SECTION III

OPERATING INSTRUCTIONS

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PREFLIGHT

The airplane should be given a thorough visual inspection prior to each flight. Particular attention should be given to the following items:

1. a. Ignition and battery switches "OFF".

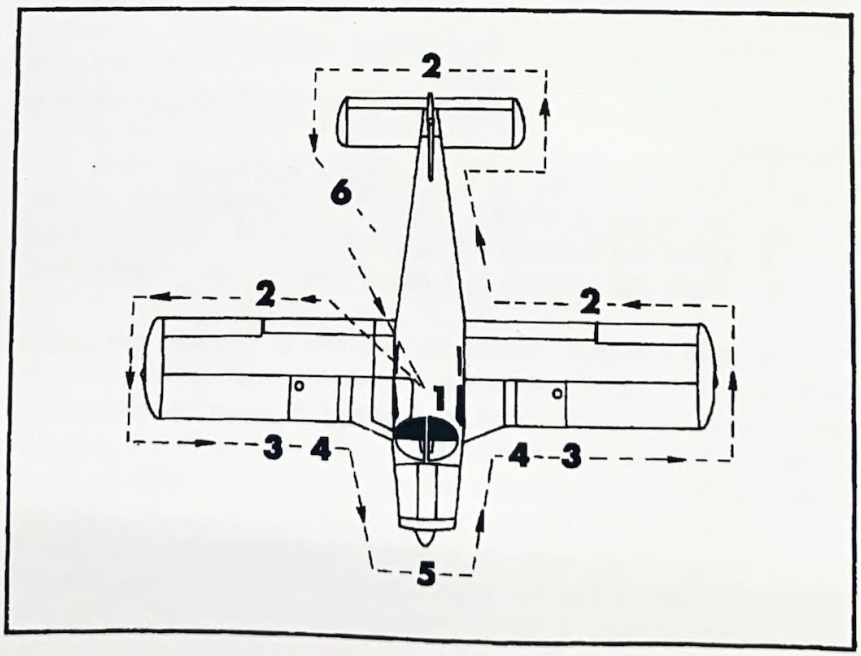
2. a. There is no external damage or operational interference to the control surfaces, wings or fuselage.

b. There is no snow, ice, or frost on the wings or control surfaces.

3. a. Check fuel supply visually, and insure that caps are secure.

b. Drain the fuel tank sumps.

c. Check to insure the fuel system vents are open.



4. a. The landing gear shock struts are properly inflated. (Refer to Section V)

b. The tires are satisfactorily inflated and not excessively worn.

5. a. The cowling and inspection covers are secured.

b. The windshield is clean and free of defects.

c. The propeller is free of detrimental nicks.

d. There are no obvious fuel or oil leads.

e. The engine oil is at the proper level.

f. Drain the fuel strainer.

6. a. The tow-bar and control locks are detached and properly stowed.

7. a. Upon entering the airplane, ascertain that all controls operate properly.

b. Close and secure the cabin door.

c. Check that required papers are in order and in the airplane.

d. Fasten seat belts and shoulder harness. Check function of inertia reel.

STARTING

After completion of the preflight inspection:

1. Lock the wheel brakes.

2. Set the carburetor heat control in the full "COLD" position.

3. Select the desired tank with the fuel valve.

4. Move the mixture to the full "RICH" position.

5. Open the throttle 1/8 to 1/4 inch.

6. Turn the electric fuel pump "ON".

In cold weather (below 40 degrees F.) prime the engine with one to three full strokes of the priming pump. If extremely cold, starting will be aided by pulling the propeller through by hand (switch "OFF") four to five revolutions. If the temperature is above 40 degrees the engine may be primed by three or four short quick strokes of the throttle.

After priming, turn the electric master switch on, engage the starter and allow the engine to turn approximately one full revolution, then turn the ignition switch to the "Left" magneto

position.

When the engine is firing evenly, turn the magneto switch to the "Both" position and advance the throttle to 800 RPM. Check the oil pressure gauge for a pressure indication. If oil pressure is not indicated within thirty seconds, stop the engine and determine the trouble.

If the engine fails to start at the first attempt, another attempt should be made without priming. If this fails, it is possible that the engine is overprimed. Turn the magneto switch off, open the throttle slowly, and rotate the engine approximately ten revolutions with the starter. Reprime the engine with one half the amount used in the initial attempt, turn the magneto switch to "Left", and repeat the starting procedure. If the engine again fails to start, refer to the Lycoming Operating Handbook, Section VII, Engine Troubles.

WARM-UP

As soon as the engine starts, the oil pressure should be checked. If no pressure is indicated within thirty seconds, stop the engine and determine the trouble. In cold weather it will take a few seconds longer to get an oil pressure indication. Warm-up the engine at 800 to 1200 RPM.

Take-off may be made as soon as ground check is completed, providing that the throttle may be opened fully without back firing or skipping, and without reduction in engine oil pressure.

GROUND CHECK

With the engine running at 1800 RPM, switch from both magnetos to only one and note the RPM loss, switch to the other magneto and again note the RPM loss. Drop off on either magneto should not exceed 125 RPM.

Check vacuum gauge, indicator should read 5" Hg $\pm$ .1" Hg at 2000 RPM.

Check both the oil temperature and pressure. The temperature may be low for some time if the engine is being run for the first time of the day, but as long as the pressure is within limits the engine is ready for take-off.

Carburetor heat should also be checked prior to take-off to be sure that the control is operating properly and to clear any ice which may have formed during taxiing. Avoid prolonged ground operation with carburetor heat ON as the air is unfiltered.

Mixture should be set FULL RICH, except a minimum amount of leaning is permitted for smooth engine operation when taking off at high elevation.

TAKE-OFF

Just before take-off the following items should be checked:

1. Controls free
2. Flaps "UP"
3. Tab set
4. Mixture "RICH"
5. Carburetor heat "OFF"
6. Fuel on proper tank
7. Electric fuel pump "ON"
8. Engine gauges normal
9. Door latched
10. Altimeter set
11. Safety belts fastened

The take-off technique is conventional for the Cherokee. The tab should be set slightly aft of neutral, with the exact setting determined by the loading of the aircraft. Allow the airplane to accelerate to 50 to 60 miles per hour, then ease back on the wheel enough to let the airplane fly itself off the ground. Premature raising of the nose, or raising it to an excessive angle will result in a delayed take-off. After take-off let the aircraft accelerate to the desired climb speed by lowering the nose slightly.

CLIMB

The best rate of climb at gross weight will be obtained at 85 miles per hour. The best angle of climb may be obtained at 74 miles per hour. At lighter than gross weight these speeds are reduced somewhat. For climbing enroute a speed of 100 miles per hour is recommended. This will produce better forward speed and increased visibility over the nose during the climb.

STALLS

The gross weight stalling speed of the Cherokee with power off and full flaps is 54 MPH on the 150, 55 MPH on the 160 and 57 MPH on the Cherokee 180. This speed is increased 9 miles per hour with the flaps up.

CRUISING

The cruising speed of the Cherokee is determined by many factors including power setting, altitude, temperature, loading, and equipment installed on the airplane.

The normal cruising power is 75% of the rated horsepower of the engine. True airspeeds which may be obtained at various altitudes and power settings can be determined from the charts in "Section IV" of this handbook.

The mixture should be leaned when 75% power or less is being used. If any doubt exists as to the amount of power being used, the mixture should be in the FULL RICH position for all operations. Always enrich the mixture before increasing power settings. Use of the mixture control in cruising flight reduces fuel consumption significantly, especially at higher altitudes, and reduces lead deposits when the alternate fuels are used.

The continuous use of carburetor heat during cruising flight decreases engine efficiency. Unless icing conditions in the carburetor are severe, do not cruise with the heat on. Apply full carburetor heat slowly and only for a few seconds at intervals determined by icing severity.

In order to keep the airplane in best lateral trim during cruising flight the fuel should be used alternately from each tank. It is recommended that one tank should be used for one

hour after take-off, then the other tank used for two hours, then return to the first tank, which will have approximately one and one half hour of fuel remaining if the tanks were full plus reserve at take-off. The second tank will contain approximately one half hour of fuel.

APPROACH AND LANDING

Landing check list:

1. Fuel on proper tank
2. Mixture - rich
3. Elec. fuel pump on
4. Flaps - set
5. Fasten belts/harness

The airplane should be trimmed to an approach speed of about 85 miles per hour, and flaps extended. The flaps can be lowered at speeds up to 115 miles per hour if desired. Carburetor heat should not be applied unless there is an indication of carburetor icing, since the use of carburetor heat causes a reduction in power which may be critical in case of a go-around. Full throttle operation with heat on is likely to cause detonation.

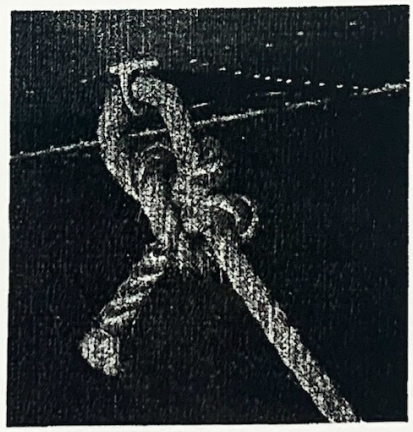
The amount of flap used during landings and the speed of the aircraft at contact with the runway should be varied according to the landing surface, and existing conditions both windwise, and loadwise. It is generally good practice to contact the ground at the minimum possible safe speed consistent with existing conditions.

Normally the best technique for short and slow landings is to use full flap and enough power to maintain the desired airspeed and approach flight path. Mixture should be full rich, fuel on the fullest tank, carburetor heat off, and electric fuel pump on. Reduce the speed during the flareout and contact the ground close to the stalling speed (50 to 60 MPH). After ground contact hold the nose wheel off, as long as possible. As the airplane slows down, drop the nose and apply the brakes. There will be less chance of skidding the tires if the flaps are retracted before applying the brakes. Braking is most effective when back pressure is applied to the control wheel, putting

most of the aircraft weight on the main wheels. In high wind conditions, particularly in strong cross winds, it may be desirable to approach the ground at higher than normal speeds, with partial or no flaps.

To stop the engine, after landing and when clear of the runway, pull the mixture control full out to idle cut-off. When using alternate fuels, the engine should be run up to 1200 RPM for one minute prior to shutdown to clean out any unburned fuel. After the engine stops, turn the ignition and master switch off, and retract the flaps.

GROUND HANDLING AND MOORING



The Cherokee should be moved on the ground with the aid of the nose wheel tow bar provided with each plane and secured in the baggage compartment. Tie downs may be secured to rings provided under each wing, and to the tail skid. The aileron and stabilator controls should be secured by looping the safety belt through the control wheel, and pulling it tight. The rudder is held in position by its connections to the nose wheel steering, and normally does not have to be secured. The flaps are locked when in the full up position, and should be left retracted.

WEIGHT AND BALANCE

For weight and balance data, see the Airplane Flight Manual, and Weight and Balance form supplied with each airplane. This form gives the exact weight of each individual airplane as manufactured and the permissible center of gravity conditions.