OPERATING INSTRUCTIONS

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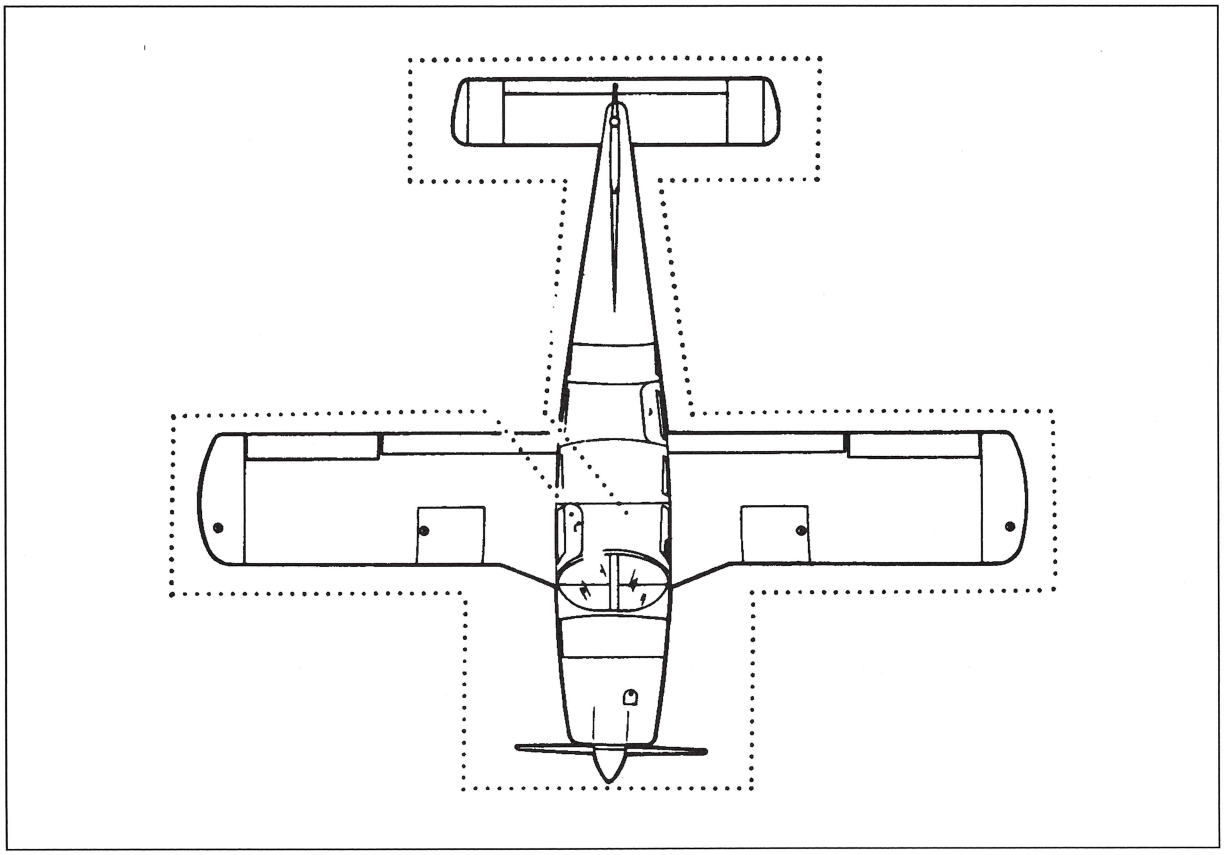
OPERATING INSTRUCTIONS

PREFLIGHT

The airplane should be given a thorough preflight and walk-around inspection prior to each flight. The preflight should include a check of the airplane's operational status, computation of weight and C.G. limits, takeoff distance, and in flight performance. A weather briefing should be obtained for the intended flight path, and any other factors relating to a safe flight should be checked before takeoff.

Walk-Around Inspection

1. a. Release seat belts securing the control wheel.
   b. Master switch ON.
   c. Check fuel quantity indicators (four tanks).
   d. Master switch and ignition OFF.
2. a. Check for external damage and operational interference of control surfaces or hinges.
   b. Insure that wings and control surfaces are free of snow, ice or frost.
3. a. Visually check wing tip tank fuel supply; secure caps.
   b. Drain wing tip tank sumps (See Description - Airplane and Systems Section for procedure).



c. Check navigation lights.

4. a. Visually check main fuel tank fuel supply; secure caps.
   b. Drain main fuel tank sumps (See Description - Airplane and Systems Section for procedure).
   c. Check that fuel system vents are open.
   d. Check main gear shock struts for proper inflation (4-1/2 inches).
   e. Check tires for cuts, wear, and proper inflation.
   f. Check brake blocks and discs for wear and damage.
   g. On left wing check pitot head. Remove cover if used; check that holes are clear.
5. a. Check windshield for cleanliness.
   b. Check the propeller and the spinner for defects, dents, or nicks.
   c. Check for obvious fuel or oil leaks.
   d. Check oil level. (Insure dipstick is properly seated.)
   e. Check cowling and inspection covers for security.
   f. Check nose wheel tire for inflation, wear.
   g. Check nose wheel shock strut for proper inflation (3-1/4 inches).
   h. Check air inlets for foreign matter.
   i. Check alternator belt tension.
6. a. Stow tow bar and control locks if used.
   b. Check baggage for proper storage and security.
   c. Close and secure the baggage compartment door.
   d. Drain strainer sump (See Description - Airplane and Systems Section for procedure).
7. a. Upon entering the aircraft ascertain that all primary flight controls operate properly.
   b. Close and secure the fore and aft cabin doors.
   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 ENGINE

After completing the preflight inspection:

1. Set brakes ON.
2. Set the carburetor heat control in the full COLD position.
3. Select the desired tank with the fuel selector.
4. Set propeller control on full INCREASE RPM (constant speed propeller).

STARTING ENGINE WHEN COLD

1. Turn master switch ON.
2. Turn electric fuel pump ON.
3. Move mixture control to FULL RICH.
4. Pump throttle to full open and back to idle position for 2 or 3 strokes.
5. Open throttle approximately 1/4 travel.
6. Engage the starter by rotating the magneto switch clockwise and pressing in.
7. When the engine starts, adjust the throttle to the desired setting. If the engine does not start within five to ten seconds, disengage the starter and prime with one to three strokes of the priming pump. Repeat the starting procedure without pumping the throttle.

STARTING ENGINE WHEN HOT

1. Open the throttle approximately 1/2 inch.
2. Turn the master switch ON.
3. Turn the electric fuel pump ON.
4. Put the mixture control in full RICH.
5. Engage the starter by rotating the magneto switch clockwise and pressing in. When the engine fires, release the magneto switch and move the throttle to the desired setting.

STARTING ENGINE WHEN FLOODED

1. Open the throttle full.
2. Turn the master switch ON.
3. Turn the electric fuel pump OFF.
4. Put the mixture control in IDLE CUT-OFF.
5. Engage the starter by rotating the magneto switch clockwise and pressing in. When the engine fires, release the magneto switch, advance the mixture control, and retard the throttle.

When the engine is firing evenly, advance the throttle to 800 RPM. If oil pressure is not 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. If the engine has failed to start, refer to the Lycoming Operating Handbook, Engine Troubles and Their Remedies.

Starter manufacturers recommend that cranking periods be limited to thirty seconds with a two minute rest between cranking periods. Longer cranking periods will shorten the life of the starter.

STARTING WITH EXTERNAL POWER SOURCE*

An optional feature called Piper External Power (PEP) allows the operator to use an external battery to crank the engine without having to gain access to the airplane's battery.

The procedure is as follows:

1. Turn the airplane master switch OFF.
2. Connect the RED lead of the PEP kit jumper cable to the POSITIVE (+) terminal of an external 12-volt battery and the BLACK lead to the NEGATIVE (-) terminal.
3. Insert the plug of the jumper cable into the socket located on the fuselage.
4. Turn the airplane master switch ON and proceed with normal engine starting technique.
5. After the engine has starter, turn the master switch OFF and disconnect the jumper cable from the airplane.
6. Turn the master switch ON and check the alternator ammeter for indication of output. DO NOT ATTEMPT FLIGHT IF THERE IS NO INDICATION OF ALTERNATOR OUTPUT.

*Optional equipment

WARM-UP

Warm-up the engine at 800 to 1200 RPM. Avoid prolonged idling at low RPM, as this practice may result in fouled spark plugs.

Takeoff may be made as soon as the ground check is completed, provided that the throttle may be opened fully without backfiring or skipping, and without a reduction in engine oil pressure.

Do not operate the engine at high RPM when running up or taxiing over ground containing loose stones, gravel, or any loose material that may cause damage to the propeller blades.

GROUND CHECK

The magnetos should be checked at 2000 RPM with the propeller set at high RPM on an airplane with a constant speed propeller. Drop off on either magneto should not exceed 175 RPM, and the difference between the magnetos should not exceed 50 RPM.

Check the vacuum gauge; the indicator should read 5.0" ± .1" Hg at 2000 RPM.

Check both oil temperature and oil 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 takeoff.

Check the annunciator panel lights with the press-to-test button*.

The propeller control should be moved through its complete range to check for proper operation, and then placed in full INCREASE RPM for takeoff. To obtain maximum RPM, push the pedestal mounted control fully forward on the instrument panel. Do not allow a drop of more than 500 RPM during this check. In cold weather the propeller control should be cycled from high to low RPM at least three times before takeoff to make sure that warm engine oil has circulated.

Check the operation of the engine driven fuel pump by observing the fuel pressure gauge with the electric fuel pump OFF.

Carburetor heat should be checked prior to takeoff to be sure that the control is operating properly and to clear any ice which may have formed during taxiing. When the carburetor heat is ON, the air is unfiltered, therefore avoid prolonged ground operation with carburetor heat ON.

*Serial nos. 7500001 and up

TAKEOFF

Just before takeoff the following items should be checked:

1. Fuel on proper tank
2. Electric fuel pump on
3. Engine gauges checked
4. Carburetor heat OFF
5. Mixture set
6. Propeller set
7. Seat backs erect
8. Fasten belts/harness
9. Empty seats - seat belts snugly fastened
10. Flaps 10° (1st notch)
11. Trim tab set
12. Controls free
13. Doors latched

The takeoff technique is conventional for the Cherokee Six. 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 65 to 70 MPH, 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 takeoff. After takeoff let the aircraft accelerate to the desired climb speed by lowering the nose slightly.

Takeoffs are normally made with flaps extended 10° (first notch). However, for short field takeoffs, and for takeoffs under difficult conditions, such as in deep grass or on a soft surface, distance can be reduced appreciably by lowering flaps to 25° (second notch).

Short Field, Obstacle Clearance:

Lower flaps to 25° (second notch), accelerate aircraft to 65-70 MPH and ease back on the wheel to rotate. After breaking ground, accelerate to best angle of climb speed, 95 MPH, and climb past obstacle. Continue climb and accelerate to best rate of climb speed, 105 MPH, and slowly retract the flaps.

Short Field, No Obstacle:

Lower flaps to 25° (second notch), accelerate aircraft to 65-70 MPH and ease back on the wheel to rotate. After breaking ground accelerate to best rate of climb speed, 105 MPH, and slowly retract the flaps while climbing out.

Soft Field, Obstacle Clearance:

Lower flaps to 25° (second notch), accelerate aircraft, pull nose gear off as soon as possible and lift off at lowest possible airspeed. Accelerate just above the ground to best angle of climb speed, 95 MPH, to climb past obstacle clearance height. Continue climb while accelerating to best rate of climb speed, 105 MPH, and slowly retract the flaps.

Soft Field, No Obstacle:

Lower flaps to 25° (second notch), accelerate aircraft, pull nose gear off as soon as possible and lift off at lowest possible airspeed. Accelerate just above the ground to best rate of climb speed, 105 MPH, and climb out while slowly retracting the flaps.

CLIMB

The best rate of climb at gross weight will be obtained at 105 MPH. The best angle of climb may be obtained at 95 MPH. At lighter than gross weight these speeds are reduced somewhat. For climbing en route, a speed of 115 MPH is recommended. This will produce better forward speed and increased visibility over the nose during the climb. Turn fuel pump off after climb-out.

STALLS

The stall characteristics of the Cherokee Six are conventional. Visual stall warning is provided by a red light located on the left side of the instrument panel which illuminates automatically between 5 and 10 MPH above the stall speed. The gross weight stalling speed of the Cherokee Six with power off and full flaps is 63 MPH. With the flaps up this speed is increased 8 MPH. Loss of altitude during stalls can be as great as 350 feet depending on configuration and power. The stall speed chart is at gross weight. Stall speeds at lower weights will be correspondingly less.

Intentional spins are prohibited in this airplane. In the event that an inadvertent spin occurs, standard recovery technique should be used immediately.

Stall speed in mph (Calibrated Airspeed):

Flaps Up - 71
Flaps 40° - 63

CRUISING

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

The normal maximum cruising power is 75% of the rated horsepower of the engine. True airspeeds, which can be obtained at various altitudes and power settings, can be determined from the Performance Charts Section.

When selecting cruising RPM below 2300, limiting manifold pressure for continuous operation, as specified by the appropriate "Avco-Lycoming Operator's Manual," should be observed.

Use of the mixture control in cruising flight reduces fuel consumption significantly, especially at higher altitudes. The mixture should be leaned during cruising operation above 5000 feet altitude and at pilot's discretion at lower altitudes 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 under 5000 feet.

To lean the mixture, disengage lock* and pull the mixture control until the engine becomes rough, indicating that the lean mixture limit has been reached in the leaner cylinders. Then enrich the mixture by pushing the control towards the instrument panel until engine operation becomes smooth.

If the airplane is equipped with the optional exhaust gas temperature (EGT) gauge, a more accurate means of leaning is available to the pilot. For this procedure, refer to the "Avco-Lycoming Operator's Manual."

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 cruise flight, the fuel should be used alternately from each main tank, and when these are nearly exhausted, from each tip tank. It is recommended that one main tank be used for one hour after takeoff, the other main tank used until nearly exhausted, then return to the first main tank. When nearly exhausted, turn to one tip tank and alternate at one-half hour internals to maintain lateral trim.

The following listing contains a few recommended fuel operation procedures:

1. Fuel quantity should be visually checked in all fuel tanks before entering the aircraft.
2. After using the underseat quick drain, it should be checked from outside the aircraft to make sure it has closed completely, and is not leaking.
3. Takeoff should be made on the tank with the highest quantity of fuel to assure best fuel flow, and this tank selected before or immediately after starting in order to allow fuel flow to be adequately established before takeoff. The tank with the highest quantity of fuel should be selected for landing.
4. Fuel tank selection at low altitude is not recommended, since little recovery time is available in the event of an error in tank selection. When switching tanks, make sure that the selector drops into a detent, and is lined up with the desired tank.
5. The electric fuel pump should be turned on before switching tanks, and should be left on for a short period thereafter.
6. To preclude making a hasty selection, and to provide continuity of flow, the selector should be changed to another tank before fuel is exhausted from the tank in use.
7. Operation of the engine driven fuel pump should be checked while taxiing or during pretakeoff engine run up by switching off the electric fuel pump and observing fuel pressure.
8. During cruise, the electric fuel pump should be in the off position so that any malfunction of the engine driven fuel pump is immediately apparent.
9. If signs of fuel starvation should occur at any time during flight, fuel exhaustion should be suspected, at which time the fuel selector should be immediately positioned to a full tank and the electric fuel pump switched to the on position.
10. When the seventh seat is used, all weight in excess of 3112 pounds must be in fuel weight only. Fill tip tanks first and use fuel from main tanks first.

*Serial nos. 7500001 and up

TURBULENT AIR OPERATION

In keeping with good operating practice used in all aircraft, it is recommended that when turbulent air is encountered or expected, the airspeed be reduced to maneuvering speed to reduce the structural loads caused by gusts and to allow for inadvertent speed build-ups which may occur as a result of the turbulence or of distractions caused by the conditions.

MANEUVERS

Intentional spins are prohibited in this airplane. In the event that an inadvertent spin occurs, standard recovery technique should be used immediately.

Lazy eights and chandelles may be performed provided a 60° angle of bank or a 30° angle of pitch is not exceeded.

APPROACH AND LANDING

Before landing check list:

1. Seat backs erect
2. Fasten belts/harness
3. Fuel on proper tank
4. Carburetor heat OFF
5. Electric fuel pump on
6. Mixture rich
7. Propeller set
8. Flaps down (125 mph)

The airplane should be trimmed to an approach speed of about 90 MPH and flaps extended. The flaps can be lowered at speeds up to 125 MPH, if desired. The propeller should be set at full RPM or at a high cruising RPM to facilitate an emergency go-around if needed. 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 conditions of wind and aircraft loading. 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 (63 to 70 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 crosswinds it may be desirable to approach the ground at higher than normal speeds with partial or no flaps

STOPPING ENGINE

At the pilot's discretion, the flaps should be raised and the electric fuel pump turned off. After parking, the radios should be turned off, the propeller set in the full increase position, and the engine stopped by disengaging the mixture control lock* and pulling the mixture control out to idle cut-off. The throttle should be left full aft to avoid engine vibration while stopping. Then the magnetos and master switches must be turned off and the parking brake set.

AIRSPEED DATA

All airspeeds quoted in this manual are calibrated unless otherwise noted. Calibrated airspeed is indicated airspeed corrected for instrument and position errors. The following table gives the correlation between indicated airspeed and calibrated airspeed if zero instrument error is assumed. This calibration is valid only when flown at maximum gross weight in level flight.

AIRSPEED CORRECTION TABLE

Flaps 0°												
IAS - MPH	60	70	80	90	100	110	120	130	140	150	160	170
CAS - MPH	70	78	85	94	102	111	120	130	139	148	157	166

Flaps 40°							
IAS - MPH	60	70	80	90	100	110	120
CAS - MPH	68	76	84	93	101	110	119

MOORING

The Cherokee Six should be moved on the ground with the aid of the nose wheel tow bar provided with each plane and secured behind the rear seats. Tie downs can 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 snug. 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

It is the responsibility of the owner and pilot to determine that the airplane remains within the allowable weight vs. center of gravity envelope while in flight. For weight and balance data see the Airplane Flight Manual and Weight and Balance Sections.

*Serial nos. 7500001 and up

EMERGENCY LOCATOR TRANSMITTER*

The Emergency Locator Transmitter (ELT) when installed, is located in the aft portion of the fuselage just below the stabilator leading edge and is accessible through a plate on the right side of the fuselage. (On aircraft manufactured prior to mid-1975, this plate is retained by three steel Phillips head screws. On aircraft manufactured from mid-1975 and on, this plate is attached with three slotted-head nylon screws for ease of removal; these screws may be readily removed with a variety of common items such as a dime, a key, a knife blade, etc. If there are no tools available in an emergency the screw heads may be broken off by any means.) The ELT is an emergency locator transmitter which meets the requirements of FAR 91.52. The unit operates on a self-contained battery. The replacement date as required by FAA regulations is marked on the transmitter label.

The battery should also be replaced if the transmitter has been used in an emergency situation or if accumulated test time exceeds one hour. The unit is equipped with a portable antenna to allow the locator to be removed from the airplane in case of an emergency and used as a portable signal transmitter.

On the unit itself is a three position selector switch placarded "OFF," "ARM" and "ON." The "ARM" position is provided to set the unit to the automatic position so that it will transmit only after impact and will continue to transmit until the battery is drained to depletion or until the switch is manually moved to the "OFF" position. The "ARM" position is selected when the transmitter is installed at the factory and the switch should remain in that position whenever the unit is installed in the airplane. The "ON" position is provided so the unit can be used as a portable transmitter or in the event the automatic feature was not triggered by impact or to periodically test the function of the transmitter.

Select the "OFF" position when changing the battery, when rearming the unit if it has been activated for any reason, or to discontinue transmission.

NOTE

If the switch has been placed in the "ON" position for any reason, the "OFF" position has to be selected before selecting "ARM." If "ARM" is selected directly from the "ON" position, the unit will continue to transmit in the "ARM" position.

A pilot's remote switch, located on the left side panel, is provided to allow the transmitter to be controlled from inside the cabin.

1. On some models the pilot's remote switch has three positions and is placarded "ON," "AUTO/ARM," and "OFF/RESET." The switch is normally left in the "AUTO/ARM" position. To turn the transmitter off, move the switch momentarily to the "OFF/RESET" position. The aircraft master switch must be "ON" to turn the transmitter "OFF." To activate the transmitter for tests or other reasons, move the switch upward to the "ON" position and leave it in that position as long as transmission is desired.

*Optional equipment

2. On other models the pilot's remote switch has two positions and is placarded "ON/RESET" and "ARM (NORMAL POSITION)." The switch is normally left in the down or "ARM" position. To turn the transmitter off, move the switch to the "ON/RESET" position for one second then return it to the "ARM" position. To activate the transmitter for tests or other reasons, move the switch upward to the "ON/RESET" position and leave it in that position as long as transmission is desired.

The unit is equipped with a portable antenna to allow the locator to be removed from the airplane in case of an emergency and used as a portable signal transmitter.

The locator should be checked during the ground check to make certain the unit has not been accidentally activated. Check by tuning a radio receiver to 121.5 MHz. If there is an oscillating sound, the locator may have been activated and should be turned off immediately. Reset to the "ARM" position and check again to insure against outside interference.

NOTE

If for any reason a test transmission is necessary, the test transmission should be conducted only in the first five minutes of any hour and limited to three audio sweeps. If tests must be made at any other time, the tests should be coordinated with the nearest FAA tower or flight service station.

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