

NOTES

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SECTION VI

GENERAL MAINTENANCE

This section of the Cherokee "F" Handbook contains information which pertains to minor maintenance of the airplane. For further maintenance assistance refer to the Service Manual for this airplane. Any complex repairs or modification should be accomplished by a Piper Certified Service Center or equivalent.

LANDING GEAR SERVICE

The main wheels are Cleveland Aircraft Products, Model # 40-86, with Cleveland single disk hydraulic brake assemblies, Model # 30-55. The nose wheel is a Cleveland Aircraft Products, Model # 38501. All wheels use a 6.00 x 6, four ply rating, type III tire with tube.

Main wheels are easily removed by taking off the hub cap, axle nut, and the two bolts holding the brake segment in place, after which the wheel slips easily from the axle.

Tires are demounted from the wheels by deflating the tire, removing the three through-bolts, and separating the wheel halves.

Landing gear oleo struts should be checked for proper strut exposures and fluid leaks. The required extensions for the strut when under normal static load (empty weight of airplane plus full fuel and oil) is 3.25 inches for the nose gear and 4.50 inches for the main gear. Should the strut exposure be below that required, it should be determined whether air or oil is required by first raising the airplane on jacks. Depress the valve core to allow air to escape from the strut housing chamber. Remove the filler plug and slowly raise the strut to full compression. If the strut has sufficient fluid it will be visible up to the bottom of the filler plug hole and will then only require proper inflation.

Should fluid be below the bottom of the filler plug hole, oil should be added. Replace the plug with valve core removed, attach a clear plastic hose to the valve strut of the filler plug and submerge the other end in a container of hydraulic fluid (MIL-II-5606). Fully compress and extend the strut several times thus drawing fluid from the container and expelling air from the strut chamber. To allow the fluid to enter the bottom chamber of the main gear strut housing, the torque link assembly must be disconnected to let the strut be extended a minimum of 10 inches. (The nose gear torque links need not be disconnected.) Do not allow the strut to extend more than 12 inches. When air bubbles cease to flow through the hose, compress the strut fully and again check fluid level. Reinstall the valve core and filler plug, and the main gear torque links, if disconnected.

With fluid in the strut housing at the correct level, attach a strut pump to the air valve and with the airplane on the ground, inflate the oleo strut to the correct height.

In jacking the Cherokee for landing gear or other service, a jack kit (available through Piper Dealers or Distributors) should be used. This kit consists of two hydraulic jacks and a tail stand. At least 250 pounds of ballast should be placed on the base of the tail stand before the airplane is jacked up. The hydraulic jacks should be placed under the jack points on the bottom of the wing and the airplane jacked up until the tail skid is at the right height to attach the tail stand. After attaching the tail stand and adding the ballast, the jacking may be continued until the aircraft is at the height desired.

The steering arms from the rudder pedals to the nose wheel are adjusted at the rudder pedals or at the nose wheel by turning in or out the threaded rod end bearings. Adjustment is normally accomplished at the forward end of the rods and should be done in such a way that the nose wheel is in line with the fore and aft axis of the plane when the rudder pedals and rudder are centered. Alignment of the nose wheel can be checked by pushing the airplane back and forth with the rudder centered to determine that the plane follows a perfectly straight line. The turning arc of the nose wheel is 22 degrees in either direction and factory adjusted at stops on the bottom of the forging. The turning radius of the nose wheel is 17 feet.

The steering arm stops should be carefully adjusted so that the nose wheel reaches its full travel just after the rudder hits its stops. This guarantees that the rudder will be allowed to move through its full travel.

BRAKE SERVICE

The brake system is filled with MIL-II-5606 (Petroleum base) hydraulic brake fluid. This should be checked at every 50 hour inspection and replenished when necessary by filling the brake reservoir on the upper left front side of the firewall to the indicated level. If the system as a whole has to be refilled with fluid it should be done from the brake end of the system by filling with fluid under pressure. This will eliminate air from the system as it is being filled.

No adjustment of brake clearances is necessary on the Cherokee brakes. If after extended service the brake blocks become worn excessively, they are easily replaced with new segments.

TIRE INFLATION

For maximum service from the tires on the Cherokee, keep the tires inflated to the proper pressure of 24 pounds for all three wheels. Interchange the tires on the main wheels if necessary to produce even wear. All wheels and tires are balanced before original installation, and the relationship of the tire, tube, and wheel should be maintained if at all possible. Unbalanced wheels can cause extreme vibration on take-off. In the installation of new components it may be necessary to rebalance the wheel with the tire mounted.

CARE OF WINDSHIELD AND WINDOWS

A certain amount of care is needed to keep the plexiglas windows clean and unmarred. The following procedure is recommended:

1. Flush with clean water and dislodge excess dirt, mud, etc. with your hand.
2. Wash with mild soap and water or Piper Plastic Cleaner. Use a soft cloth or sponge. Do not rub.
3. Remove oil, grease or sealing compounds with a soft cloth and kerosene.
4. After cleaning, apply a thin coat of hard polishing wax. Rub lightly with a soft cloth.
5. A severe scratch or mar may be removed by using jeweler's rouge to rub out the scratch, smoothing, and then applying wax.

BATTERY SERVICE

Access for service or inspection of the battery is obtained through the removal of the panel at the right rear side of the baggage compartment. The stainless steel box has a plastic drain tube which is normally closed off with a clamp and which should be opened occasionally to drain off any accumulation of liquid. The battery should be checked for proper fluid level, but must not be filled above the baffle plates. Use only water - no acid. A hydrometer check should be performed to determine the percent of charge present in the battery.

If the battery is not up to charge, recharge starting at a 4 ampere rate and finishing with a 2 ampere rate. Quick charges are not recommended.

FUEL AND OIL REQUIREMENTS

Aviation Grade 91/96 Octane (minimum) fuel must be used in the Cherokee. Because the use of lower grades can cause serious damage in a very short period of time, the engine warranty is invalidated by such use.

The oil capacity of the Lycoming O 360-A4A is 8 quarts, and the minimum safe quantity is 2 quarts. It is recommended that the oil and oil filter be changed every 50 hours, or sooner under unfavorable conditions. The following grades are recommended for the specific temperatures:

Temperatures above 60° F	S.A.E. 50
Temperatures between 30° and 90° F	S.A.E. 40
Temperatures between 0° and 70° F	S.A.E. 30
Temperatures below 10° F	S.A.E. 20

FUEL SYSTEM

The fuel screen in the strainer will require cleaning every 50 hour inspection. The strainer, located ahead of the firewall, is accessible for cleaning by removal of the lower cowl. When the strainer is reassembled after cleaning, a small amount of grease applied to the gasket will facilitate assembly.

CARE OF AIR FILTER

The carburetor air filter must be cleaned at least once every fifty hours. Under extremely adverse conditions of operation it may be necessary to clean the filter daily. Extra filters are inexpensive and a spare should be kept on hand and used as a rapid replacement.

The filter manufacturer recommends that the filter be tapped gently to remove dirt particles. Do not blow out with compressed air.

LEVELING AND RIGGING

Leveling the Cherokee "F" for purposes of weighing or rigging is accomplished as follows:

1. Partially withdraw two machine screws located immediately below the left front side window. These screws are leveling points, and the airplane is longitudinally level when a level placed on the heads of these screws indicates level.

2. To put the airplane in a longitudinally level position on scales, first block the main gear oleos in the fully extended position, then deflate the nose wheel tire until the proper attitude is obtained. For rigging only, the airplane may be placed on jacks for leveling.

3. To level the airplane laterally, place a level across the baggage compartment floor along the rear bulkhead.

Rigging: Although the fixed flight surfaces on the Cherokee cannot be adjusted for rigging purposes, it may be necessary upon occasion to check the position of these surfaces. The movable surfaces all have adjustable stops, as well as adjustable turnbuckles on the cables or push-pull tubes, so that their range of travel can be altered. The positions and angular travels of the various surfaces are as follows:

1. Wings: 7° dihedral, 2° washout.
2. Stabilator Travel: 18° up, 2° down, tolerance $\pm 1^{\circ}$.
3. Fin should be vertical and in line with center of fuselage.
4. Aileron Travel: 30° up, 15° down, tolerance $\pm 2^{\circ}$.
5. Flap Travel: 10° , 25° , 40° , tolerance $\pm 2^{\circ}$.
6. Rudder Travel: 27° right and left, tolerance $\pm 2^{\circ}$.
7. Stabilator Tab Travel: 3° up, 12° down, tolerance $\pm 1^{\circ}$.

Cable tensions for the various controls are as follows:

Rudder: 40 ± 5 lbs.	Stabilator: 40 ± 5 lbs.
Ailerons: 40 ± 5 lbs.	Stabilator Trim: 10 ± 5 lbs.
Flaps: Approx. 10 lbs.	

For extreme cases of wing heaviness, the flap on the wing heavy side may be adjusted down from the zero position as desired.

The service manual should be consulted for the proper method of adjusting surface travels.

SERIAL NUMBER PLATE

The serial number plate is located near the stabilator on the left side of the airplane. Refer to this number for service or warranty matters.

SKETCH A

SKETCH B

SKETCH C

SKETCH D

SKETCH E

SKETCH F

SKETCH G

SKETCH H

EXAMPLE

METHOD OF LUBRICATION

FREQUENCY OF LUBRICATION

TYPE OF LUBRICANT

LUBRICATION CHART PA-38-190

IDENTIFICATION LETTER	LUBRICANTS	SPECIFICATION	PREFERRED SOURCE AND VENDOR
A	LUBRICATING OIL, GENERAL PURPOSE, LOW TEMP.	SAE 1, 157F	
B	LUBRICATING OIL, AIRCRAFT RECIPROCATING ENGINE (Piston GRATE IS SPECIFIED SAE 50 ARRIVE AS 1 AIR TEMP SAE 100 100W 2 AIR TEMP SAE 30 2 10 10 2 AIR TEMP SAE 200 LOW 10 2 AIR TEMP)	SAE 1, 157F	
C	HYDRAULIC FLUID, 72 BOLD FHM BAY	SAE 1, 157F	
D	GREASE, AIRCRAFT AND HELICOPTER WHEEL, CAR AND JACKSONSON SCREW	SAE 1, 157F	
E	COOLANT, AIRCRAFT, HIGH TEMP.		TELECO MARKER ALL PURPOSE GREASE, MOORE MARLUB GREASE #1 (FOR MOTOR OIL ETC), SHELL ALVANIA EP GREASE 2
F	FAIRBANKS OIL LUBRICANT		FAIRBANKS OIL LUBRICANT
G	FAIRBANKS OIL LUBRICANT		FAIRBANKS OIL LUBRICANT

FREQUENCY

□ DAILY ○ 50 ◇ 100 ⬡ 500 ▲ AS REQUIRED

METHOD

HAND OR PACK
 OIL CAN
 GREASE GUN
 SPRAY CAN
 BRUSH
 HYDRAULIC FLUID

SPECIAL INSTRUCTIONS

- AIR FILTER - TO CLEAN FILTER, TAP GENTLY TO REMOVE DIRT PARTICLES DO NOT BLOW OUT WITH COMPRESSED AIR OR USE OIL. REPLACE FILTER IF PUNCTURED OR DAMAGED.
- BEARINGS AND BUSHINGS - CLEAN EXTERIOR WITH A DRY TYPE SOLVENT BEFORE LUBRICATING.
- WHEEL BEARINGS - DISASSEMBLE AND CLEAN WITH A DRY TYPE SOLVENT. AFTER CLEANING, SHAKE GREASE IS PACKED BETWEEN THE BEARING ROLLER AND CONE. DO NOT PACK GREASE IN WHEEL BEARING.
- DIED SIGHTS AND BINARY RESERVOIR - FILL PER INSTRUCTIONS ON SIGHT OR CONTAINER OR REFER TO SERVICE MANUAL, SECTION II.
- "O" RING, FORWARD SHIRT BUSHING - DISASSEMBLE "O" RING, OBTAINED PLAYS FROM INSIDEMENT PANEL, LUBRICATE "O" RING AND REASSEMBLE.
- LUBRICATION POINTS - Wipe ALL LUBRICATION POINTS CLEAN OF OLD OIL, GREASE, DIRT, ETC., BEFORE LUBRICATING.
- INTERVALS BETWEEN OIL CHANGES CAN BE INCREASED AS MUCH AS 100% ON ENGINES FROPPED WITH FULL FLOW (CARBURETOR TYPE) OIL FILTERS, PROVIDED THE ELEMENT IS REPLACED EACH 50 HOURS OF OPERATION.

NOTES

- PILOT AND PASSENGER SEATS - LUBRICATE TRACK ROLLERS AND STOP PINS AS REQUIRED. (TYPE OF LUBRICANT, "A")
- WHEEL BEARINGS REQUIRE CLEANING AND REPACKING AFTER EXPOSURE TO AN ABNORMAL QUANTITY OF WATER.
- FUEL SELECTOR VALVE LUBRICATE FUEL SELECTOR VALVE AS REQUIRED, REFER TO PAPER SERVICE LETTER NO. 31.
- SEE LYCOMING SERVICE INSTRUCTIONS NO. 1714 FOR USE OF DETERGENT OIL.

CAUTIONS

- DO NOT USE HYDRAULIC FLUID WITH A CASTER OIL ON EXTERIOR PARTS.
- DO NOT OVER LUBRICATE EXCEPT CONTROLS.
- DO NOT APPLY LUBRICANT TO RUBBER PARTS.

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