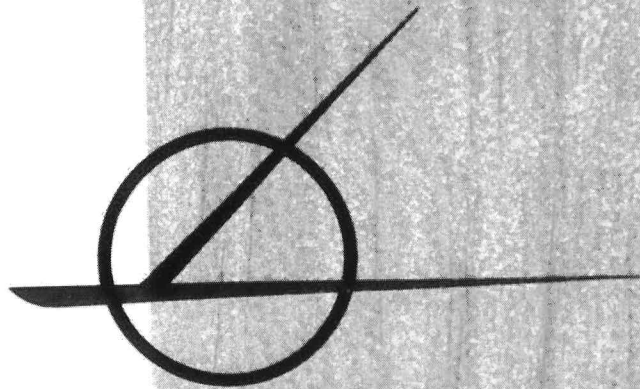




Your 1958

Cessna

172

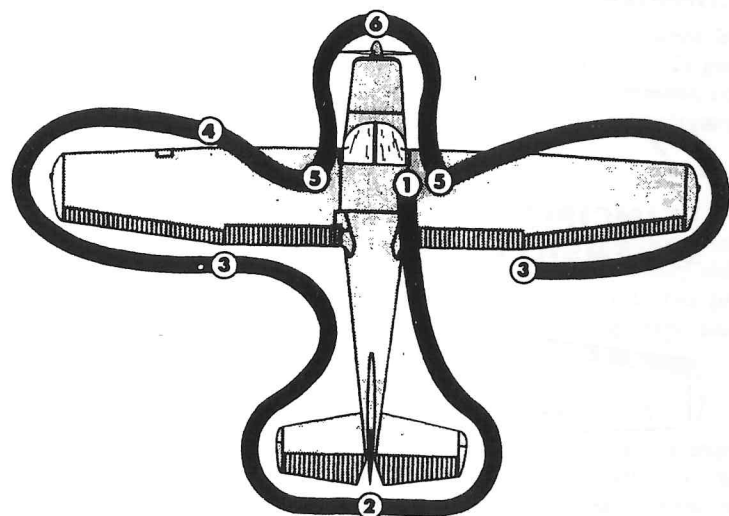
1957-1958 172

CESSNA AIRCRAFT COMPANY

WICHITA, KANSAS



OWNER'S MANUAL



- ①
 - a. Check quantity of fuel (2 gages).
 - b. Make sure master and ignition switches are OFF.
 - c. Remove control lock or safety belt from control wheel, if installed.
 - ②
 - a. Remove rudder lock, if installed.
 - b. Inspect tail surface hinges and hinge bolts.
 - c. Check trim tab for security.
 - d. Disconnect tie-down chain.
 - ③
 - a. Remove aileron lock, if installed.
 - b. Check aileron and flap hinges.
 - ④
 - a. Remove pitot tube cover, if installed.
 - b. Inspect pitot tube opening for stoppage.
 - c. Check fuel tank vent opening for stoppage.
 - ⑤
 - a. Check main wheel tire for cuts, bruises, and proper inflation.
 - b. Inspect airspeed static source hole on side of fuselage for stoppage, (left side only).
 - c. Remove fuel tank cap and check fuel level.
 - d. Disconnect tie-down chain.
 - ⑥
 - a. Check oil level. Do not operate with less than four quarts. Fill for extended flight.
 - b. Inspect cowl access door for security.
 - c. On first flight of day, drain a two-ounce quantity of fuel from the fuel strainer to check for presence of water and sediment.
 - d. Check propeller and spinner for nicks and security.
 - e. Check nose wheel strut for proper inflation.
 - f. Check nose wheel tire for cuts, bruises, and proper inflation.
 - g. Disconnect tie-down chain.
- Repeat steps 3 and 5.

Figure 6. Exterior Inspection Diagram

SECTION II

operating check list

AFTER FAMILIARIZING YOURSELF with the equipment of your Cessna 172, your primary concern will normally be the operation of your airplane. This section lists, in Pilot's Check List form, the steps necessary to operate your Cessna 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 would want to or should know concerning the operation of your Cessna 172.

The flight and operational characteristics of the Model 172 Cessna 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 of the airplane. All airspeeds mentioned in sections II and III are indicated airspeeds. Corresponding true indicated airspeeds may be obtained from the airspeed correction table in section V.

A. BEFORE ENTERING THE AIRPLANE.

- (1) Check oil level. Do not operate on less than four quarts. Fill for extended flights.
- (2) On first flight of the day, drain a small (two-ounce) quantity of fuel from fuel strainer drain to insure that no free water is in the line.
- (3) Check quantity of fuel.
- (4) Make a visual check of the airplane (see figure 6).
- (5) Remove control locks, and nose gear tow bar if installed.

B. BEFORE STARTING THE ENGINE.

- (1) Operate controls and make a visual check for proper operation.
- (2) Make sure windshield is clean for maximum visibility.
- (3) Adjust seat for comfort and distance to rudder pedals.

NOTE

Test the front seats for secure latching after adjusting them to the desired position.

- (4) Check brakes and set parking brake.
- (5) Fasten and check safety belt.

C. STARTING THE ENGINE.

- (1) Set carburetor heat to "cold" (Full in).

OPERATING CHECK LIST

- (2) Set mixture control to "full rich" (Full in).
- (3) Set fuel tank selector to "both tanks". (Take-off on less than $\frac{1}{4}$ tank is not recommended.)
- (4) In normal weather temperatures use one or two strokes of the engine primer if required.
- (5) Clear propeller.
- (6) Turn master switch "on".
- (7) Turn magneto switches "on".
- (8) Open throttle $\frac{1}{8}$ " (to idle position).
- (9) Start engine by pulling starter control.

D. WARM-UP AND GROUND TEST.

- (1) Do not allow the engine to operate at more than 800 r.p.m. for the first 60 seconds after starting. After starting if 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 may cause serious engine damage.
- (2) Avoid the use of carburetor heat unless icing conditions prevail.
- (3) After one to two minutes running at 800 r.p.m., continue warm-up while taxiing to the active runway. Do not overheat the engine by running engine at high speed while on the ground. When the engine accelerates smoothly and oil pressure remains steady, you are ready for take-off.

NOTE

To avoid propeller tip abrasion, do not run up engine on loose cinders or gravel.

E. BEFORE TAKE-OFF.

- (1) Apply toe brakes.
- (2) Set altimeter.
- (3) Set trim tab to "take-off" position.
- (4) Check oil pressure — should show 30 to 40 lbs./sq. in. (Minimum idling oil pressure — 10 lb./sq. in.).
- (5) Check engine magnetos at 1600 r.p.m. by switching off separately each magneto momentarily. The maximum allowable r.p.m. drop on either magneto is 100 r.p.m. Switch to both magnetos before continuing.
- (6) Check carburetor heat and leave on full heat until take-off.
- (7) Full throttle r.p.m. check is recommended only when condition of engine is in doubt. The engine should run smoothly and turn, with carburetor heat off, 2260 to 2360 r.p.m. The engine should idle between 400 and 500 r.p.m. Except for short check do not idle below 600 r.p.m.

OPERATING CHECK LIST

F. TAKE-OFF.

NORMAL TAKE-OFF.

- (1) Flaps 0° (retracted).
- (2) Carburetor Heat — "OFF" (full in).
- (3) Advance throttle slowly to full throttle.
- (4) Avoid dragging brakes by keeping heels on floor.
- (5) Apply slight back pressure on the elevator control to raise nosewheel when take-off speed is reached.

CAUTION

Do not raise the nose of the airplane excessively high as this will only lengthen the take-off run.

- (6) Climb at 80 MPH.

MINIMUM GROUND RUN TAKE-OFF.

- (1) Wing flaps 10° (First notch).
- (2) Apply full throttle while holding brakes.
- (3) Release brakes.
- (4) Take-off slightly tail low.

OBSTACLE CLEARANCE TAKE-OFF.

- (1) Wing flaps 0° (retracted).
- (2) Apply full throttle while holding brakes.
- (3) Release brakes.
- (4) Take-off slightly tail low.
- (5) Level off momentarily to accelerate to best angle of climb speed (60 MPH).

SOFT OR ROUGH FIELD TAKE-OFF WITH NO OBSTACLE AHEAD.

- (1) Wing flaps 10° (First notch).
- (2) Apply full throttle and raise nosewheel clear of ground with elevator control back pressure.
- (3) Take-off in a tail low attitude.
- (4) Level off momentarily to accelerate to a safe airspeed.
- (5) Retract flaps slowly as soon as a reasonable altitude is obtained. (see "Take-off" paragraph on page 32).

TAKE-OFF IN STRONG CROSSWIND.

- (1) Flaps 0° (retracted).
- (2) Apply full throttle and use sufficient aileron into the wind to maintain

wings level.

- (3) Hold nosewheel on ground 5-10 MPH above normal take-off speed.
- (4) Take-off abruptly to prevent airplane from settling back to runway while drifting.

G. CLIMB.

- (1) If no obstacle is ahead climb out with flaps up at 80-90 MPH with full throttle. If maximum rate of climb is desired use full throttle and 75 MPH, at sea level (See Figure 9). Reduce climb speed about ½ MPH for every 1000 feet of altitude above sea level.
- (2) To climb over an obstacle after take-off use the best Angle of climb speed of 60 MPH, with full throttle and flaps up.
- (3) Mixture should be "Full Rich" unless engine is rough due to rich mixture.

H. CRUISING.

- (1) Recommended cruising r.p.m. — 2450-2650 (See page 36)
- (2) Trim airplane by adjusting elevator tab.
- (3) Oil pressure — 30-40 lbs./sq. in.
- (4) Oil temperature — within green arc range.
- (5) Lean mixture to maximum r.p.m.; then enrichen mixture until r.p.m. begins to decrease.
- (6) Lean mixture as required to obtain smooth engine operation when using carburetor heat in cruise.

I. LET-DOWN.

- (1) Set mixture control "Full Rich" (full in).
- (2) Reduce power to obtain desired let down rate at cruising speed.
- (3) Apply enough carburetor heat to prevent icing if icing conditions exist.

J. BEFORE LANDING.

- (1) Set fuel selector to "Both".
- (2) Recheck mixture "Full Rich" (full in).
- (3) Apply carburetor heat before closing throttle.
- (4) Glide at 70-80 MPH, with flaps up.
- (5) Lower flaps as desired below 100 MPH.
- (6) Maintain 65-75 MPH, with flaps extended.
- (7) Trim airplane with elevator trim tab for glide.

K. LANDING.

NORMAL LANDING.

- (1) Landing technique is conventional for all flap settings.

SHORT FIELD LANDING.

- (1) Make a power-off approach at 60 MPH, with flaps 40° (fourth notch).
- (2) Land on main wheels first.
- (3) Lower nosewheel to ground immediately after touchdown.
- (4) Apply heavy braking as required.

CAUTION

Excessive braking will skid tires, resulting in lengthened ground run and tire damage.

LANDING IN STRONG CROSSWIND.

- (1) Use minimum flap setting required for field length.
- (2) Use wing low, crab, or combination method of drift correction.
- (3) Land in a nearly level attitude.
- (4) Hold straight course with steerable nosewheel and occasional braking if necessary.

L. AFTER LANDING.

- (1) Raise flaps after completion of landing roll.
- (2) Normal glide and taxiing should cool engine sufficiently; however, if excessive amount of taxiing is necessary, allow engine to cool before cutting ignition by allowing to idle at 800 r.p.m. two to three minutes.
- (3) Stop engine by pulling mixture control knob to full lean position. Do not open throttle as engine stops.
- (4) After engine stops, turn ignition switch "off".
- (5) Turn all switches "off". Be sure — otherwise your battery may run down over night.
- (6) Set parking brake, if required.

at 70-80 m.p.h. with flaps up, or 65-75 with flaps down, depending upon the turbulence of the air. The elevator trim tab is normally adjusted in the glide to relieve elevator control forces.

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

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

COLD WEATHER OPERATION.

Prior to starting on cold mornings, it is advisable to pull the propeller through several times by hand to "break loose" or "limber" the oil, thus conserving battery energy. In extremely cold (-20°F) weather, prime the engine as follows:

- (1) Clear propeller.
- (2) Turn master switch "on".
- (3) With magneto switch "off" and throttle closed, prime the engine four to ten strokes as the engine is being turned over.

- (4) Turn magneto switches "on".
- (5) Open throttle $\frac{1}{8}$ (to idle position) and start engine by pulling starter control. Note: In extremely cold weather a few strokes of the primer as the engine fires will enable the engine to keep running. (Avoid over-priming.) After priming, push primer all the way in and turn to locked position to avoid possibility of engine drawing fuel through the primer. Do not pull out on starter for a second starting attempt until engine has come to a complete stop from the first attempt. Failure to do this may result in damage to the starting gear.

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

For operation at temperatures consistently below freezing, a winterization kit consisting of plates for closing cowl openings is available at your distributor or dealer for a nominal charge.

SECTION IV

operating limitations

OPERATIONS AUTHORIZED.

Your Cessna 172 with standard equipment as certificated under CAA Type Certificate No. 3A12 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. When operated for hire at night, certificated flares are required. An owner of a properly equipped 172 is eligible to obtain approval for its operation on single engine scheduled airline service on VFR.

MANEUVERS — NORMAL CATEGORY.

The Model 172 exceeds the requirements of the Civil Air Regulations, Part 3, set forth by the United States Government for airworthiness. Spins and aerobatic maneuvers are not permitted in normal category airplanes in compliance with these regulations. In connection with the foregoing, the following gross weights and flight load factors apply:

Gross Weight.....	2200 lbs.
Flight Load Factor* Flaps Up.....	+3.8 — 1.52
Flight Load Factor* Flaps Down.....	+3.5

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

Your airplane must be operated in accordance with all CAA approved markings, placards and check lists in the airplane. If there is any information in this section which contradicts the CAA 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 C.A.A. All of these maneuvers are permitted in the Cessna 172 when operated in the utility category. In connection with the utility category, the following gross weight and flight load factors apply, with recommended entry speeds for maneuvers as shown.

Maximum Design Weight.....	1950 lbs.
Flight Maneuvering Load Factor, Flaps Up.....	+4.4 — 1.76
Flight Maneuvering Load Factor, Flaps Down.....	+3.5

OPERATING LIMITATIONS

No acrobatic maneuvers are approved except those listed below:

Maneuver	Entry Speed
Chandelles	115 m. p. h. (100 knots)
Lazy Eights	115 m. p. h. (100 knots)
Steep Turns	115 m. p. h. (100 knots)
Spins	Slow Deceleration
Stalls (Except Whip Stalls)	Slow Deceleration

The baggage compartment and rear seat must not be occupied.

Aerobatics that may impose high inverted loads should not be attempted. The important thing to bear in mind in flight maneuvers is that the Cessna 172 is clean in aerodynamic design and will build up speed quickly with the nose down. Proper speed control is an essential requirement for execution of any maneuver and care should always be exercised to avoid excessive speed which in turn can impose excessive loads. In the execution of all maneuvers avoid abrupt use of controls.

AIRSPEED LIMITATIONS.

The following are the certificated true indicated airspeed limits for the Cessna 172:

Maximum (Glide or dive, smooth air)	160 mph (red line)
Caution Range (Level flight or climb)	140-160 mph (yellow arc)
Normal Range (Level flight or climb)	59-140 mph (green arc)
Flap Operating Range	55-100 mph (white arc)

ENGINE OPERATION LIMITATIONS.

Power and Speed	145 bhp at 2700 rpm
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ENGINE INSTRUMENT MARKINGS.

OIL TEMPERATURE GAGE.

Normal Operating Range	Green Arc
Maximum Allowable	Red Line

OIL PRESSURE GAGE.

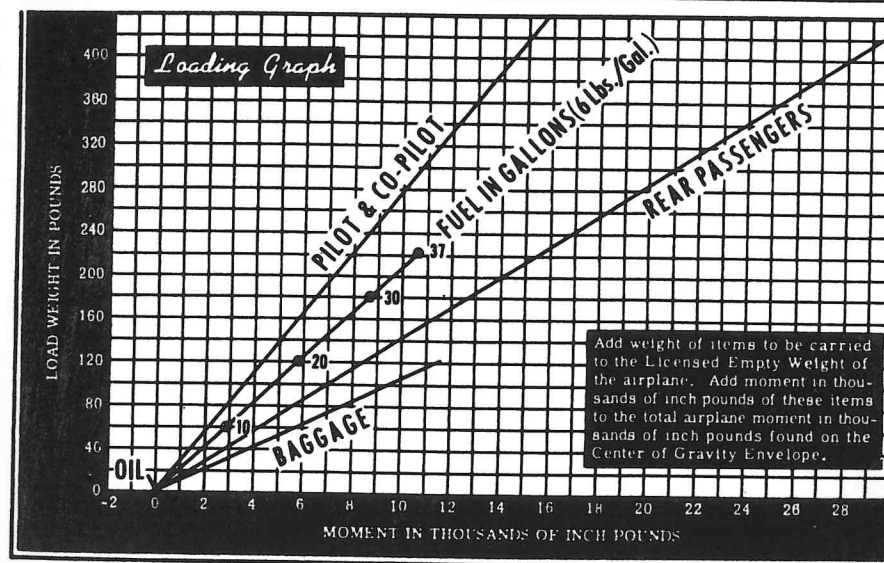
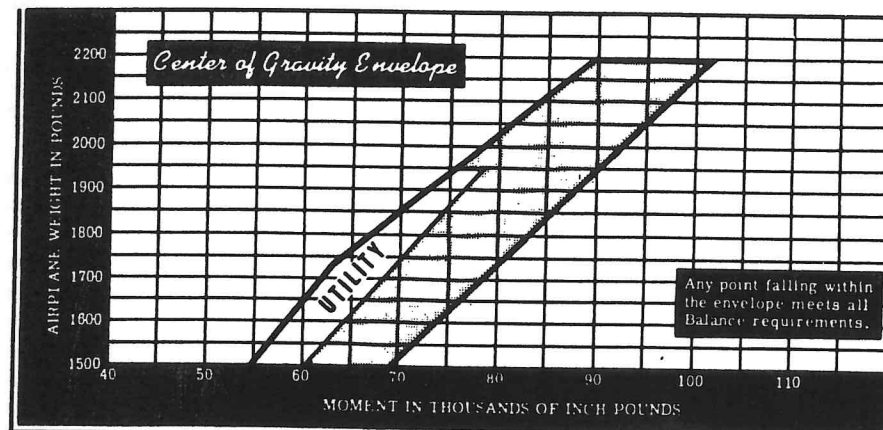
Minimum Idling	5 psi (red line)
Normal Operating Range	30-45 psi (green arc)
Maximum	50 psi (red line)

OPERATING LIMITATIONS

TACHOMETER.

Normal Operating Range:

At sea level	2200-2450 (inner green arc)
At 5000 feet	2200-2550 (middle green arc)
At 10,000 feet	2200-2650 (outer green arc)
Maximum Allowable	2700 (red line)



WEIGHT AND BALANCE.

All aircraft are designed for certain limit loads and balance conditions. These specifications for your 172 are charted on page 37.

A weight and balance report and equipment list for your particular airplane when it left the factory is furnished. Changes in original equipment affecting empty weight c. g. are required by the C.A.A. to be recorded in the repair and alteration form 337. Using the empty weight, c. g. location, and moment derived from the latest of these two sources, and following the example shown, the exact moment may be readily calculated. This exact moment, when plotted on the center of gravity envelope, will quickly show whether or not the c. g. is within limits. Refer to the loading graph for moment values of items to be carried.

The utility category is solely for the purpose of instructing and training in certain flight maneuvers. The weight and balance considerations limit the airplane to a pilot with or without co-pilot, full gas, no baggage and no rear seat baggage *or passenger*. The utility category envelope has been included in the weight and balance charts. The weight and moment of your airplane in the utility category may be determined by following the example shown for figuring a normal category airplane weight and moment. The utility weight and moment, when plotted on the center of gravity envelope, should fall within the "Utility" portion of the envelope for safe operation.

EXAMPLE FOR A NORMAL CATEGORY AIRPLANE WITH A LICENSED
EMPTY WEIGHT OF 1290 LBS. AND A MOMENT OF 49,260 IN. LBS.

	WT.	MOMENT 1000
EMPTY WEIGHT (LICENSED).....	1290	+49.3
OIL.....	15	- 0.3
PILOT & PASSENGER (1).....	340	+12.2
REAR PASSENGERS (2).....	290	+20.3
FUEL (MAXIMUM) 37 GAL.....	222	+10.7
BAGGAGE (TO MAKE GR. WT.).....	43	+ 4.1
Total.....	2200	96.6

Locate this point (2200-96.8) on the center of gravity envelope graph, and, since the point falls within the envelope, the above loading meets all balance requirements.

NOTE

The above problem is an example of only one of many different loading configurations. To best utilize the available payload for *your* airplane, the loading charts on page 37 should be consulted to determine proper load distribution.

SECTION V

operational data

THE OPERATIONAL DATA shown on the following pages are compiled from actual tests with airplane and engine in good condition and using average piloting technique and best power mixture. You will find this data a valuable aid when planning your flights. However, inasmuch as the number of variables included precludes great accuracy, an ample fuel reserve should be provided. The range performance shown makes no allowance for wind, navigational error, pilot technique, warm-up, take-off, climb, etc. All of these factors must be considered when estimating reserve fuel.

To realize the maximum usefulness from your 172, take advantage of the 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. Use the range table on page 42 to solve flight planning problems of this nature.

In the table, (Figure 10), range and endurance are given for lean mixture, from 2500 feet to 12,500 feet and for rich mixture at altitudes of 2,500 feet and 5,000 feet. All figures are based on zero wind, 37 gallons of fuel for cruise, McCauley 7651 propeller, 2200 pounds gross weight, and standard atmospheric conditions. For lean mixture figures, mixture is leaned to maximum r.p.m. Allowances for fuel reserve, headwinds, take-offs and climb, and variations in mixture leaning technique should be made and are in addition to those shown on the charts. Other indeterminate variables such as carburetor metering characteristics, engine and propeller conditions, and turbulence of the atmosphere may account for variations of 10% or more in maximum range.

AIRSPEED CORRECTION TABLE FLAPS UP OR DOWN											
IAS	40	50	60	70	80	90	100	110	120	130	140
TIAS	52	58	65	73	82	92	101	111	120	130	139

Figure 7. Airspeed Correction Table

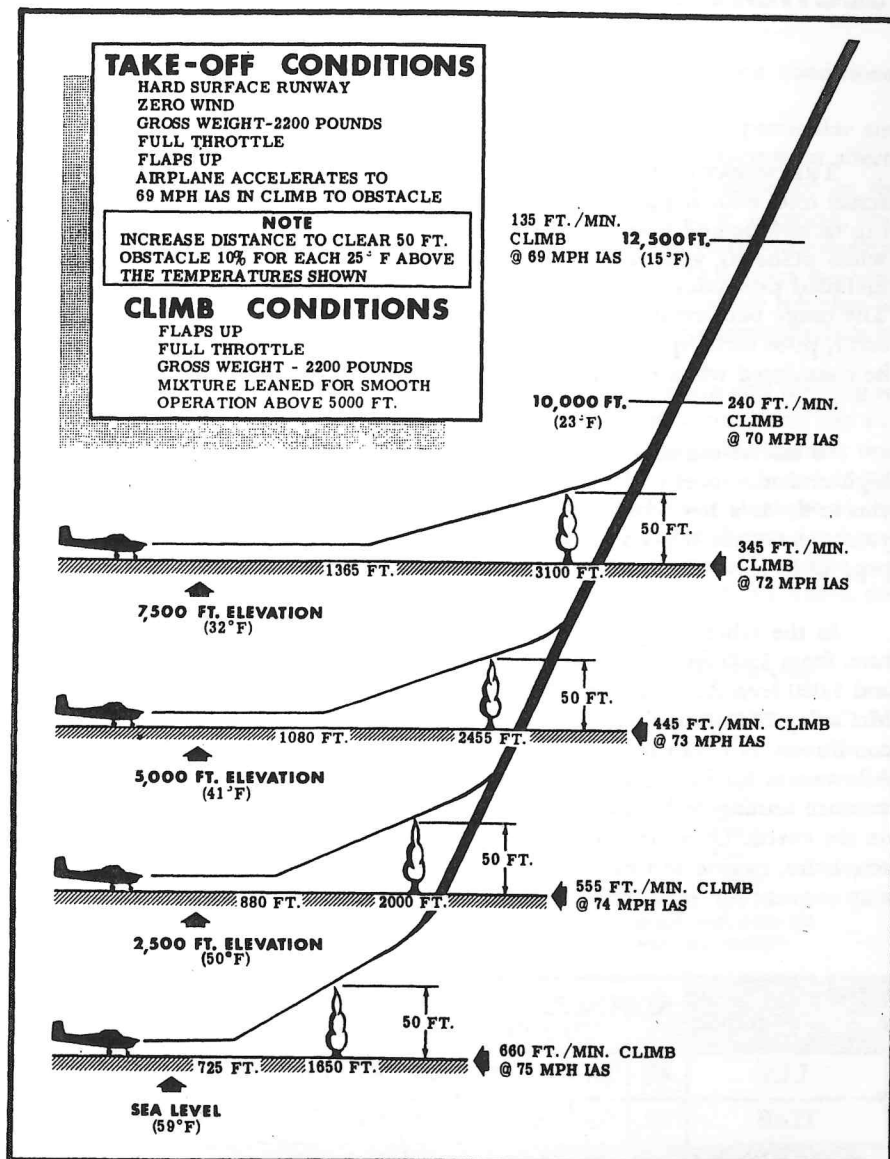


Figure 8. Take-Off Diagram

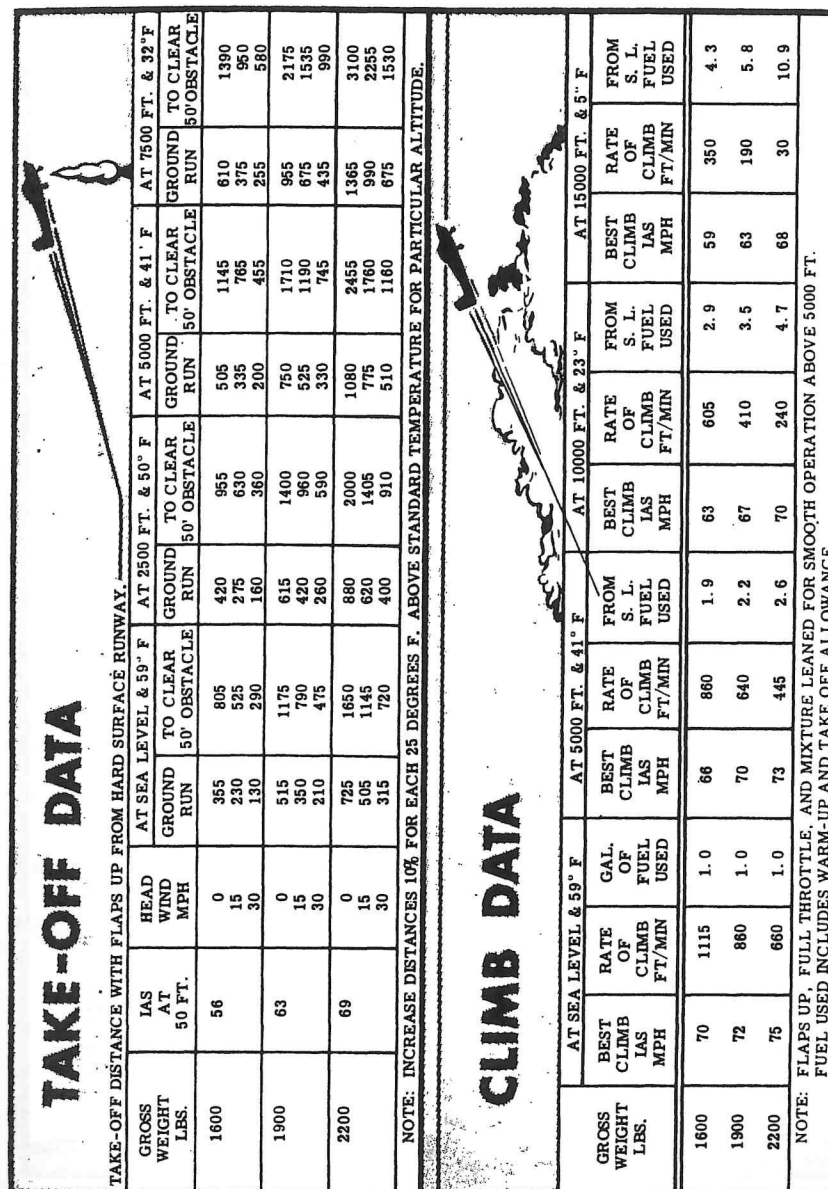


Figure 9. Take-Off & Climb Chart

CRUISE PERFORMANCE WITH RICH MIXTURE

ALT	RPM	BHP	% BHP	TAS MPH	Gal./Hour	End Hours	Mi./Gal.	Range Miles
2,500	2100	66	45	94	7.2	5.1	13.1	484
	2200	74	51	102	7.8	4.7	13.0	482
	2300	83	57	108	8.5	4.4	12.8	474
	2400	92	64	114	9.2	4.0	12.4	458
	2500	103	71	120	10.1	3.7	11.9	440
	2600	116	80	126	11.2	3.3	11.3	417
	2700	128	89	131	12.6	2.9	10.3	382
5,000	2100	63	43	93	7.1	5.2	13.1	483
	2200	70	48	100	7.8	4.8	12.8	475
	2300	78	54	107	8.4	4.4	12.7	469
	2400	87	60	113	9.1	4.0	12.4	457
	2500	97	67	119	10.0	3.7	12.0	443
	2600	107	74	125	10.8	3.4	11.5	426
	2700	120	83	131	12.1	3.1	10.8	401

CRUISE PERFORMANCE WITH LEAN MIXTURE

2,500	2100	66	45	94	5.7	6.5	16.5	610
	2200	74	51	102	6.5	5.7	15.7	580
	2300	83	57	108	7.3	5.1	14.9	552
	2400	92	64	114	8.1	4.6	14.1	521
	2500	103	71	120	9.0	4.1	13.3	491
	2600	116	80	126	10.1	3.6	12.4	458
	2700	128	89	131	11.2	3.3	11.6	430
5,000	2100	63	43	93	5.5	6.7	16.8	621
	2200	70	48	100	6.1	6.0	16.3	601
	2300	78	54	107	6.8	5.4	15.6	578
	2400	87	60	113	7.6	4.8	14.8	546
	2500	97	67	119	8.5	4.3	14.0	518
	2600	107	74	125	9.4	3.9	13.3	491
	2700	120	83	131	10.5	3.5	12.4	460
7,500	2100	60	42	89	5.3	7.0	16.9	626
	2200	66	46	97	5.8	6.4	16.7	620
	2300	73	51	105	6.4	5.8	16.4	607
	2400	82	56	111	7.2	5.2	15.5	575
	2500	91	63	118	8.0	4.6	14.8	548
	2600	101	70	124	8.9	4.2	14.0	519
10,000	2100	58	40	84	5.0	7.3	16.6	614
	2200	63	44	94	5.5	6.7	17.0	629
	2300	70	48	102	6.2	6.0	16.6	613
	2400	77	53	109	6.8	5.5	16.1	596
	2500	86	59	117	7.5	4.9	15.5	574
	2600	93	64	122	8.2	4.5	14.9	552
12,500	2200	61	42	90	5.3	6.9	16.8	623
	2300	66	46	98	5.8	6.4	16.9	626
	2400	74	51	107	6.5	5.7	16.6	612
	2500	80	55	114	7.0	5.2	16.2	597

Shaded areas are cruising rpm settings that are not recommended for the given altitude.

Figure 10. Cruise Performance Chart

LANDING CONDITIONS

APPROACH IAS 64 MPH @ 2200 LBS.
51 MPH @ 1600 LBS.

WING FLAPS — 40°
POWER OFF
HARD SURFACE RUNWAY

NOTE
Reduce Landing Distance 10%
for each 6MPH Headwind

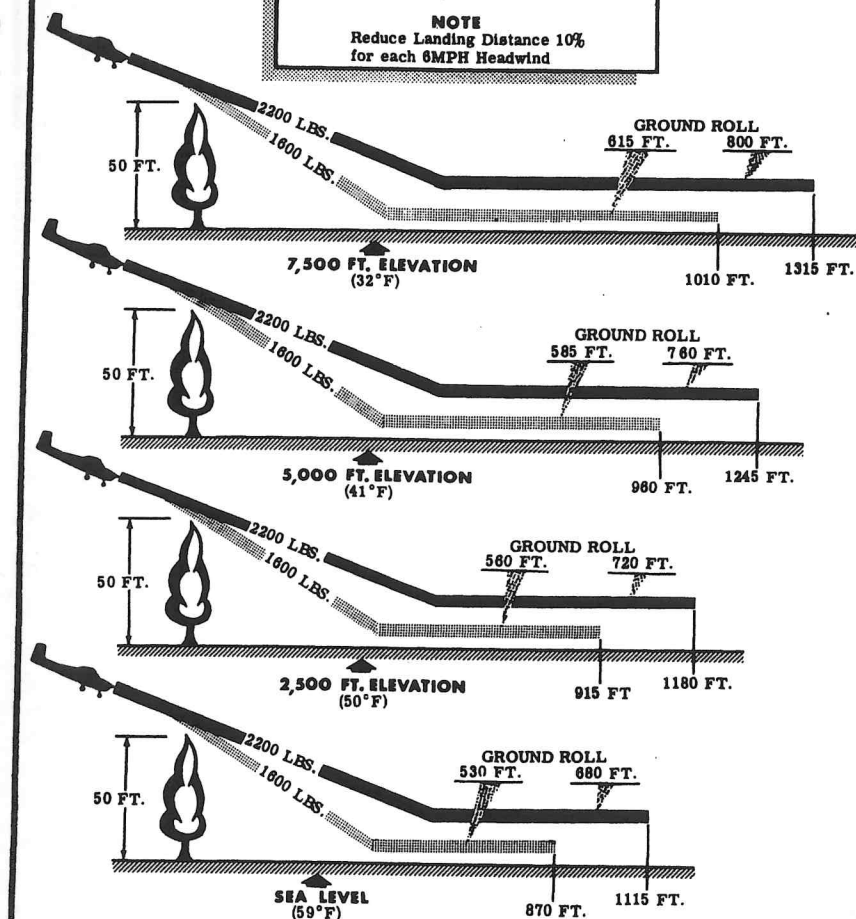


Figure 11. Landing Diagram