPENER -- Refer to Service Manual for detailed instructions on checking and filling.

EACH 100 HOURS

SPARK PLUGS -- Clean, test and regap.

FUEL STRAINER -- Disassemble and clean.

FUEL TANK SUMP DRAIN PLUGS -- Drain.

FUEL RESERVOIR DRAIN PLUGS -- Drain.

FUEL/AIR CONTROL UNIT SCREEN -- Clean.

BRAKE MASTER CYLINDERS -- Check and fill.

VACUUM SYSTEM OIL SEPARATOR (OPT) -- Clean.

SUCTION RELIEF VALVE INLET SCREEN (OPT) -- Clean.

SERVICING INTERVALS CHECK LIST

(Continued)

EACH 500 HOURS

WHEEL BEARINGS -- Lubricate at first 100 hours and at 500 hours ther after. Reduce lubrication interval to 100 hours when operating in dusty or seacoast areas, during periods of extensive taxiing, or when numerou take-offs and landings are made.

VACUUM SYSTEM AIR FILTER (OPT) -- Replace filter element. Replace sooner if suction gage reading drops to 4.6 in. Hg.

AS REQUIRED

NOSE GEAR SHOCK STRUT -- Keep filled with fluid and inflated to 80 ps

OWNER FOLLOW-UP SYSTEM

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

PUBLICATIONS

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

- OWNER'S MANUALS FOR YOUR
  - AIRCRAFT
  - ELECTRONICS AND AUTOPILOT
- CESSNA FLIGHT GUIDE (FLIGHT 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
  - ELECTRONICS AND AUTOPILOT

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

Section V

OPERATIONAL DATA

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

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

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

Speed performance data is shown for an airplane equipped with optional speed fairings, which increase the speed by one MPH.

AIRSPEED CORRECTION TABLE

FLAPS 0°							
IAS - MPH	60	80	100	120	140	160	180
CAS - MPH	74	85	100	118	137	156	176
***FLAPS 20°**							
IAS - MPH	50	60	70	80	90	100	110
CAS - MPH	65	70	76	84	93	102	111
***FLAPS 40°**							
IAS - MPH	50	60	70	80	90	100	110
CAS - MPH	65	71	77	85	93	102	111

*MAXIMUM FLAP SPEED 110 MPH - CAS

Figure 5-1.

STALL SPEED, POWER OFF

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**

SPEEDS ARE MPH, CAS

Figure 5-2.

TAKE-OFF DATA

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

GROSS WEIGHT POUNDS	IAS @ 50 FT.	HEAD WIND KNOTS	AT SEA LEVEL & 59°F		@ 2500 FT. & 50°F.		@ 5000 FT. & 41°F		@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	910	1810	1010	1960	1140	2160	1280	2370
		10	650	1420	740	1550	840	1720	960	1900
		20	440	1070	510	1180	590	1320	680	1480
3100	71	0	650	1310	720	1410	810	1540	910	1690
		10	460	1010	510	1100	580	1210	670	1330
		20	290	740	340	820	390	910	460	1010
2600	61	0	400	760	440	820	500	900	560	980
		10	270	550	300	600	340	670	390	740
		20	160	380	180	420	210	470	250	520

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.

Figure 5-3.

MAXIMUM RATE-OF-CLIMB DAT

Standard Conditions ••• Flaps Up

ALTITUDE FEET	IAS MPH	GROSS WEIGHT POUNDS	RATE OF CLIMB FT./MIN.	FROM SEA LEVEL GAL. OF FUEL USED	FROM SEA LEVEL TIME MIN.	FROM SEA LEVEL DIS MIL
SEA LEVEL	105	3600	1030	2	0	0
		3100	1300	2	0	0
		2600	1660	2	0	0
5000	105	3600	950	5	5	9
		3100	1220	4	4	7
		2600	1570	3	3	6
10,000	105	3600	860	7	11	20
		3100	1120	6	8	16
		2600	1470	5	6	12
15,000	105	3600	740	10	18	35
		3100	1000	8	14	28
		2600	1320	7	10	20
20,000	104	3600	540	14	27	55
		3100	780	11	20	40
		2600	1080	9	14	30
25,000	99	3600	190	20	43	95
		3100	380	15	29	65
		2600	630	11	20	45
30,000	96	2600	170	16	37	85

NOTES:
1. Maximum allowable M.P., 2700 RPM, mixture at recommended leaning schedule.
2. Fuel used includes warm-up and take-off allowance.
3. For hot weather, decrease rate of climb 45 ft./min. for each 10°F above standard day temperature for particular altitude.
4. With cargo pack, climb performance is 50 ft./min. less than shown.

Figure 5-4.

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions — Zero Wind — Gross Weight- 3600 Pounds

SEA LEVEL

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
2500	27.5	75	154	16.4	3.8	590	4.9	750
	26	70	149	15.3	4.1	615	5.2	780
	24	63	142	13.9	4.5	645	5.8	820
	22	56	134	12.5	5.1	675	6.4	860
2400	27.5	70	150	15.4	4.1	610	5.2	780
	26	66	145	14.4	4.4	635	5.6	805
	24	59	139	13.1	4.8	665	6.1	845
	22	53	129	11.8	5.3	690	6.8	875
2300	27.5	66	145	14.4	4.4	635	5.6	805
	26	61	140	13.5	4.7	655	5.9	830
	24	56	133	12.3	5.1	680	6.5	860
	22	49	123	11.1	5.7	700	7.2	890
	20	43	111	10.0	6.3	705	8.0	895
2200	27.5	61	140	13.4	4.7	660	6.0	835
	26	57	135	12.6	5.0	675	6.4	855
	24	52	127	11.6	5.5	690	6.9	880
	22	46	117	10.4	6.0	705	7.7	900
	20	40	102	9.3	6.8	690	8.6	875

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 1 of 6).

CRUISE PERFORMANCE

NORMAL LEAN 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
2500	27.5	75	160	16.4	3.8	615	4.9	780
	26	70	155	15.3	4.1	640	5.2	810
	24	64	149	13.9	4.5	670	5.8	855
	22	57	139	12.6	5.0	695	6.4	880
2400	27.5	70	155	15.4	4.1	635	5.2	810
	26	66	151	14.4	4.4	660	5.6	840
	24	60	143	13.2	4.8	685	6.1	870
	22	53	133	11.9	5.3	705	6.7	895
2300	27.5	66	151	14.4	4.4	660	5.6	840
	26	62	146	13.6	4.7	675	5.9	860
	24	56	137	12.4	5.1	695	6.5	885
	22	50	127	11.3	5.6	710	7.1	905
	20	44	114	10.2	6.2	705	7.9	895
2200	27.5	62	145	13.5	4.7	680	5.9	860
	26	58	140	12.7	5.0	690	6.3	880
	24	52	132	11.7	5.4	705	6.8	900
	22	47	120	10.7	5.9	710	7.5	905
	20	42	103	9.6	6.6	675	8.3	860

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 2 of 6).

CRUISE PERFORMANCE

NORMAL LEAN 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
2500	27.5	75	168	16.4	3.8	645	4.9	820
	26	70	162	15.3	4.1	670	5.2	850
	24	64	155	13.9	4.5	700	5.7	890
	22	57	146	12.7	5.0	725	6.3	920
2400	27.5	70	163	15.4	4.1	665	5.2	850
	26	66	158	14.4	4.4	690	5.6	875
	24	60	150	13.2	4.8	715	6.1	905
	22	54	141	12.1	5.2	735	6.6	935
2300	27.5	66	158	14.5	4.4	690	5.5	875
	26	62	152	13.6	4.6	705	5.9	895
	24	56	144	12.5	5.1	730	6.4	925
	22	51	135	11.4	5.5	745	7.0	945
	20	46	124	10.4	6.1	750	7.7	955
2200	27.5	62	152	13.6	4.6	705	5.9	895
	26	58	147	12.9	4.9	720	6.2	915
	24	53	139	11.9	5.3	740	6.7	940
	22	48	129	10.9	5.8	750	7.4	950
	20	43	117	9.9	6.4	740	8.1	940

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 3 of 6).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight- 3600 Pounds

15,000 FEET

RPM	MP	% BHP	TAS MPH	GAL/ HOUR	63 GAL(NO RESERVE) ENDR. HOURS	63 GAL(NO RESERVE) RANGE MILES	80 GAL(NO RESERV ENDR. HOURS	80 GAL(NO RESERV RANGE MILES
2500	27.5	75	175	16.4	3.8	670	4.9	860
	26	70	170	15.2	4.1	705	5.3	895
	24	63	164	13.9	4.5	740	5.8	940
	22	58	157	12.8	4.9	775	6.2	980
2400	27.5	70	171	15.3	4.1	700	5.2	890
	26	66	167	14.4	4.4	725	5.6	925
	24	60	160	13.2	4.8	760	6.1	965
	22	55	153	12.2	5.2	790	6.6	1005
2300	27.5	66	167	14.5	4.4	725	5.5	925
	26	62	162	13.6	4.6	750	5.9	955
	24	57	156	12.6	5.0	780	6.4	990
	22	51	148	11.5	5.5	805	6.9	1025
	20	47	139	10.6	5.9	825	7.6	1050
2200	27.5	63	163	13.7	4.6	750	5.8	950
	26	59	158	13.0	4.9	770	6.2	975
	24	54	152	12.0	5.2	795	6.7	1010
	22	49	144	11.1	5.7	820	7.2	1040
	20	44	133	10.1	6.2	825	7.9	1050

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 4 of 6).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions ↘ Zero Wind ↘ Gross Weight- 3600 Pounds

20,000 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
2500	27.5	75	178	16.4	3.8	680	4.9	870
	26	69	172	15.2	4.2	715	5.3	905
	24	64	163	14.0	4.5	740	5.7	935
	22	58	154	12.9	4.9	750	6.2	950
2400	27.5	70	173	15.2	4.1	715	5.3	905
	26	66	167	14.4	4.4	730	5.6	925
	24	60	157	13.3	4.7	745	6.0	950
	22	55	146	12.3	5.1	750	6.5	950
2300	27.5	66	167	14.4	4.4	730	5.5	925
	26	62	161	13.7	4.6	745	5.9	945
	24	57	150	12.6	5.0	750	6.3	955
	22	52	137	11.6	5.4	745	6.9	945
	20	48	122	10.8	5.9	715	7.4	905
2200	27.5	63	162	13.8	4.6	740	5.8	940
	26	59	155	13.1	4.8	750	6.1	950
	24	55	145	12.2	5.2	750	6.6	950
	22	50	130	11.2	5.6	735	7.1	930
	20	45	113	10.4	6.1	685	7.7	870

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 5 of 6).

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Conditions ╲ Zero Wind ╲ Gross Weight-3600 Pounds

25,000 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
2500	26.5	70	179	15.3	4.1	735	5.2	935
	24	64	168	14.0	4.5	755	5.7	960
	22	59	154	12.9	4.9	750	6.2	955
2400	26.5	67	173	14.6	4.3	750	5.5	950
	24	60	160	13.3	4.7	755	6.0	960
	22	55	144	12.3	5.1	735	6.5	935
2300	26.5	63	167	13.9	4.5	755	5.8	960
	24	57	150	12.6	5.0	745	6.3	945
	22	52	129	11.7	5.4	695	6.9	880
2200	26.5	61	160	13.3	4.7	755	6.0	960
	24	55	142	12.2	5.2	730	6.5	930
	22	50	120	11.3	5.6	665	7.1	845

NOTE: For cargo pack performance, refer to page 6-6.

Figure 5-5 (Sheet 6 of 6).

LANDING DISTANCE TABLE

LANDING DISTANCE WITH 40° FLAPS ON HARD SURFACED RUNWAY

GROSS WEIGHT POUNDS	APPROACH IAS MPH	@ SEA LEVEL & 59°F		@ 2500 FEET & 50°F		@ 5000 FEET & 41°F		@ 7500 FEET & 32° F	
		GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS.
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 5-6.

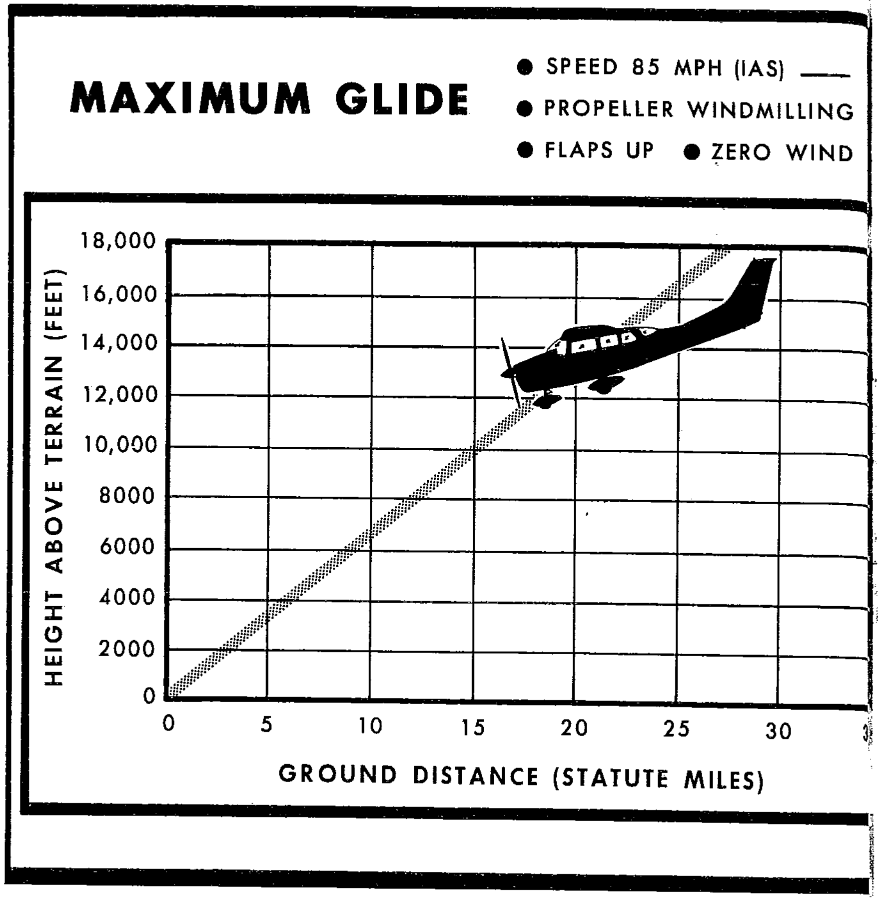


Figure 5-7.

Section VI

OPTIONAL SYSTEMS

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

LONG RANGE FUEL TANKS

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

COLD WEATHER EQUIPMENT

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 airplane electrical system (with the exception of electronic equipment).

NOTE

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

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 onl if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the airpl electrical system, thereby preventing any damage to electrical equipmen

The battery and external power circuits have been designed to completely eliminate the need to "jumper" across the battery contactor to cl it for charging a completely "dead" battery. A special fused circuit in th external power system supplies the needed "jumper" across the contacts that with a "dead" battery and an external power source applied, turning 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 "HI" position while cranking. After manual priming, make sure the primer is fully in and locked.

OIL DILUTION SYSTEM.

If your airplane is equipped with an oil dilution system and very low temperatures are anticipated, dilute the oil prior to engine shut down by

OIL DILUTION TABLE

	TEMPERATURE		
	0°F	-10°F	-20°F
DILUTION TIME	2 min.	5 min.	8 min.
FUEL ADDED	1 qt.	2.5 qt.	4 qt.

Maximum Sump Capacity - 16 quarts
Maximum for Take-off - 13 quarts.

Figure 6-1.

energizing the oil dilution switch with the engine operating at 1000 RPM. (Refer to figure 6-1 for dilution time for the anticipated temperature.) While diluting the oil, the oil pressure should be watched for any unusual fluctuations that might indicate a screen being clogged with sludge washed down by the fuel.

NOTE

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

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

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

RADIO SELECTOR SWITCHES

RADIO SELECTOR SWITCH OPERATION.

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

TRANSMITTER SELECTOR SWITCH.

The transmitter selector switch has two positions. When two transmitters are installed, it is necessary to switch the microphone to the radio unit the pilot desires to use for transmission. This is accomplished by placing the transmitter selector switch in the position corresponding to the radio unit which is to be used. The up position selects the upper transmitter and the down position 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 is placed in position 1 or 2, 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, place the transmitter selector switch in the other transceiver position. Since an audio amplifier is not utilized for headphones, a malfunctioning amplifier will not affect headphone operation.

SPEAKER-PHONE SWITCHES.

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

AUTOPILOT-OMNI SWITCH.

When a Nav-O-Matic autopilot is installed with two compatible omni

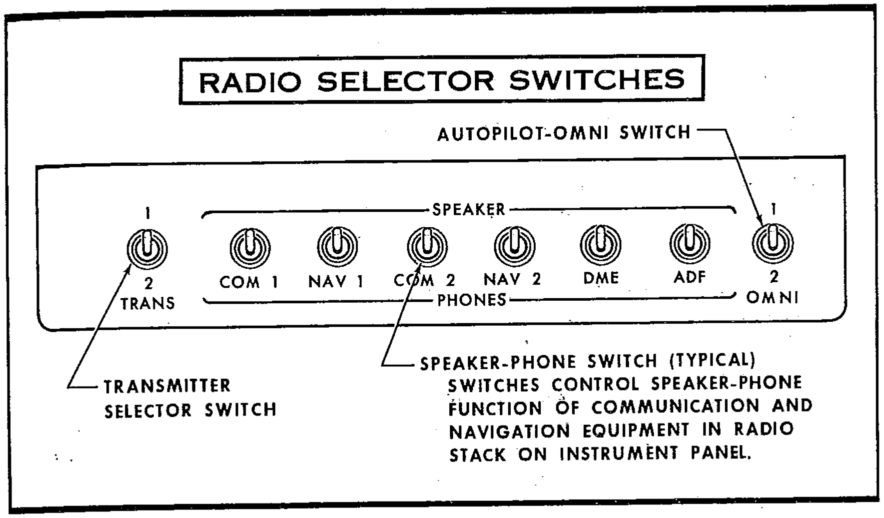


Figure 6-2.

receivers, an autopilot-omni switch is utilized. This switch selects the omni receiver to be used for the omni course sensing function of the autopilot. The up position selects the upper omni receiver in the radio panel stack and the down position selects the lower omni receiver.

3-BLADED PROPELLER

A Cessna-Crafted three-bladed propeller is optionally offered. There is no significant performance change with the three-bladed propeller.

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 50 ft/min less than that shown in the MAXIMUM RATE-OF-CLIMB DATA table for the standard airplane.

To obtain the speed performance for the airplane 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 airplane. Cruising range is computed by multiplying the cargo pack TAS by the endurance.

For cargo loading, refer to Section III.

SPEED DIFFERENTIAL TABLE

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

Figure 6-3.

CESSNA ECONOMY MIXTURE INDICATOR

The Cessna Economy Mixture Indicator is an exhaust gas temperature (EGT) sensing device which visually aids the pilot in obtaining either an efficient maximum power mixture or a desired cruise mixture. Exhaust gas temperature varies with cylinder fuel-to-air ratio, power, and RPM.

OPERATING INSTRUCTIONS.

The chart below should be used to establish mixture settings in take-off, climb and cruise conditions.

NOTE

Operation at peak EGT is not authorized for continuous operation, except to establish peak EGT for reference at 75% power or less. Operation on the lean side of peak EGT or within 25° of peak EGT is not approved.

FLIGHT CONDITION	POWER SETTING	EGT	REMARKS
TAKE-OFF AND CLIMB	Full throttle 2700 RPM and 32.5" MP	————	Use 28 GPH for FULL POWER TAKE-OFF and CLIMB
NORMAL CLIMB	27.5" MP and 2500 RPM	Peak minus 125° to 150° (ENRICHEN)	Use NORMAL CLIMB mixture
MAXIMUM CRUISE SPEED	75% or less	Peak minus 100°F (ENRICHEN)	BEST POWER mixture, 1 to 2 MPH TAS increase and 8% range loss from NORMAL LEAN
NORMAL CRUISE	75% or less	Peak minus 25° F to 50° F (ENRICHEN)	NORMAL LEAN mixture-Owner's Manual and Power Computer performance

NOTE

Enrichen mixture during climb if excessive cylinder head temperatures occur.

The yellow index pointer may be set at a specific point to lean to. It can be positioned manually by turning the screw adjustment on the face of the instrument.

In the event that a distinct peak is not obtained, use the corresponding maximum EGT as the reference point for enriching the mixture to the desired cruise setting.

Changes in power setting require the EGT to be rechecked. Mixture may be controlled in cruise descent by simply enriching to avoid engine roughness. During prolonged descents, maintain sufficient power to keep the EGT needle on scale. In idle descents or landing approaches use full rich mixture.

TRUE AIRSPEED INDICATOR

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

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

NOTE

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

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, and also to rest his feet on the rudder pedals during flight without, in any way, interfering with the flight operation of the pilot's rudder pedals.

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 elevator trim system is available to facilitate trimming the airplane. The system is controlled by a switch on the left side of the pilot's control wheel. Pushing the switch forward, labeled "DN", moves the elevator trim tab in the "nose-down" direction; conversely, pushing the switch aft, labeled "UP", moves the tab in the "nose-up" direction. When the switch is released, it automatically returns to the center (off) position and elevator tab motion stops.

A servo unit (which includes a motor and a chain-driven, solenoid-operated clutch) in the fuselage 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 the manual system, if necessary. Should the electric trim malfunction and run continuously, electric power to the servo unit can be turned off by pulling out the breaker on the control pedestal.

WING LEVELER

A wing leveler may be installed to augment the lateral stability of the airplane. The system uses the Turn Coordinator for roll and yaw sensing. Vacuum pressure, from the engine-driven vacuum pump, is routed from the Turn Coordinator to cylinder-piston servo units attached to the aileron control system. As the airplane deviates from a wing level attitude, vacuum pressure in the servo units is increased or relieved as needed to actuate the ailerons to oppose the deviations.

A separately mounted push-pull control knob, labeled "WING LVLR," is provided on the left side of the instrument panel to turn the system on and off. A "ROLL TRIM" control knob on the Turn Coordinator is used for manual roll trim control to compensate for asymmetrical loading of fuel and passengers, and to optimize system performance in climb, cruise and let-down.

OPERATING CHECK LIST

TAKE-OFF.

(1) "WING LVLR" Control Knob -- Check in off position (full in).

CLIMB.

(1) Adjust elevator and rudder trim for climb.
(2) "WING LVLR" Control Knob -- Pull control knob "ON."
(3) "ROLL TRIM" Control Knob -- Adjust for wings level attitude.

CRUISE.

(1) Adjust power, elevator and rudder trim for level flight.
(2) "ROLL TRIM" Control Knob -- Adjust as desired.

DESCENT.

(1) Adjust power, elevator and rudder trim for desired speed and rate of descent.
(2) "ROLL TRIM" Control Knob -- Adjust as desired.

LANDING.

(1) Before landing, push "WING LVLR" control knob full in to the off position.

EMERGENCY PROCEDURES

If a malfunction should occur, the system is easily overpowered with pressure on the control wheel. The system should then be turned off. In the event of partial or complete vacuum failure, the wing leveler will automatically become inoperative. However, the Turn Coordinator used with the wing leveler system will not be affected by loss of vacuum since it is designed with a "back-up" system enabling it to operate from either vacuum or electrical power in the event of failure of one of these sources.

OPERATING NOTES

(1) The wing leveler system may be overpowered at any time without damage or wear. However, for extended periods of maneuvering it may be desirable to turn the system off.
(2) It is recommended that the system not be engaged during take-off and landing. Although the system can be easily overpowered, servo forces could significantly alter the manual "feel" of the aileron control, especially should a malfunction occur.

FUEL TANK QUICK-DRAIN VALVE KIT

Two fuel tank quick-drain valves and a fuel sampler cup are available as a kit to facilitate daily draining and inspection of fuel in the main tanks for the presence of water and sediment. The valves replace existing fuel tank drain plugs located at the lower inboard area of the wing. The fuel sampler cup, which may be stowed in the map compartment, is used to drain the valves. The sampler cup has a probe in the center of the cup. When the probe is inserted into the hole in the bottom of the drain valve and pushed upward, fuel flows into the cup to facilitate visual inspection of the fuel. As the cup is removed, the drain valve seats, stopping the flow of fuel.

SKYDIVING KIT

A kit is available as optional equipment to facilitate skydiving operations. The kit consists of an externally-mounted step, a spoiler, skydiver steering switch, and a steering signal light console. The step is mounted beneath the cargo door opening to facilitate boarding and leaving the aircraft. 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 installation of a depressor plate over the wing flap circuit interrupt switch to permit flap operation with doors removed. (under normal operations with the doors installed, the switch prevents flap operation whenever the front cargo door is open to prevent accidental damage to the door or 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.

ALPHABETICAL INDEX

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Cessna

SALES AND SERVICE

"TAKE YOUR CESSNA HOME FOR SERVICE AT THE SIGN OF THE CESSNA SHIELD".

CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS