THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE




# MODEL 150

1968

# OWNER'S MANUAL

THE WORLD'S LARGEST PRODUCER OF GENERAL AVIATION AIRCRAFT SINCE 1956

# PERFORMANCE - SPECIFICATIONS

| Model 150 * | STANDARD AND TRAINER | COMMUTER |
|---|---|---|
| GROSS WEIGHT | 1600 lbs | 1600 lbs |
| SPEED: | | |
| Top Speed At Sea Level | 122 mph | 122 mph |
| Cruise, 75% Power at 7000 ft | 117 mph | 117 mph |
| RANGE: | | |
| Cruise, 75% Power at 7000 ft | 475 mi | 475 mi |
| 22.5 Gallons, No Reserve | 4.1 hrs | 4.1 hrs |
| | 117 mph | 117 mph |
| Cruise, 75% Power at 7000 ft | 725 mi | 725 mi |
| Long Range Version, 35.0 Gallons | 6.2 hrs | 6.2 hrs |
| | 117 mph | 117 mph |
| Optimum Range at 10,000 ft | 565 mi | 565 mi |
| 22.5 Gallons, No Reserve | 6.1 hrs | 6.1 hrs |
| | 93 mph | 93 mph |
| Optimum Range at 10,000 ft | 880 mi | 880 mi |
| Long Range Version, 35.0 Gallons | 9.4 hrs | 9.4 hrs |
| | 93 mph | 93 mph |
| RATE OF CLIMB AT SEA LEVEL | 670 fpm | 670 fpm |
| SERVICE CEILING | 12,650 ft | 12,650 ft |
| TAKE-OFF: | | |
| Ground Run | 735 ft | 735 ft |
| Total Distance Over 50-ft Obstacle | 1385 ft | 1385 ft |
| LANDING: | | |
| Landing Roll | 445 ft | 445 ft |
| Total Distance Over 50-ft Obstacle | 1075 ft | 1075 ft |
| EMPTY WEIGHT: (Approximate) | Standard / Trainer | |
| With Standard Fuel Tanks | 980 lbs / 1010 lbs | 1065 lbs |
| With Long Range Fuel Tanks | 985 lbs / 1015 lbs | 1070 lbs |
| BAGGAGE | 120 lbs | 120 lbs |
| WING LOADING: Pounds/Sq Foot | 10.2 | 10.2 |
| POWER LOADING: Pounds/HP | 16.0 | 16.0 |
| FUEL CAPACITY: | | |
| Total (Standard Tanks) | 26 gal. | 26 gal. |
| Total (Long Range Tanks) | 38 gal. | 38 gal. |
| OIL CAPACITY: | 6 qts | 6 qts |
| (One additional quart is required when optional oil filter is installed) | | |
| PROPELLER: Fixed Pitch (Diameter) | 69 inches | 69 inches |
| ENGINE: Continental Engine | O-200-A | O-200-A |
| 100 rated HP at 2750 RPM | | |

* This manual covers operation of the Model 150 which is certificated as Model 150H under FAA Type Certificate No. 3A19. The manual also covers operation of the Model F150 which is certificated as Model F150H under French Type Certificate No. 38 and FAA Type Certificate No. A13EU. The Model F150, manufactured by Reims Aviation S.A., Reims (Marne), France, is identical to the 150 except that it is powered by an O-200-A engine manufactured under license by Rolls Royce, Crewe, England. All 150 information in this manual pertains to the F150 as well.

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Cessna Aircraft Company
Wichita, Kansas USA

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

This Owner's Manual has been prepared as a guide to help you get the most pleasure and utility from your Model 150. It contains information about your Cessna's equipment, operating procedures, and performance; and suggestions for its servicing and care. We urge you to read it from cover to cover, and to refer to it frequently.

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

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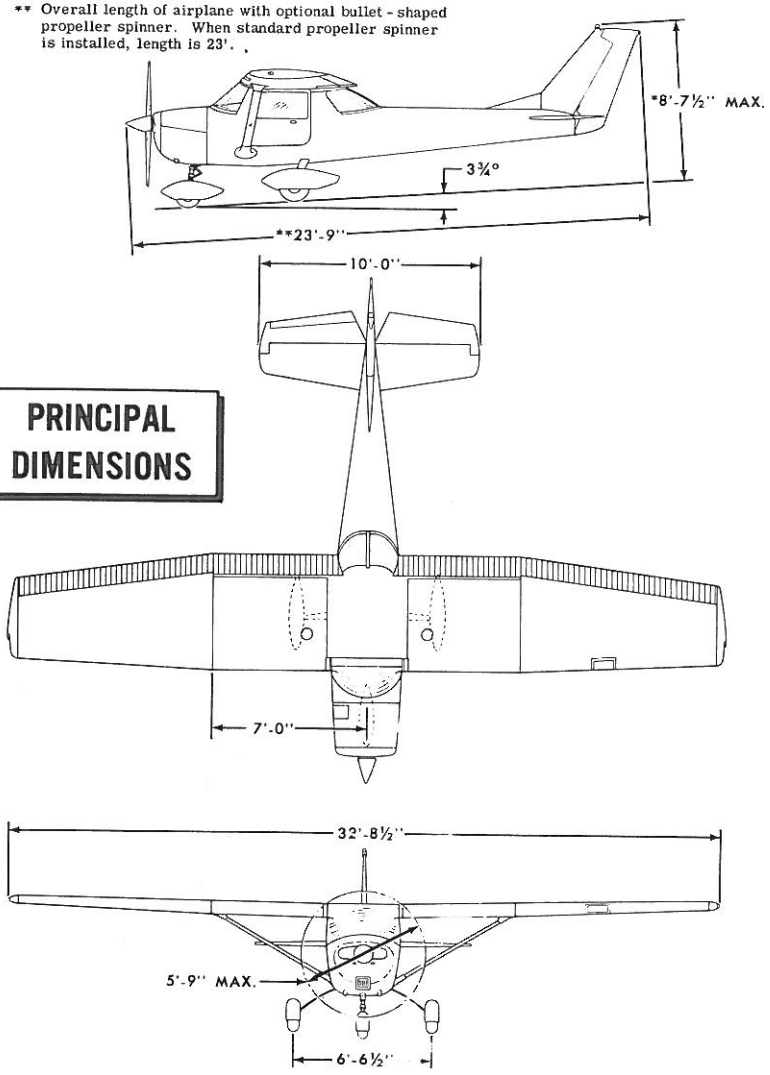
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* Maximum height of airplane with nose gear depressed and an optional flashing beacon installed.

** Overall length of airplane with optional bullet - shaped propeller spinner. When standard propeller spinner is installed, length is 23'. .

# PRINCIPAL DIMENSIONS



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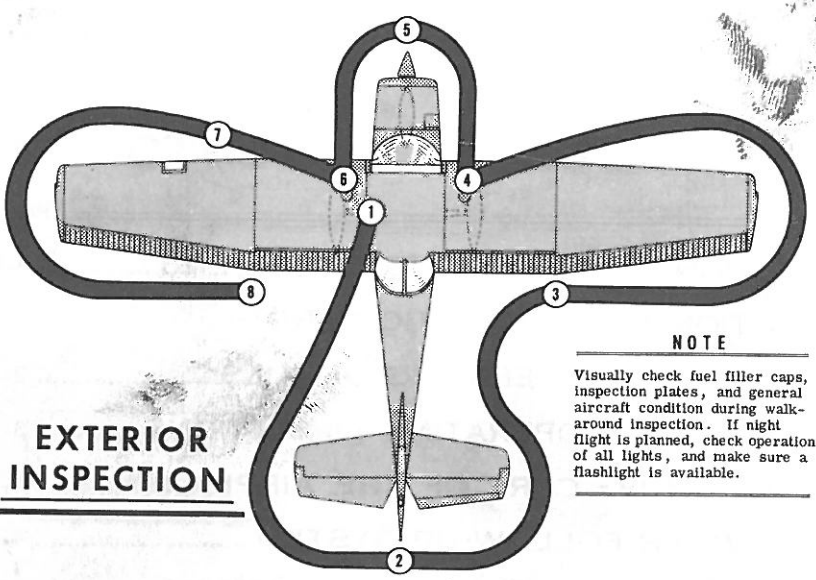
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This manual describes the operation and performance of the Standard Model 150, the Trainer and the Commuter. Equipment described as "Optional" denotes that the subject equipment is optional on the Standard airplane. Much of this equipment is standard on the Trainer and Commuter.




## 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 fuel valve handle "ON."
(d) Remove control wheel lock.

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

**3** (a) Remove gust lock, if installed.

**4** (a) Check main wheel tire for proper inflation.
(b) Inspect airspeed static source hole on side of fuselage for stoppage (left side only).
(c) Disconnect wing tie-down.

**5** (a) Check oil level. Do not operate with less than 4 quarts. Fill for extended flights.
(b) Check propeller and spinner for nicks and security.
(c) Check carburetor air filter for restrictions by dust or other foreign matter.
(d) 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 wing tank sumps contain water. Thus, the wing tank sump drain plugs and fuel line drain plug should be removed to check for presence of water.
(e) Check nosewheel strut and tire for proper inflation.
(f) Disconnect nose tie-down.

**6** Same as **4**

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

**8** 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) Fuel Valve Handle -- "ON."

### STARTING THE ENGINE.

(1) Carburetor Heat -- Cold.

(2) Mixture -- Rich.
(3) Primer -- As required.
(4) Ignition Switch -- "BOTH."
(5) Throttle -- Open 1/4".
(6) Propeller Area -- Clear.
(7) Starter Handle -- Pull.

## BEFORE TAKE-OFF.

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

✓ TRANSPONDER

## TAKE-OFF.

### NORMAL TAKE-OFF.

(1) Wing Flaps -- Up.
(2) Carburetor Heat -- Cold.
(3) Throttle - Full "OPEN."
(4) Elevator Control -- Lift nose wheel at 50 MPH.
(5) Climb Speed -- 73 MPH until all obstacles are cleared, then set up climb speed as shown in "NORMAL CLIMB" paragraph.

### MAXIMUM PERFORMANCE TAKE-OFF.

(1) Wing Flaps - Up.
(2) Carburetor Heat -- Cold.
(3) Brakes -- Hold.
(4) Throttle -- Full "OPEN."
(5) Brakes -- Release.
(6) Elevator Control -- Slightly tail low.
(7) Climb Speed -- 57 MPH (with obstacles ahead).

## CLIMB.

### NORMAL CLIMB.

(1) Air Speed -- 75 to 80 MPH.

(2) Power -- Full throttle.
(3) Mixture -- Rich (unless engine is rough).

### MAXIMUM PERFORMANCE CLIMB.

(1) Air Speed -- 73 MPH.
(2) Power -- Full throttle.
(3) Mixture -- Rich (unless engine is rough).

## CRUISING.

(1) Power -- 2000 to 2750 RPM.
(2) Elevator Trim -- Adjust.
(3) Mixture -- Lean to maximum RPM.

## BEFORE LANDING.

(1) Mixture -- Rich.
(2) Carburetor Heat -- Apply full heat before closing throttle.
(3) Airspeed -- 65 to 75 MPH.
(4) Wing Flaps -- As desired below 100 MPH.
(5) Airspeed -- 60 to 70 MPH (flaps extended).

## NORMAL LANDING.

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

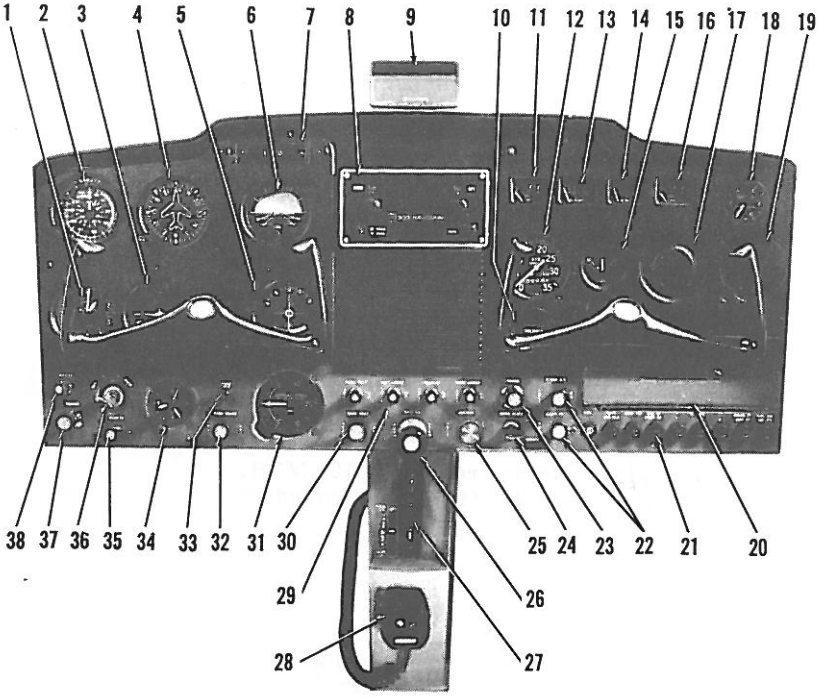
## AFTER LANDING.

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

## SECURE AIRCRAFT.

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

# INSTRUMENT PANEL




1. Altimeter
2. Airspeed Indicator
3. Turn Coordinator (Opt.)
4. Directional Gyro (Opt.)
5. Omni Course Indicator (Opt.)
6. Gyro Horizon (Opt.)
7. Aircraft Registration Number
8. Optional Radio
9. Rear View Mirror (Opt.)
10. Flight Hour Recorder (Opt.)
11. Fuel Quantity Indicator (Left)
12. Tachometer
13. Oil Pressure Gage
14. Oil Temperature Gage
15. Ammeter
16. Fuel Quantity Indicator (Right)
17. Optional Instrument Space
18. Suction Gage (Opt.)
19. Optional Instrument Space
20. Map Compartment
21. Fuse/Circuit Breaker Panel
22. Cabin Air and Heat Control Knobs
23. Cigar Lighter (Opt.)
24. Wing Flap Switch
25. Mixture Control Knob
26. Throttle
27. Elevator Trim Control Wheel
28. Microphone (Opt.)
29. Electrical Switches
30. Carburetor Heat Control Knob
31. Vertical Speed Indicator (Opt.)
32. Parking Brake Control Knob
33. Wing Leveler Control Knob (Opt.)
34. Clock (Opt.)
35. Starter Handle
36. Ignition Switch
37. Primer
38. 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. From these tanks, fuel flows by gravity through a fuel shutoff valve and fuel strainer to the carburetor.

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

### FUEL STRAINER DRAIN KNOB.

Refer to fuel strainer servicing procedure, Section IV.

### FUEL QUANTITY DATA (U.S. GALLONS)

| TANKS | USABLE FUEL ALL FLIGHT CONDITIONS | UNUSABLE FUEL | TOTAL FUEL VOLUME |
|---|---|---|---|
| TWO, STANDARD WING (13 GAL. EACH) | 22.5 | 3.5 | 26.0 |
| TWO, LONG RANGE WING (19 GAL. EACH) | 35.0 | 3.0 | 38.0 |

Figure 2-2.

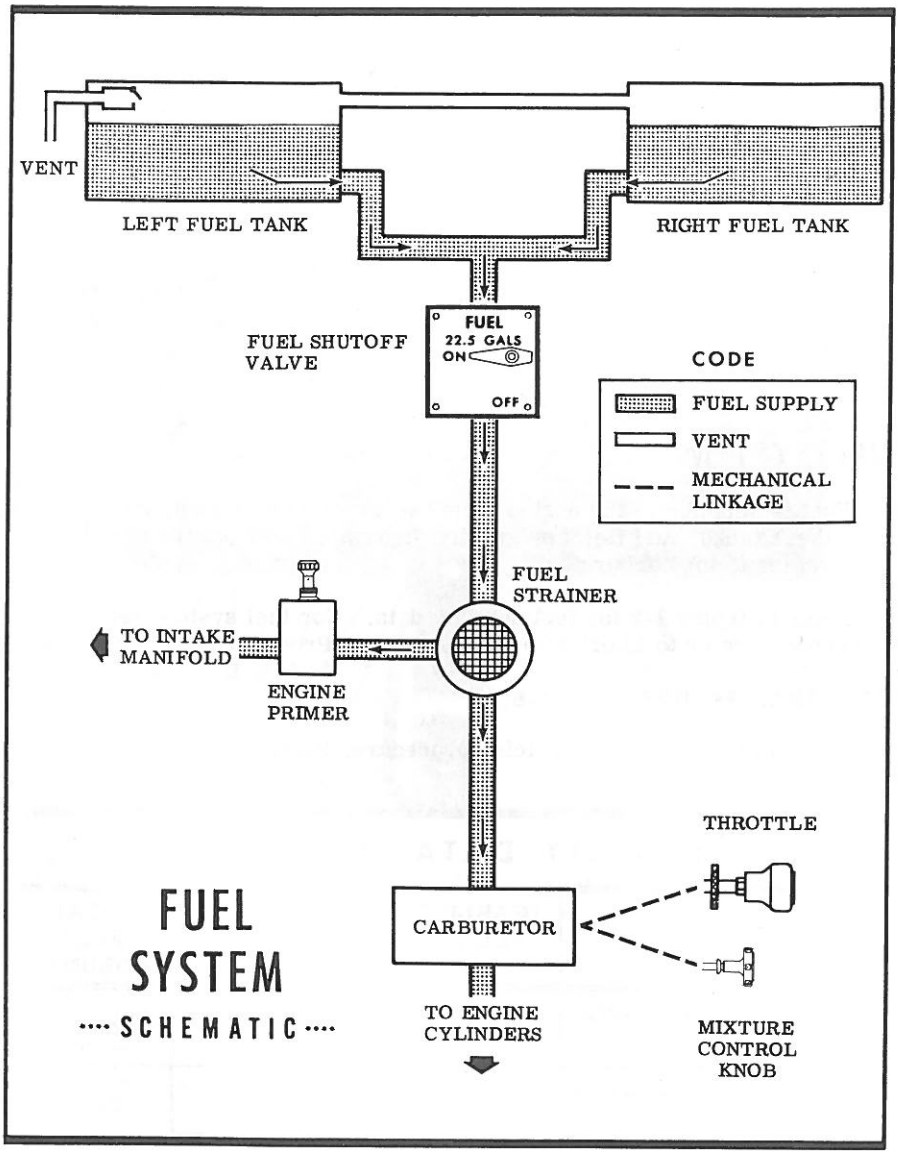

VENT
LEFT FUEL TANK
RIGHT FUEL TANK
FUEL SHUTOFF VALVE
FUEL
22.5 GALS
ON
OFF
CODE
FUEL SUPPLY
VENT
MECHANICAL LINKAGE
FUEL STRAINER
TO INTAKE MANIFOLD
ENGINE PRIMER
THROTTLE
CARBURETOR
FUEL SYSTEM
···· SCHEMATIC ····
TO ENGINE CYLINDERS
MIXTURE CONTROL KNOB

Figure 2-3.

# ELECTRICAL SYSTEM.

Electrical energy is supplied by a 14-volt, direct-current system powered by an engine-driven alternator (see figure 2-4). A 12-volt storage battery is located on the right, forward side of the firewall just inside the cowl access door. The master switch controls all electrical circuits except the engine ignition system, optional clock and optional flight hour recorder (operative only when engine is operating).

## 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.

## FUSES AND CIRCUIT BREAKERS.

Fuses on the right side of the instrument panel protect the majority of electrical circuits in the airplane. Labeling above each fuse retainer indicates the circuits protected by the fuses. Fuse capacity is shown on each fuse retainer cap. Fuses are removed by pressing the fuse retainers inward and rotating them counterclockwise until they disengage. The faulty fuse may then be lifted out and replaced. Spare fuses are held in a clip on the inside of the map compartment door.

NOTE

A special "SLO-BLO" fuse protects the wing flaps circuit. If this fuse is replaced, care should be taken to assure that the replacement fuse is of the proper type and capacity. A "SLO-BLO" fuse is identified by an integrally mounted spring encircling the fuse element.

Two additional fuses are provided in the airplane. A fuse located adjacent to the battery protects the optional clock and flight hour recorder circuits. An in-line fuse located in the wire bundle just left of center behind the instrument panel protects the alternator field circuit.

A "push-to-reset" circuit breaker (labeled "GEN") on the instrument panel protects the alternator circuit. The cigar lighter is protected by a

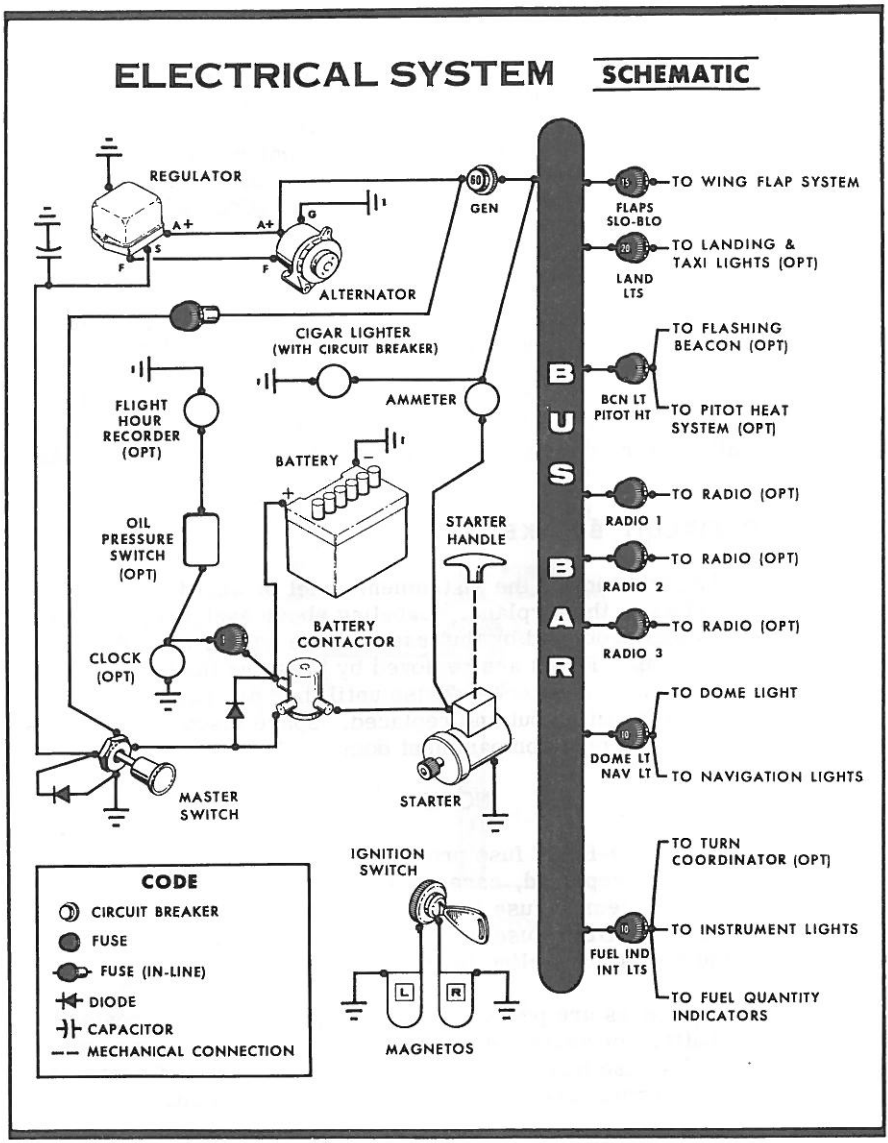

ELECTRICAL SYSTEM
SCHEMATIC
REGULATOR
A+
S
F
A+
G
F
ALTERNATOR
GEN
CIGAR LIGHTER
(WITH CIRCUIT BREAKER)
FLIGHT
HOUR
RECORDER
(OPT)
AMMETER
BATTERY
OIL
PRESSURE
SWITCH
(OPT)
STARTER
HANDLE
BATTERY
CONTACTOR
CLOCK
(OPT)
MASTER
SWITCH
STARTER
IGNITION
SWITCH
L
R
MAGNETOS
BUS BAR
TO WING FLAP SYSTEM
FLAPS
SLO-BLO
TO LANDING &
TAXI LIGHTS (OPT)
LAND
LTS
TO FLASHING
BEACON (OPT)
BCN LT
PITOT HT
TO PITOT HEAT
SYSTEM (OPT)
TO RADIO (OPT)
RADIO 1
TO RADIO (OPT)
RADIO 2
TO RADIO (OPT)
RADIO 3
TO DOME LIGHT
DOME LT
NAV LT
TO NAVIGATION LIGHTS
TO TURN
COORDINATOR (OPT)
TO INSTRUMENT LIGHTS
FUEL IND
INT LTS
TO FUEL QUANTITY
INDICATORS
CODE
CIRCUIT BREAKER
FUSE
FUSE (IN-LINE)
DIODE
CAPACITOR
MECHANICAL CONNECTION

Figure 2-4.

manually reset type circuit breaker mounted directly on the back of the lighter behind the instrument panel.

### LANDING LIGHTS (OPT).

A three-position, push-pull type switch controls the optional landing lights mounted in the leading edge of the left wing. To turn one lamp on for taxiing, pull the switch out to the first stop. To turn both lamps on for landing, pull the switch out to the second stop.

### FLASHING BEACON (OPT).

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

## CABIN HEATING AND VENTILATING 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.

Heated fresh air and outside air are blended in a cabin manifold just aft of the firewall by adjustment of the heat and air controls; this air is then vented into the cabin from outlets in the cabin manifold near the pilot's and passenger's feet. Windshield defrost air is also supplied by a duct leading from the manifold.

A separate adjustable ventilator near each upper corner of the windshield supplies additional outside air to the pilot and passenger.

## PARKING BRAKE SYSTEM.

To set parking brake, pull out on the parking brake knob, apply and release toe pressure to the pedals, and then release the parking brake knob. To release the parking brake, apply and release toe pressure on the pedals while checking to see that the parking brake knob is full in.

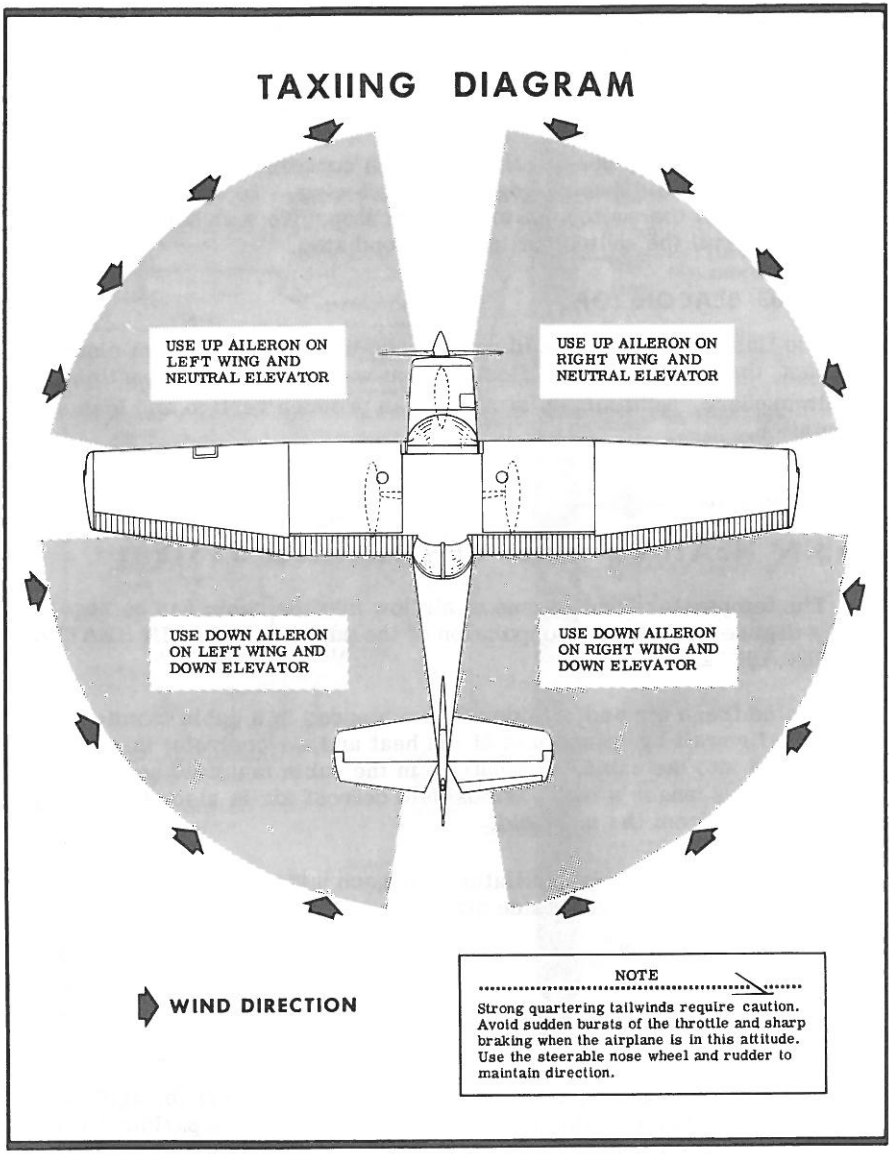

TAXIING DIAGRAM
USE UP AILERON ON LEFT WING AND NEUTRAL ELEVATOR
USE UP AILERON ON RIGHT WING AND NEUTRAL ELEVATOR
USE DOWN AILERON ON LEFT WING AND DOWN ELEVATOR
USE DOWN AILERON ON RIGHT WING AND DOWN ELEVATOR
WIND DIRECTION
NOTE
Strong quartering tailwinds require caution. Avoid sudden bursts of the throttle and sharp braking when the airplane is in this attitude. Use the steerable nose wheel and rudder to maintain direction.

Figure 2-5.

## STARTING ENGINE.

Ordinarily the engine starts easily with one or two strokes of primer in warm temperatures to six strokes in cold weather, with the throttle open approximately 1/4 inch. In extremely cold temperatures, it may be necessary to continue priming while cranking.

Weak intermittent explosions followed by puffs of black smoke from the exhaust stack indicate overpriming or flooding. Excess fuel can be cleared from the combustion chambers by the following procedure: Set the mixture control in full lean position, throttle full open, and crank the engine through several revolutions with the starter. Repeat the starting procedure without any additional priming.

If the engine is underprimed (most likely in cold weather with a cold engine) it will not fire at all, and additional priming will be necessary. As soon as the cylinders begin to fire, open the throttle slightly to keep it running.

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

## TAXIING.

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

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

The nose wheel is designed to automatically center straight ahead when the nose strut is fully extended. In the event the nose strut is overinflated and the airplane is loaded to a rearward center of gravity position, it may be necessary to partially compress the strut to permit steering. This can be accomplished prior to taxiing by depressing the airplane nose (by hand) or during taxi by sharply applying brakes.

## BEFORE TAKE-OFF.

### WARM-UP.

Most of the warm-up will have been conducted during taxi, and additional warm-up before take-off should be restricted to the checks outlined in Section I. Since the engine is closely cowled for efficient in-flight cooling, precautions should be taken to avoid overheating on the ground.

### MAGNETO CHECK.

The magneto check should be made at 1700 RPM 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 individually should not be more than 75 RPM. If there is a doubt concerning the operation of the ignition system, RPM checks at higher engine speeds will usually confirm whether a deficiency exists.

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

## TAKE-OFF.

### POWER CHECKS.

It is important to check full-throttle engine operation early in the take-off run. Any signs of rough engine operation or sluggish engine acceleration is good cause for discontinuing the take-off. If this occurs, you are justified in making a thorough full-throttle, static runup before another take-off is attempted. The engine should run smoothly and turn approximately 2500 to 2600 RPM with carburetor heat 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. When unavoid-

able small dents appear in the propeller blades, they should be immediately corrected as described in Section IV.

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

### FLAP SETTINGS.

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

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

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

### PERFORMANCE CHARTS.

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

### CROSSWIND TAKE-OFFS.

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

## CLIMB.

### CLIMB DATA.

For detailed data, see Maximum Rate-of-Climb Data chart in Section V.

### CLIMB SPEEDS.

Normal climbs are conducted at 75 to 80 MPH with flaps up and full throttle, for best engine cooling. The mixture should be full rich unless the engine is rough due to too rich a mixture. The best rate-of-climb speeds range from 73 MPH at sea level to 65 MPH at 10,000 feet. If an obstruction dictates the use of a steep climb angle, the best angle-of-climb speed should be used with flaps up and full throttle. These speeds vary from 57 MPH at sea level to 60 MPH at 10,000 feet.

NOTE

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

### GO-AROUND CLIMB.

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

## CRUISE.

Normal cruising is done at 65% to 75% of METO power. The 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.

Cruising can be done most efficiently at high altitude because of the higher true airspeeds obtainable at the same power. This is illustrated in the following table for 75% power.

**OPTIMUM CRUISE PERFORMANCE**

| ALTITUDE | RPM | TRUE AIRSPEED |
|---|---|---|
| Sea Level | * 2525 | 110 |
| 5000 feet | * 2650 | 115 |
| 7000 feet | * Full Throttle | 117 |

* 75% POWER

## STALLS.

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

The stalling speeds are shown in Section V for aft c.g., full gross weight conditions. They are presented as calibrated airspeeds because indicated airspeeds are unreliable near the stall. Other loadings result in slower stalling speeds. The stall warning horn produces a steady signal 5 to 10 MPH before the actual stall is reached and remains on until the airplane flight attitude is changed.

## LANDING.

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

### SHORT FIELD LANDINGS.

For a short field landing, make a power off approach at 58 MPH with flaps 40° and land on the main wheels first. Immediately after touchdown, lower the nose gear to the ground and apply heavy braking as required. Raising the flaps after landing will provide more efficient braking.

### CROSSWIND LANDINGS.

When landing in a strong crosswind, use the minimum flap setting required for the field length. Use a wing low, crab, or a combination method of drift correction and land in a nearly level attitude.

Excessive nose strut inflation can hinder nose wheel alignment with the airplane ground track in a drifting crosswind landing at touchdown and during ground roll. This can be counteracted by firmly lowering the nose wheel to the ground after initial contact. This action partially compresses the nose strut, permitting nose wheel swiveling and positive ground steering.

## COLD WEATHER OPERATION.

Prior to starting on cold mornings, it is advisable to pull the propeller through several times by hand to "break loose" or "limber" the oil, thus conserving battery energy. In extremely cold (0°F and lower) weather the use of an external preheater is recommended whenever possible to reduce wear and abuse to the engine and the electrical system. Cold weather starting procedures are as follows:

With Preheat:

(1) With ignition switch "OFF" and throttle closed, prime the engine four to ten strokes as the propeller is being turned over by hand.

NOTE

Use heavy strokes of primer for best atomization of fuel. After priming, push primer all the way in and turn to locked position to avoid possibility of engine drawing fuel through the primer.

(2) Clear propeller.
(3) Pull master switch "ON."
(4) Turn ignition switch to "BOTH."
(5) Open throttle 1/4" and engage starter.

Without Preheat:

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

NOTE

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

NOTE

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

During cold weather operations, no indication will be apparent on the oil temperature gage prior to take-off if outside air temperatures are very cold. After a suitable warm-up period (2 to 5 minutes at 1000 RPM), accelerate the engine several times to higher engine RPM. If the engine accelerates smoothly and the oil pressure remains normal and steady, the airplane is ready for take-off.

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

Refer to Section VI for cold weather equipment.

# Section III

## OPERATING LIMITATIONS

## OPERATIONS AUTHORIZED.

Your Cessna exceeds the requirements for airworthiness as set forth by the United States Government, and is certificated under FAA Type Certificate No. 3A19.

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.

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

## MANEUVERS-UTILITY CATEGORY.

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

| | | |
|---|---|---|
| Gross Weight . . . . . | 1600 lbs | |
| Flight Maneuvering Load Factor, *Flaps Up . . . | +4.4 | -1.76 |
| Flight Maneuvering Load Factor, *Flaps Down . . | +3.5 | |

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

No aerobatic maneuvers are approved except those listed below:

| MANEUVER | MAXIMUM ENTRY SPEED |
|---|---|
| Chandelles | 109 MPH (95 knots) |
| Lazy Eights | 109 MPH (95 knots) |
| Steep Turns | 109 MPH (95 knots) |
| Spins | Use Slow Deceleration |
| Stalls (Except Whip Stalls) | Use Slow Deceleration |

During prolonged spins, the aircraft engine may stop; however, spin recovery is not adversely affected by engine stoppage. Intentional spins with wing flaps extended are prohibited.

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

## AIRSPEED LIMITATIONS.

The following are the certificated calibrated airspeed limits for the Cessna 150:

| | |
|---|---|
| Maximum (Glide or dive, smooth air) | 162 MPH (red line) |
| Caution Range | 120-162 MPH (yellow arc) |
| Normal Range | 56-120 MPH (green arc) |
| Flap Operating Range | 49-100 MPH (white arc) |
| Maneuvering Speed* | 109 MPH |

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

## ENGINE OPERATION LIMITATIONS.

| | |
|---|---|
| Power and Speed | 100 BHP at 2750 RPM |

## ENGINE INSTRUMENT MARKINGS.

**OIL TEMPERATURE GAGE.**

| | |
|---|---|
| Normal Operating Range | Green Arc |
| Maximum Allowable | 225°F Red Line |

**OIL PRESSURE GAGE.**

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

**FUEL QUANTITY INDICATORS.**

Empty (1.75 gallons unusable each standard tank) . . E (red line)
(1.50 gallons unusable each long range tank)

**TACHOMETER.**

Normal Operating Range:

| | |
|---|---|
| At sea level | 2000-2550 (inner green arc) |
| At 5000 feet | 2000-2650 (middle green arc) |
| At 10,000 feet | 2000-2750 (outer green arc) |
| Maximum Allowable | 2750 (red line) |

## WEIGHT AND BALANCE.

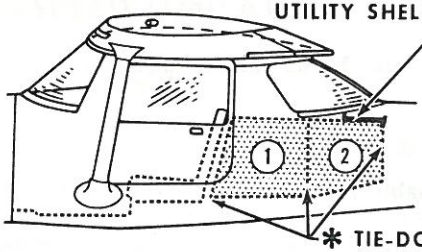
The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure the weight and balance for your particular airplane, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope as follows:

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

| SAMPLE LOADING PROBLEM | SAMPLE AIRPLANE | | YOUR AIRPLANE | |
|---|---|---|---|---|
| | Weight (lbs.) | Moment (lb.-ins. /1000) | Weight (lbs.) | Moment (lb.-ins. /1000) |
| 1. Licensed Empty Weight (Sample Airplane) . . . | 1038 | 34.1 | 1090 | 32.8 |
| 2. Oil (6 qts. - Full oil may be assumed for all flights) . . . . . | 11 | -0.1 | 11 | -0.1 |
| 3. Fuel (Standard - 22.5 gal at 6 lbs./gallon). . . | 135 | 5.7 | 135 | 5.7 |
| Fuel (Long Range - 35 gal. at 6 lbs./gallon). . | | | (1237) | (36.39) |
| 4. Pilot and Passenger . . . . . | 340 | 13.3 | 400 | 15.6 |
| 5. Baggage - Area 1 (or children on child's seat) . . . . . | 76 | 4.9 | 320 | 1.9 |
| 6. Baggage - Area 2 . . . . . | 0 | 0.0 | | |
| 7. TOTAL WEIGHT AND MOMENT | 1600 | 57.9 | 1657 | 55.4 |
| 8. Locate this point (1600 at 57.9) on the center of gravity moment envelope, and since this point falls within the envelope, the loading is acceptable. | | | 1571.4 | |

max ramp 1955

## BAGGAGE LOADING AND TIE-DOWN



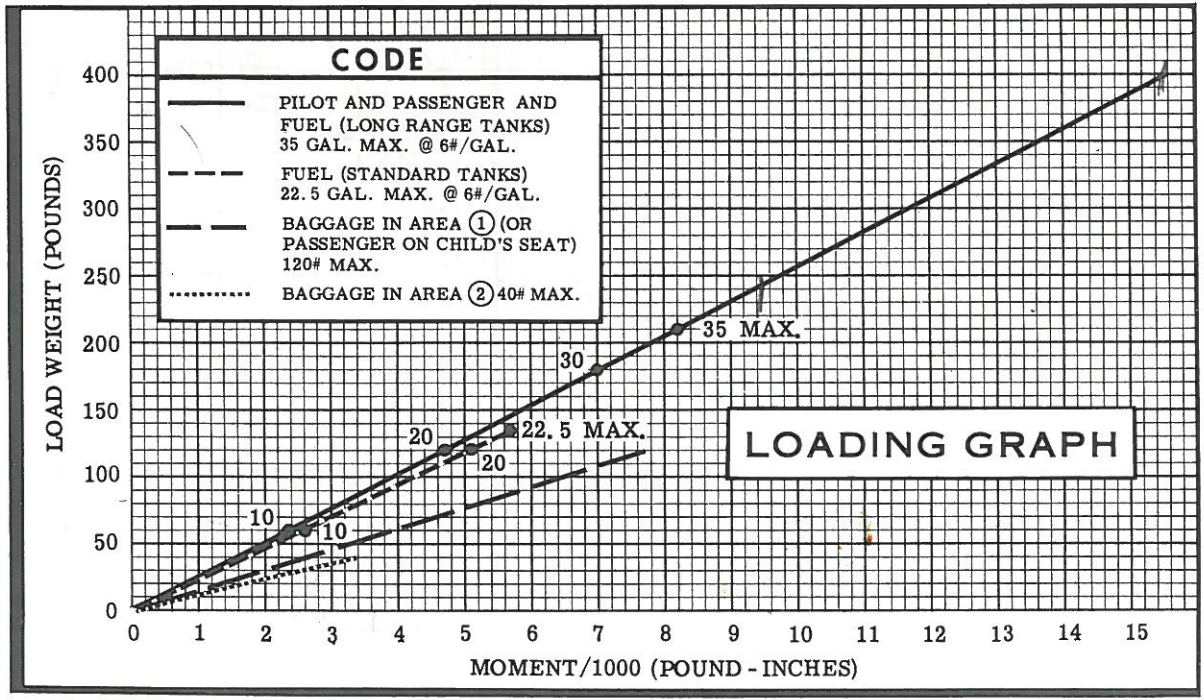

**BAGGAGE AREA MAXIMUM ALLOWABLE LOADS**

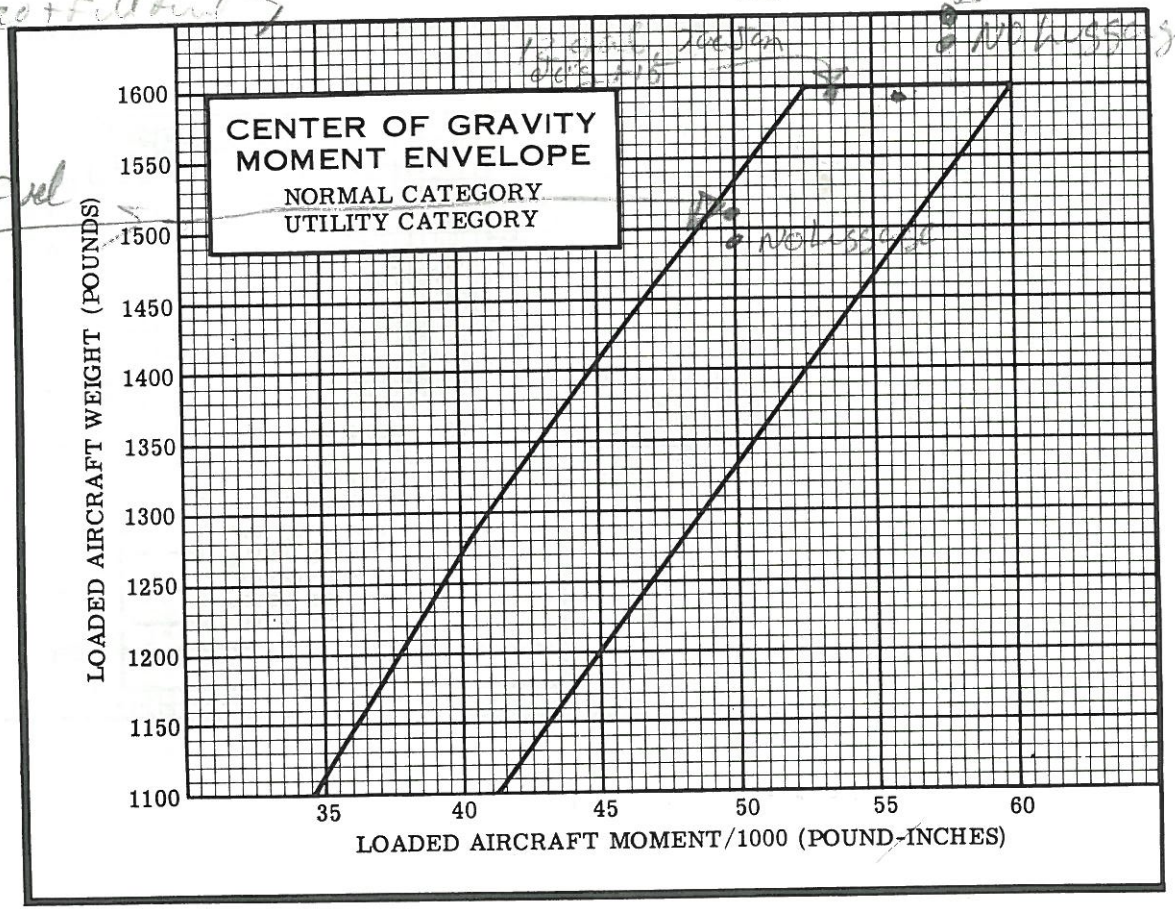
AREA (1) = 120 POUNDS
AREA (2) = 40 POUNDS
AREAS (1) + (2) = 120 POUNDS

* TIE-DOWN NET ATTACH POINTS

* A cargo tie-down net is provided to secure baggage in the baggage area. The net attaches to six tie-down rings. Two rings are located on the floor just aft of the seat backs and one ring is located two inches above the floor on each cabin wall at the aft end of area (1). Two additional rings are located at the top, aft end of area (2). At least four rings should be used to restrain the maximum baggage load of 120#.

If the airplane is equipped with an optional utility shelf, it should be removed prior to loading and tying down large baggage items. (Slide the tab of the locking clips on each end of the shelf inboard to disengage the shelf from the aircraft structure.) After baggage is loaded and secured, either stow the shelf or, if space permits, install it for storing small articles.


CODE
PILOT AND PASSENGER AND FUEL (LONG RANGE TANKS) 35 GAL. MAX. @ 6#/GAL.
FUEL (STANDARD TANKS) 22.5 GAL. MAX. @ 6#/GAL.
BAGGAGE IN AREA (1) (OR PASSENGER ON CHILD'S SEAT) 120# MAX.
BAGGAGE IN AREA (2) 40# MAX.
LOAD WEIGHT (POUNDS)
400
350
300
250
200
150
100
50
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
MOMENT/1000 (POUND - INCHES)
35 MAX.
30
22.5 MAX.
20
20
10
10
LOADING GRAPH


CENTER OF GRAVITY
MOMENT ENVELOPE
NORMAL CATEGORY
UTILITY CATEGORY
LOADED AIRCRAFT WEIGHT (POUNDS)
1600
1550
1500
1450
1400
1350
1300
1250
1200
1150
1100
35
40
45
50
55
60
LOADED AIRCRAFT MOMENT/1000 (POUND-INCHES)

# Section IV

## CARE OF THE AIRPLANE

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

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

## GROUND HANDLING.

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

NOTE

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

## MOORING YOUR AIRPLANE.

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

(1) Set parking brake and install control wheel lock.
(2) Install a surface control lock between each aileron and flap.
(3) Tie sufficiently strong ropes or chains (700 pounds tensile strength) to wing and tail tie-down fittings, and secure each rope

to ramp tie-down.
(4) Install a surface control lock over the fin and rudder.
(5) Install a pitot tube cover.
(6) Tie a rope to an exposed portion of the engine mount and secure the opposite end to a ramp tie-down.

## WINDSHIELD-WINDOWS.

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

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

NOTE

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

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

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

## PAINTED SURFACES.

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

by someone experienced in handling uncured paint. Any Cessna Dealer can accomplish this work.

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

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

## ALUMINUM SURFACES.

The clad aluminum surfaces of your Cessna require only minimum care to keep them bright and clean. The airplane may be washed with water to remove dirt; oil and grease may be removed with gasoline, naphtha, carbon tetrachloride or other non-alkaline solvents. Dulled aluminum surfaces may be cleaned effectively with an aircraft aluminum polish.

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

## PROPELLER CARE.

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

## INTERIOR CARE.

To remove dust and loose dirt from the upholstery, headliner, and

carpet, clean the interior regularly with a vacuum cleaner.

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

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

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

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

## INSPECTION SERVICE AND INSPECTION PERIODS.

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

Federal Aviation Regulations require that all airplanes have a periodic (annual) inspection as prescribed by the administrator, and performed by a person designated by the administrator. In addition, 100-hour periodic

inspections made by an "appropriately-rated mechanic" are required if the airplane is flown for hire. The Cessna Aircraft Company recommends the 100-hour periodic inspection for your airplane. The procedure for this 100-hour inspection has been carefully worked out by the factory and is followed by the Cessna Dealer Organization. The complete familiarity of the Cessna Dealer Organization with Cessna equipment and with factory-approved procedures provides the highest type of service possible at lower cost.

## AIRCRAFT FILE.

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

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

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

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

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

C. To be made available upon request:

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

NOTE

Cessna recommends that these items, plus the Owner's Manual, "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 80/87 minimum grade fuel. The capacity of each wing tank is 13 gallons for standard fuel tanks, 19 gallons for optional long range tanks.

FUEL STRAINER:

Before first flight of the day and after each refueling, pull out fuel strainer drain knob (located just inside cowl access door) 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 wing tank sumps contain water. Thus, the wing tank sump drain plugs and fuel line drair plug should be removed to check for presence of water.

OIL FILLER:

When preflight check shows low oil level, service with aviation grade engine oil; SAE 40 above 40°F and SAE 10W30 or SAE 20 below 40°F. (Multi-viscosity oil with a range of SAE 10W30 is recommended for improved starting in cold weather.) Detergent or dispersant oil, conforming to Continental Motors Specification MHS-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.

OIL DIPSTICK:

Check oil level before each flight. Do not operate on less than 4 quarts. To minimize loss of oil through breather, fill to 5 quart level for normal flights of less than 3 hours. For extended flight, fill to 6 quarts. If optional oil filter is installed, one additional quart is required when the filter element is changed.

# SERVICING INTERVALS CHECK LIST

## EACH 50 HOURS

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

ENGINE OIL AND OIL FILTER--Change engine oil and replace filter element. If optional oil filter is not installed, change oil and clean screen every 25 hours. Change engine oil at least every four months even though less than 50 hours have been accumulated. Reduce periods for prolonged operation in dusty areas, cold climates, or when short flights and long idle periods result in sludging conditions.

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, if installed.

CARBURETOR 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.

## EACH 100 HOURS

BRAKE MASTER CYLINDERS--Check and fill.

SHIMMY DAMPENER--Check and fill.

FUEL STRAINER--Disassemble and clean.

FUEL TANK SUMP DRAINS--Drain water and sediment.

FUEL LINE DRAIN PLUG--Drain water and sediment.

VACUUM SYSTEM OIL SEPARATOR (OPT)--Clean.

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

SPARK PLUGS-- Clean, test and regap.

## EACH 500 HOURS

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

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

## AS REQUIRED

NOSE GEAR SHOCK STRUT--Keep filled with fluid and inflated to 20 psi. Do not over-inflate.

# OWNER FOLLOW-UP SYSTEM

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

## PUBLICATIONS

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

- OWNER'S MANUALS FOR YOUR
  AIRCRAFT
  ELECTRONICS - 300 SERIES

- SERVICE MANUALS AND PARTS CATALOGS FOR YOUR
  AIRCRAFT
  ENGINE AND ACCESSORIES
  ELECTRONICS - 300 SERIES
  WING LEVELER

- COMPUTERS

- SALES AND SERVICE DEALER DIRECTORY

- DO'S AND DON'TS ENGINE BOOKLET

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

# Section V

## OPERATIONAL DATA

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

To realize the maximum usefulness from your Cessna, you should take advantage of its high cruising speeds. However, if range is of primary importance, it may pay you to fly at a low cruising RPM, thereby increasing your range and allowing you to make the trip non-stop with ample fuel reserve. The cruise performance table (figure 5-4) should be used to solve flight planning problems of this nature.

In the table (figure 5-4), range and endurance are given for lean mixture from 2500 feet to 12,500 feet. All figures are based on zero wind, 22.5 and 35.0 gallons of fuel for cruise, McCauley 1A101/DCM6948 propeller, 1600 pounds gross weight, and standard atmospheric conditions. Mixture is leaned to maximum RPM. Allowances for fuel reserve, headwinds, take-offs and climb, and variations in mixture leaning technique should be made as no allowances are shown on the chart. Other indeterminate variables such as carburetor metering characteristics, engine and propeller conditions, and turbulence of the atmosphere may account for variations of 10% or more in maximum range.

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

## AIRSPEED CORRECTION TABLE

(Flaps Up)

| IAS | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAS | 51 | 57 | 65 | 73 | 82 | 91 | 100 | 109 | 118 | 127 | 136 |

(Flaps Down)

| IAS | 40 | 50 | 60 | 70 | 80 | 90 | 100 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CAS | 49 | 55 | 63 | 72 | 81 | 89 | 98 | | | | |

Figure 5-1.

## =Power Off= STALLING SPEEDS MPH = CAS

| Gross Weight 1600 lbs. CONDITION | ANGLE OF BANK 0° | 20° | 40° | 60° |
|---|---|---|---|---|
| Flaps UP | 55 | 57 | 63 | 78 |
| Flaps 20° | 49 | 51 | 56 | 70 |
| Flaps 40° | 48 | 49 | 54 | 67 |

Figure 5-2.

## —TAKE-OFF DISTANCE— FLAPS RETRACTED HARD SURFACE RUNWAY

| GROSS WT. LBS. | IAS 50 FT. MPH | HEAD WIND KNOTS | AT SEA LEVEL & 59° F. | | AT 2500 FT. & 50° F. | | AT 5000 FT. & 41° F. | | AT 7500 FT. & 32° F. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | GROUND RUN | TOTAL TO CLEAR 50 FT. OBS | GROUND RUN | TOTAL TO CLEAR 50 FT. OBS | GROUND RUN | TOTAL TO CLEAR 50 FT. OBS | GROUND RUN | TOTAL TO CLEAR 50 FT. OBS |
| 1600 | 64 | 0 | 735 | 1385 | 910 | 1660 | 1115 | 1985 | 1360 | 2440 |
| | | 10 | 500 | 1035 | 630 | 1250 | 780 | 1510 | 970 | 1875 |
| | | 20 | 305 | 730 | 395 | 890 | 505 | 1090 | 640 | 1375 |

NOTES: 1. Increase the distances 10% for each 35°F. increase in temperature above standard for the particular altitude.
2. For operation on a dry, grass runway, increase distances (both "ground run" and "total to clear 50 ft. obstacle") by 7% of the "total to clear 50 ft. obstacle" figure.

## —MAXIMUM RATE-OF-CLIMB DATA—

| GROSS WEIGHT LBS. | AT SEA LEVEL & 59° F. | | | AT 5000 FT. & 41° F. | | | AT 10000 FT. & 23° F. | | |
|---|---|---|---|---|---|---|---|---|---|
| | IAS, MPH | RATE OF CLIMB FT./MIN. | FUEL USED, GAL. | IAS, MPH | RATE OF CLIMB FT./MIN. | FUEL USED FROM S.L., GAL. | IAS, MPH | RATE OF CLIMB FT./MIN. | FUEL USED FROM S.L., GAL. |
| 1600 | 73 | 670 | 0.6 | 69 | 440 | 1.6 | 65 | 220 | 3.0 |

NOTES: 1. Flaps retracted, full throttle, mixture leaned to smooth operation above 5000 ft.
2. Fuel used includes warm-up and take-off allowances.
3. For hot weather, decrease rate of climb 15 ft./min. for each 10°F above standard day temperature for particular altitude.

## —LANDING DISTANCE— FLAPS LOWERED TO 40° - POWER OFF HARD SURFACE RUNWAY - ZERO WIND

| GROSS WEIGHT LBS. | APPROACH SPEED, IAS, MPH | AT SEA LEVEL & 59° F. | | AT 2500 FT. & 50° F. | | AT 5000 FT. & 41° F. | | AT 7500 FT. & 32° F. | |
|---|---|---|---|---|---|---|---|---|---|
| | | 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 |
| 1600 | 58 | 445 | 1075 | 470 | 1135 | 495 | 1195 | 520 | 1255 |

NOTES: 1. Decrease the distances shown by 10% for each 4 knots of headwind.
2. Increase the distance by 10% for each 60°F. temperature increase above standard.
3. For operation on a dry, grassy runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 20% of the "total to clear 50 ft. obstacle" figure.

Figure 5-3.

# CRUISE PERFORMANCE — WITH LEAN MIXTURE

| ALTITUDE | RPM | %BHP | TAS MPH | GAL/HR. | END. HOURS | | RANGE, MILES | |
|---|---|---|---|---|---|---|---|---|
| | | | | | STANDARD | LONG RANGE | STANDARD | LONG RANGE |
| | | | | | 22.5 GAL. | 35 GAL. | 22.5 GAL. | 35 GAL. |
| 2500 | 2750 | 92 | 121 | 7.0 | 3.2 | 5.0 | 390 | 605 |
| | 2700 | 87 | 119 | 6.6 | 3.4 | 5.3 | 410 | 635 |
| | 2600 | 77 | 114 | 5.8 | 3.9 | 6.1 | 445 | 690 |
| | 2500 | 68 | 108 | 5.1 | 4.4 | 6.9 | 475 | 740 |
| | 2400 | 60 | 103 | 4.6 | 4.9 | 7.7 | 505 | 790 |
| | 2300 | 53 | 96 | 4.1 | 5.5 | 8.6 | 535 | 830 |
| | 2200 | 46 | 89 | 3.6 | 6.2 | 9.7 | 550 | 860 |
| | 2100 | 40 | 79 | 3.2 | 7.0 | 10.9 | 555 | 865 |
| 5000 | 2750 | 85 | 121 | 6.4 | 3.5 | 5.5 | 425 | 660 |
| | 2700 | 80 | 118 | 6.0 | 3.8 | 5.8 | 445 | 690 |
| 21.3 MPG | 2600 | 71 | 113 | 5.3 | 4.2 | 6.6 | 475 | 740 |
| | 2500 | 63 | 107 | 4.8 | 4.7 | 7.4 | 505 | 790 |
| | 2400 | 56 | 101 | 4.3 | 5.3 | 8.2 | 530 | 830 |
| | 2300 | 49 | 93 | 3.8 | 5.9 | 9.2 | 550 | 860 |
| 24.5 MPG | 2200 | 43 | 84 | 3.4 | 6.6 | 10.3 | 560 | 870 |
| | 2100 | 37 | 71 | 3.0 | 7.5 | 11.7 | 540 | 835 |
| 7500 | 2700 | 74 | 117 | 5.5 | 4.1 | 6.3 | 480 | 745 |
| 22.65 | 2600 | 66 | 111 | 4.9 | 4.6 | 7.1 | 505 | 790 |
| | 2500 | 58 | 105 | 4.4 | 5.1 | 7.9 | 535 | 830 |
| | 2400 | 52 | 98 | 4.0 | 5.7 | 8.8 | 555 | 860 |
| 24.7 | 2300 | 45 | 89 | 3.6 | 6.3 | 9.8 | 560 | 875 |
| | 2200 | 40 | 77 | 3.2 | 7.1 | 11.1 | 550 | 850 |
| 10,000 | 2700 | 68 | 116 | 5.1 | 4.4 | 6.8 | 510 | 790 |
| 23.6 | 2600 | 61 | 109 | 4.6 | 4.9 | 7.6 | 535 | 830 |
| | 2500 | 54 | 102 | 4.1 | 5.4 | 8.5 | 555 | 865 |
| | 2400 | 48 | 93 | 3.7 | 6.1 | 9.4 | 565 | 880 |
| 25.1 | 2300 | 42 | 82 | 3.3 | 6.8 | 10.6 | 555 | 860 |
| 12,500 | 2650 | 60 | 110 | 4.5 | 5.0 | 7.8 | 550 | 855 |
| | 2600 | 56 | 106 | 4.3 | 5.3 | 8.2 | 555 | 865 |
| | 2500 | 50 | 97 | 3.9 | 5.8 | 9.1 | 565 | 880 |
| | 2400 | 44 | 86 | 3.5 | 6.5 | 10.1 | 560 | 870 |

NOTES: 1. Maximum cruise is normally limited to 75% power.
2. In the above calculations of endurance in hours and range in miles, no allowances were made for take-off or reserve.

Figure 5-4.

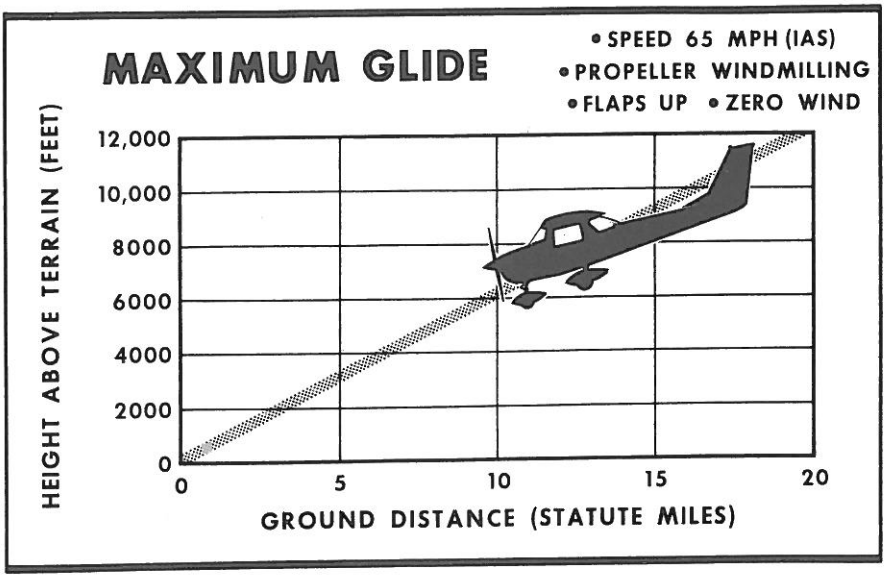

MAXIMUM GLIDE
• SPEED 65 MPH (IAS)
• PROPELLER WINDMILLING
• FLAPS UP • ZERO WIND
HEIGHT ABOVE TERRAIN (FEET)
12,000
10,000
8000
6000
4000
2000
0
0
5
10
15
20
GROUND DISTANCE (STATUTE MILES)

Figure 5-5.

# 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 19 gallons. Usable fuel in each long range tank, for all flight conditions, is 17.5 gallons.

## COLD WEATHER EQUIPMENT

### WINTERIZATION KIT.

For continuous operation in temperatures consistently below 20°F, the Cessna winterization kit should be installed to improve engine operation. The kit consists of a shield to partially cover the cowl nose cap opening, the addition of heat ducting from the right exhaust manifold for additional cabin heat, a carburetor airbox heat outlet cap, and insulation for the engine breather line.

# RADIO TRANSMITTER SELECTOR SWITCH

Operation of the radio equipment is normal as covered in the respective radio manuals. When more than one radio with transmitter function is installed, a transmitter switch is necessary. The transmitter selector switch is mounted in the upper left corner of the control pedestal and has two positions, labeled "TRANS 1" and "TRANS 2." 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.

# 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.

# WING LEVELER

A wing leveler may be installed to augment the lateral and directional 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 and rudder control systems. As the airplane deviates from a wing level attitude or a given direction, vacuum pressure in the servo units is increased or relieved as needed to actuate the ailerons and rudder to oppose the deviations. The rudder action effectively corrects adverse yaw induced by the ailerons.

The wing leveler system has manual roll trim capabilities which may be used 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 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 and elevator trim for level flight.
(2) "ROLL TRIM" Control Knob -- Adjust as desired.

### DESCENT.

(1) Adjust power and elevator 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 stability augmentation system will automatically become inoperative.

## 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.

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# WARRANTY

The Cessna Aircraft Company ("Cessna") warrants each new aircraft manufactured by it, and all new aircraft equipment and accessories, including Cessna-Crafted Electronics (as herein defined), and all new service parts for such aircraft, aircraft equipment and accessories sold by it, to be free from defects in material and workmanship under normal use and service for a period of six (6) months after delivery to the original retail purchaser or first user in the case of aircraft, aircraft equipment and accessories (except Cessna-Crafted Electronics as herein defined) and service parts therefor, and for a period of one (1) year after such delivery in the case of Cessna-Crafted Electronics (which term includes all communication, navigation and autopilot systems bearing the name "Cessna", beginning at the connection to the aircraft electrical system (bus bar) and including "black boxes", antennas, microphones, speakers and other components and associated wiring but excluding gyro instruments used in connection with autopilot and navigation systems) and service parts therefor.

Cessna's obligation under this warranty is limited to repairing or replacing, at its option, any part or parts which, within the applicable six (6) or twelve (12) months period as above set forth, shall be returned transportation charges prepaid to Cessna at Wichita, Kansas, or to any Cessna appointed or Cessna Distributor appointed dealer authorized by such appointment to sell the aircraft, equipment, accessories and service parts of the type involved and which upon examination shall disclose to Cessna's satisfaction to have been thus defective. (A new warranty period is not established for replacements. Replacements are warranted for the remainder of the applicable six (6) or twelve (12) months original warranty period). The repair or replacement of defective parts under this warranty will be made by Cessna or the dealer without charge for parts, or labor for removal, installation and/or actual repair of such defective parts. (Locations of such dealers will be furnished by Cessna on request).

The provisions of this warranty do not apply to any aircraft, equipment, accessories (including Cessna-Crafted Electronics) or service parts therefor manufactured or sold by Cessna which have been subject to misuse, negligence, or accident, or which shall have been repaired or altered outside of Cessna's factory in any way so as in the judgment of Cessna to affect adversely its performance, stability and reliability, nor to normal maintenance services (such as engine tune up, cleaning, control rigging, brake and other mechanical adjustments, maintenance inspections, etc.) and the replacement of service items (such as spark plugs, brake linings, filters, hoses, belts, tires, etc.) made in connection with such services or required as maintenance, nor to normal deterioration of soft trim and appearance items (such as paint, upholstery, rubber-like items, etc.) due to wear and exposure.

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# SERVICING REQUIREMENTS

**FUEL:**

AVIATION GRADE -- 80/87 MINIMUM GRADE
CAPACITY EACH STANDARD TANK -- 13 GALLONS
CAPACITY EACH LONG RANGE TANK -- 19 GALLONS

**ENGINE OIL:**

AVIATION GRADE -- SAE 40 ABOVE 40° F.
SAE 10W30 OR SAE 20 BELOW 40° F.
(MULTI-VISCOSITY OIL WITH A RANGE OF SAE 10W30 IS RECOMMENDED FOR IMPROVED STARTING IN COLD WEATHER. DETERGENT OR DISPERSANT OIL, CONFORMING TO CONTINENTAL MOTORS SPECIFICATION MHS-24A, MUST BE USED.

CAPACITY OF ENGINE SUMP -- 6 QUARTS
(DO NOT OPERATE ON LESS THAN 4 QUARTS. TO MINIMIZE LOSS OF OIL THROUGH BREATHER, FILL TO 5 QUART LEVEL FOR NORMAL FLIGHTS OF LESS THAN 3 HOURS. FOR EXTENDED FLIGHT, FILL TO 6 QUARTS. IF OPTIONAL OIL FILTER IS INSTALLED, ONE ADDITIONAL QUART IS REQUIRED WHEN THE FILTER ELEMENT IS CHANGED.

**HYDRAULIC FLUID:**

MIL-H-5606 HYDRAULIC FLUID

**TIRE PRESSURE:**

NOSE WHEEL --- 30 PSI ON 5:00 × 5 TIRE
MAIN WHEELS -- 21 PSI ON 6:00 × 6 TIRES

**NOSE GEAR SHOCK STRUT:**

KEEP FILLED WITH FLUID AND INFLATED TO 20 PSI.
DO NOT OVER-INFLATE.




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

CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS