# CHEROKEE 235 C

## PA-28-235

**APPLICABLE TO SERIAL NUMBERS 28-11040 THROUGH 28-11255.**

# Owner's Handbook


**Piper Aircraft Corporation, Vero Beach, Florida U.S.A.**

## NOTICE

THIS HANDBOOK IS NOT DESIGNED, NOR CAN ANY HANDBOOK SERVE, AS A SUBSTITUTE FOR ADEQUATE AND COMPETENT FLIGHT INSTRUCTION, OR KNOWLEDGE OF THE CURRENT AIRWORTHINESS DIRECTIVES, THE APPLICABLE FEDERAL AIR REGULATIONS, AND ADVISORY CIRCULARS. IT IS NOT INTENDED TO BE A GUIDE OF BASIC FLIGHT INSTRUCTION, NOR A TRAINING MANUAL.

THE HANDBOOK IS DESIGNED:

1. TO HELP YOU OPERATE YOUR CHEROKEE WITH SAFETY AND CONFIDENCE.
2. TO MORE FULLY ACQUAINT YOU WITH THE BASIC PERFORMANCE AND HANDLING CHARACTERISTICS OF THE AIRPLANE.
3. TO MORE FULLY EXPLAIN YOUR CHEROKEE'S OPERATION THAN IS PERMISSIBLE TO SET FORTH IN THE AIRPLANE FLIGHT MANUAL.

IF THERE IS ANY INCONSISTENCY BETWEEN THIS HANDBOOK AND THE AIRPLANE FLIGHT MANUAL APPROVED BY THE F.A.A., THE AIRPLANE FLIGHT MANUAL SHALL GOVERN.

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Revised text and illustrations shall be indicated by a black vertical line in the margin opposite the change. A line opposite the page number will indicate that material was relocated.

Additional copies of this manual, Part No. 753 767, may be obtained from your Piper Dealer.

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# SECTION I

## SPECIFICATIONS

# SECTION I

## SPECIFICATIONS

### PERFORMANCE

Published figures are for standard airplanes flown at gross weight under standard conditions at sea level, unless otherwise stated. Performance for a specific airplane may vary from published figures depending upon the equipment installed, the condition of engine, airplane and equipment, atmospheric conditions and piloting technique. Each performance figure below is subject to the same conditions as on the corresponding performance chart from which it is taken in the Performance Charts Section.

| | PA-28-235 (Fixed Pitch) | PA-28-235 (Const. Speed) |
|---|---|---|
| Take-off Run (ft) (flaps up) | 935 | 810 |
| Take-off Distance Over 50-ft Obstacle (ft) (flaps up) | 1510 | 1350 |
| Take-off Run (ft) (flaps 25°) | 800 | 750 |
| Take-off Distance Over 50-ft Obstacle (ft) (flaps 25°) | 1360 | 1220 |
| Best Rate of Climb Speed (mph) | 100 | 100 |
| Rate of Climb (ft per min) | 825 | 900 |
| Service Ceiling (ft) | 14,500 | 16,500 |
| Absolute Ceiling | 16,500 | 18,500 |
| Top Speed (mph) | 166 | 164 |
| Cruising Speed (75% power, sea level mph) | 146 | 145 |
| Optimum Cruising Speed (75% power, 7000 ft, mph) | 156 | 154 |
| Fuel Consumption (gal per hr 75%) | 14.0 | 14.0 |
| Cruising Range (75% power, sea level, mi) | 875 | 870 |

SPECIFICATIONS (cont):

| PERFORMANCE | PA-28-235 (Fixed Pitch) | PA-28-235 (Const. Speed) |
|---|---|---|
| Cruising Range (75% power, 7000 ft) (mi) | 935 | 923 |
| Optimum Cruising Range (55% power, 10,000 ft) | 1130 | 1105 |
| Stalling Speed (flaps down, mph) | 60 | 60 |
| Stalling Speed (flaps up, mph) | 70 | 70 |
| Landing Roll (flaps down, ft) | 680 | 680 |
| Landing Distance Over 50-ft Obstacle (ft) | 1300 | 1300 |

| WEIGHTS | | |
|---|---|---|
| Gross Weight (lbs) | 2900 | 2900 |
| Empty Weight (Standard) (lbs) | 1467 | 1491 |
| USEFUL LOAD (Standard)(lbs) | 1433 | 1409 |

| POWER PLANT | | |
|---|---|---|
| Engine - Lycoming | O-540-B4B5 | O-540-B4B5 |
| Rated Horsepower | 235 | 235 |
| Rated Speed (rpm) | 2575 | 2575 |
| Bore (inches) | 5.125 | 5.125 |
| Stroke (inches) | 4.375 | 4.375 |
| Displacement (cubic inches) | 541.5 | 541.5 |
| Compression Ratio | 7.2:1 | 7.2:1 |
| Dry Weight (pounds) | 395 | 395 |
| Propeller | 1P235PFA80 | HC-C2YK-1 |

## SPECIFICATIONS (cont):

### FUEL AND OIL

| | |
|---|---|
| Fuel Capacity (main tank) (U.S. gal) | 50 |
| Fuel Capacity (auxiliary tanks) (U.S. gal) | 34 |
| Oil Capacity (U.S. qts) | 12 |
| Fuel, Aviation Grade (min octane) | 80/87 |

### BAGGAGE

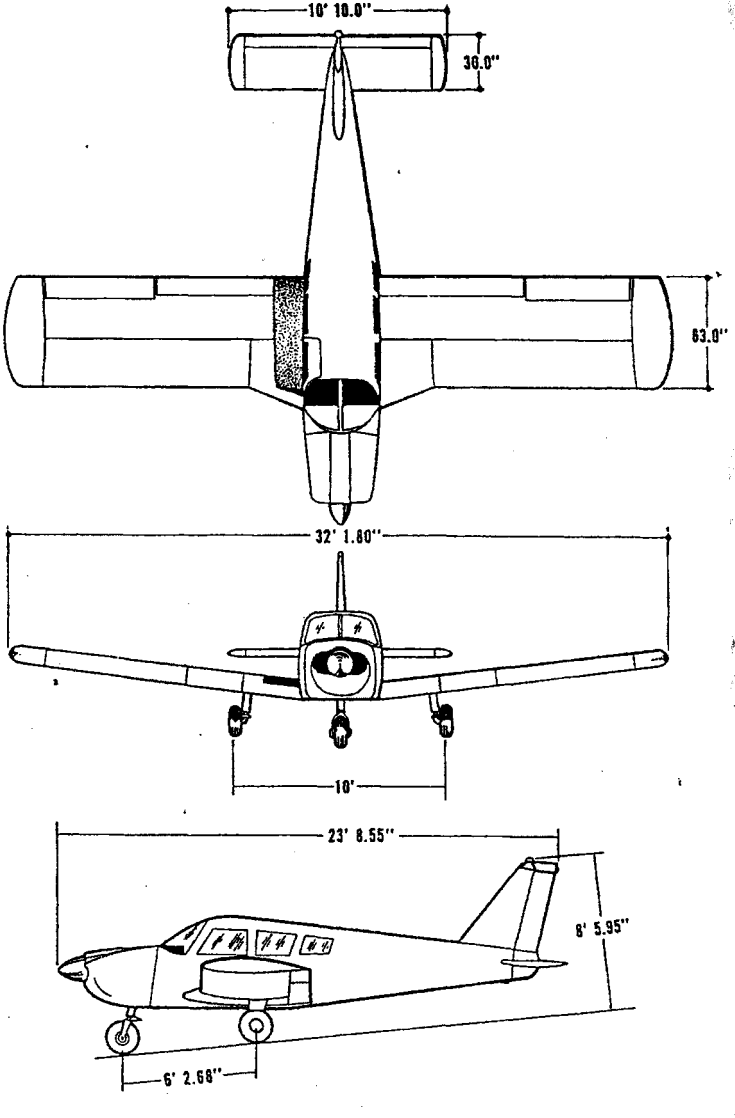
| | |
|---|---|
| Maximum Baggage (lbs) | 200 |
| Baggage Space (cubic ft) | 24 |
| Baggage Door Size (in) | 20 x 22 |

### DIMENSIONS

| | |
|---|---|
| Wing Span (ft) | 32.0 |
| Wing Area (sq ft) | 170 |
| Wing Loading (lbs per sq ft) | 17.0 |
| Length (ft) | 23.7 |
| Height (ft) | 7.1 |
| Power Loading (lbs per hp) | 12.4 |

### LANDING GEAR

| | | |
|---|---|---|
| Wheel Base (ft) | | 6.2 |
| Wheel Tread (ft) | | 10.0 |
| Tire Pressure (lbs) | Nose | 28-30 |
| | Main | 35-40 |


10' 10.0"
36.0"
63.0"
32' 1.80"
10'
23' 8.55"
8' 5.95"
6' 2.68"

# SECTION II

## DESIGN INFORMATION

# SECTION II

## DESIGN INFORMATION

### ENGINE AND PROPELLER

The Lycoming O-540-B engine installed in the Cherokee PA-28-235 is rated at 235 horsepower at 2575 rpm. This engine has a compression ratio of 7.2 to 1 and requires 80/87 minimum octane aviation fuel. The engine is equipped with a geared starter, a 60 ampere alternator, dual magnetos, shielded ignition system, vacuum pump drive, a diaphragm-type fuel pump and a float carburetor.

Exhaust gases are carried through a system constructed of heavy gauge stainless steel which incorporates two heater shrouds, one for cabin heat and the other for carburetor deicing.

The propeller used on the PA-28-235 is either a McCauley 1P235PFA80 or Sensenich M-80BMM fixed pitch aluminum alloy unit. Optional equipment is a Hartzell HC-C2YK-1/8468A-4 constant speed propeller. The McCauley and Sensenich propellers are 80 inches in diameter with a standard pitch of 69 inches, although propellers with other pitch settings may be installed for special purposes. All performance figures are based on the standard 69 inch propeller.

The Hartzell propeller is 80 inches in diameter, and is controlled by a Hartzell F-4-3 governor mounted on a pad on the forward end of the crankcase. This governor supplies oil to the propeller through the engine shaft. The governor is controlled by a cable from the cockpit.

The two-piece cowling on the Cherokee is designed to cool the engine in all normal flight conditions, including protracted climb, without the use of cowl flaps or cooling flanges.

The throttle quadrant, located in the lower center instrument panel, contains the throttle, mixture control, and, when installed, the propeller governor control. A friction lock on the right side of the quadrant prevents creeping of the controls. To the right of the quadrant is the carburetor heat control. Maximum carburetor heat is provided with the control in the "ON" position, Prolonged ground operation with carburetor heat "ON" should be avoided as the air is not filtered in this position. Air passes through a high-efficiency dry-type filter when the carburetor heat is in the "OFF" position.

## STRUCTURES

All structures are of aluminum alloy construction and are designed to ultimate load factors well in excess of normal requirements. All exterior surfaces are primed with etching primer and painted with acrylic lacquer.

The wings are attached to each side of the fuselage by inserting the butt ends of the respective main spars into a spar box carry through which is an integral part of the fuselage structure, providing, in effect, a continuous main spar with splices at each side of the fuselage. There are also fore and aft attachments at the rear spar and at an auxiliary front spar.

The wing airfoil section is a laminar flow type, NACA $65_2$-415 with the maximum thickness about 40% aft of the leading edge. This permits the main spar carry through structure to be located under the rear seat providing unobstructed cabin floor space ahead of the rear seat.

## LANDING GEAR

The landing gears use a Cleveland 6.00 x 6 wheel, the main wheels being provided with brake drums and single disc hydraulic brakes. The nose wheel carries a 6.00 x 6 four ply rating tire with tubes while the main gear uses 6.00 x 6 six ply rating tires.

The nose gear is steerable through a 22-1/2 degree arc each side of neutral by use of the rudder pedals. A spring device is incorporated in

the rudder pedal torque tube assembly to aid in rudder centering and to provide rudder trim. The nose gear steering mechanism also incorporates a hydraulic shimmy dampener.

The oleo struts are of the air-oil type, with normal extension being 3-1/4 inches for the nose gear and 4-1/2 inches for the main gear under normal static load (empty weight of airplane plus full fuel and oil).

The brakes are actuated by a hand lever and master cylinder, which is located below and near the center of the instrument panel. The toe brakes and the lever have their own brake cylinders but they both use a common reservoir. The parking brake is incorporated in the lever brake and is operated by pulling back on the lever and depressing the knob attached to the top of the handle. To release the parking brake, pull back on the brake lever to disengage the catch mechanism; then allow the handle to swing forward.

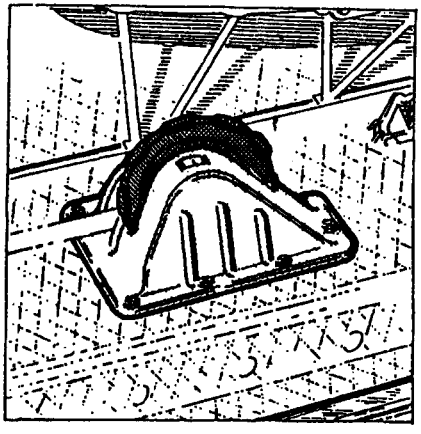
## CONTROL SYSTEM

Dual controls are provided as standard equipment, with a cable system used between the controls and the surfaces. The horizontal tail is of the all movable slab type, with an anti-servo tab which also acts as a longitudinal trim tab, actuated by a control mounted on the control tunnel between the two front seats. The stabilator provides extra stability and controllability with less size, drag and weight than conventional tail surfaces. The ailerons are provided with a differential action which tends to eliminate adverse yaw in turning maneuvers and to reduce the amount of coordination required in normal turns.

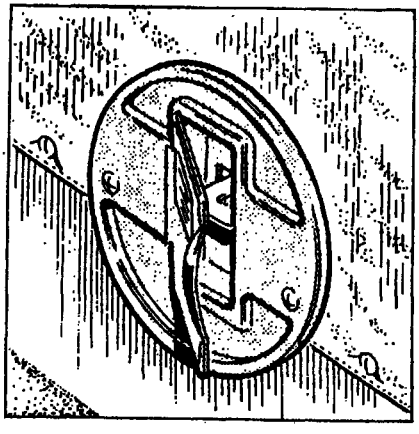
The flaps are manually operated, balanced for light operating forces and spring loaded to return to the up position. A past-center lock incorporated in the actuating linkage holds the flap when it is in the up position so that it may be used as a step on the right side. The flap will not support a step load except when in the full up position, so it must be completely retracted when used as a step. The steps have three extended positions, 10, 25 and 40 degrees.

## FUEL SYSTEM

Standard fuel capacity of the Cherokee 235 is 84 gallons, of which



Stabilator Trim Control



Fuel Drain Lever

approximately one pint in each of the four tanks is unusable. The two main inboard tanks, which hold 25 gallons each, are attached to the wing structure with screws and nut plates and may be easily removed for service or inspection. The tip tanks are constructed of resin-impregnated fiberglass and hold 17 gallons each.

The fuel selector control is located below the center of the instrument panel on the sloping face of the control tunnel. It has five positions corresponding to each of the four tanks plus an "OFF" position. When using less than the standard 84 gallons capacity of the tanks, fuel should be distributed equally between each side and may be placed in either the inboard or tip tanks.

The fuel system should be drained daily prior to first flight and after refueling to avoid the accumulation of water or sediment. Each fuel tank is equipped with an individual quick drain located at the lower inboard rear corner of the tank. The fuel strainer and a system quick drain valve are located in the fuselage at the lowest point of the fuel system. It is important that the fuel system be drained in the following manner:

1. Drain each tank through its individual quick drain located at the lower inboard rear corner of the tank, making sure that enough fuel has been drained to ensure that all water and sediment is removed.

2. Place a container under the fuel sump drain outlet, which is located under the fuselage.

3. Drain the fuel strainer by pressing down on the lever located

on the right hand side of the cabin below the forward edge of the rear seat. The fuel selector must be positioned in the following sequence: off position, left tip, left main, right main, and right tip while draining the strainer to ensure that the fuel lines between each tank outlet and fuel strainer are drained as well as the strainer. When the fuel tanks are full, it will take approximately 11 seconds to drain all the fuel in one of the lines between a tip tank and the fuel strainer and approximately six seconds to drain all the fuel in one of the lines from a main tank to the fuel strainer. When the fuel tanks are less than full, it will take a few seconds longer.

4. Examine the contents of the container placed under the fuel sump drain outlet for water and sediment and dispose of the contents.

**CAUTION**

When draining any amount of fuel, care should be taken to ensure that no fire hazard exists before starting engine.

After using the underseat quick drain, it should be checked from outside to make sure it has closed completely and is not leaking.

Fuel quantity gauges for each of the four tanks are located in the engine gauge cluster on the left side of the instrument panel. A fuel pressure indicator is also incorporated in the engine gauge cluster.

An electric fuel pump is provided for use in case of failure of the engine driven pump. The electric pump operates from a single switch and independent circuit protector, and should be ON for all takeoffs and landings.

## ELECTRICAL SYSTEM

The electrical system includes a 14-volt 60 amp alternator, battery, voltage regulator, overvoltage relay, and master switch relay. The battery is mounted in a stainless steel box immediately aft of the baggage compartment. The regulator and overvoltage relay are located on the forward left side of the fuselage behind the instrument panel.

Electrical switches are located on the right center instrument panel, and the circuit breakers are located on the lower right instrument panel. A rheostat switch on the left side of the switch panel controls the navigation lights and the dome instrument light. It also dims the dome light. The similar switch on the right side controls and dims the panel lights.

Standard electrical accessories include starter, electric fuel pump, stall warning indicator, cigar lighter, and ammeter.

Navigation lights, anti-collision light, landing light, instrument lighting and cabin dome light are offered as optional accessories.

Circuit provisions are made to handle a complete complement of communications and navigational equipment.

The alternator system offers many advantages over the generator system. The main advantage is full electrical power output at much lower engine RPM and results in improved radio and electrical equipment operation. Since the alternator output is available all the time, the battery will be charging for a larger percentage of its use. This will make cold weather starting easier. If the battery is discharged, charge it before takeoff as three volts are required to excite the alternator.

Unlike previous generator systems, the ammeter does not indicate battery discharge; rather it displays in amperes the load placed on the alternator. With all electrical equipment off (except the master switch) the ammeter will be indicating the amount of charging current demanded by the battery. As each item of electrical equipment is turned on, the current will increase to a total appearing on the ammeter. This total includes the battery. The maximum continuous load for night flight, with radios on, is about 30 amperes. This 30 ampere value, plus approximately two amperes for a fully charged battery, will appear continuously under these flight conditions. The amount of current shown on the ammeter will tell immediately whether the alternator system is operating normally, as the amount of current shown should equal the total amount of amperes being drawn by the equipment which is operating.

If no output is indicated on the ammeter, during flight, reduce the electrical load by turning off all unnecessary electrical equipment. Check both the 5 ampere field breaker and the 60 ampere output breaker and reset if open. If neither circuit breaker is open, turn off the master switch for 1 second to reset the overvoltage relay. If ammeter continues to indicate no output, maintain minimum electrical load and terminate flight as soon as practical.

Maintenance on the alternator should prove to be a minor factor. Should service be required, contact the local Piper Dealer.

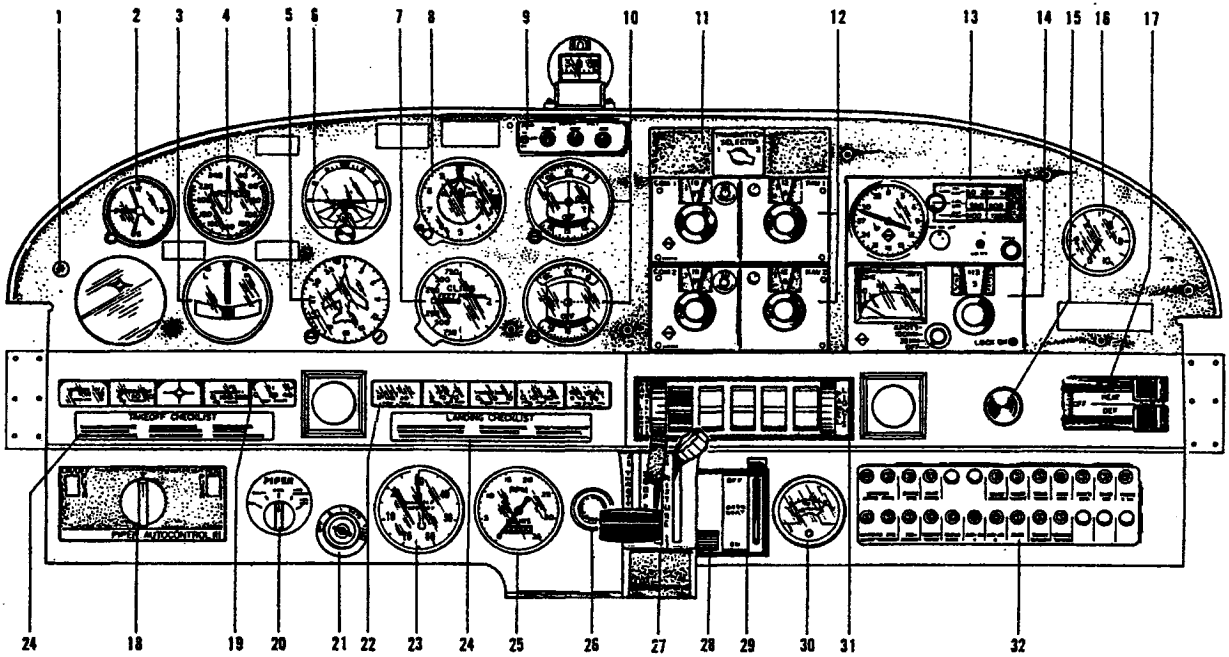
## HEATING AND VENTILATING SYSTEM

Heat for the cabin interior and the defroster system is provided by a heater muff attached to the exhaust system. The amount of heat desired can be regulated with the controls located on the lower right side of the instrument panel.

Fresh air inlets are located in the leading edge of the wing at the intersection of the tapered and straight sections. A large adjustable outlet is located on the side of the cabin near the floor at each seat location. Air is exhausted through an outlet under the rear seat.

## CABIN FEATURES

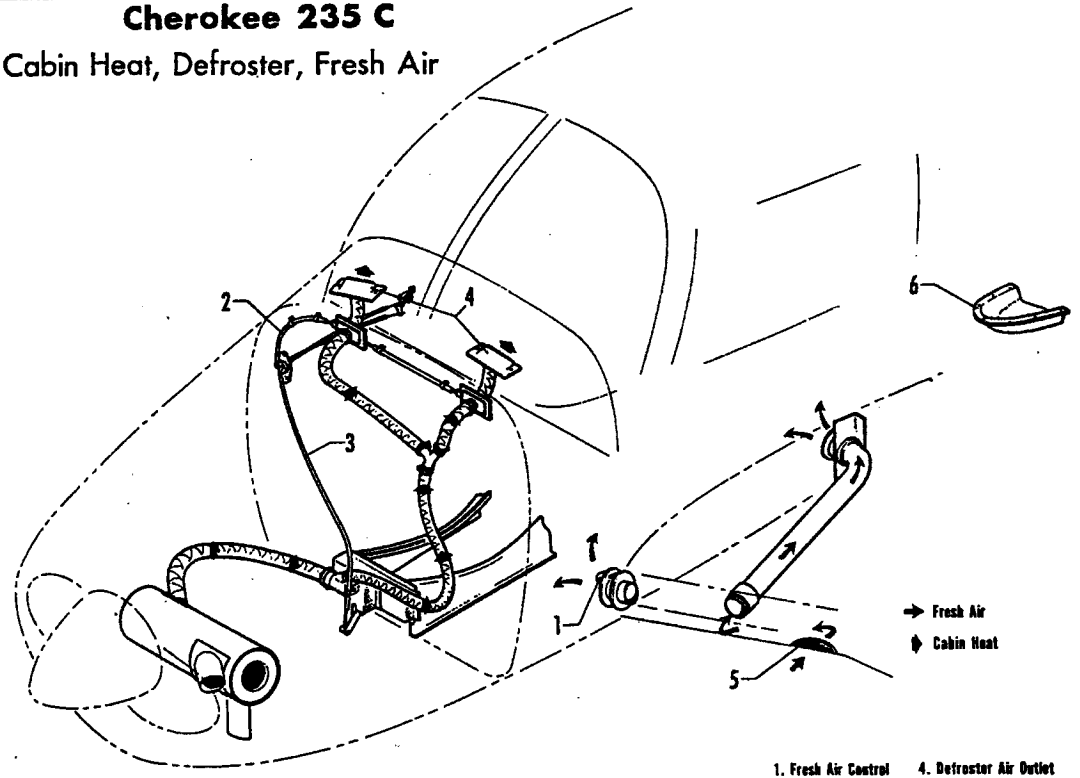
The instrument panel of the Cherokee is designed to accommodate the customary advanced flight instruments and the normally required power plant instruments. The Artificial Horizon and Directional Gyro are vacuum operated through use of a vacuum pump installed on the engine, while the Turn and Bank instrument is electrically operated. A vacuum gauge is mounted on the far right side of the instrument panel. A natural separation of the flight group and power group is provided by placing the flight group in the upper instrument panel and the power group in the center and lower instrument panels. The radios and circuit breakers are on the right hand instrument panel, and extra circuits are provided for a complete line of optional radio equipment.




1. STALL WARNING LIGHT
2. CLOCK
3. TURN AND BANK INDICATOR
4. AIRSPEED INDICATOR
5. DIRECTIONAL GYRO
6. GYRO HORIZON
7. VERTICAL SPEED INDICATOR
8. ALTIMETER
9. MARKER BEACON RECEIVER CONTROL
10. OMNI AND GLIDESLOPE INDICATORS
11. TRANSMITTER SELECTOR SWITCH
12. COMMUNICATIONS AND NAVIGATION TRANSCEIVERS
13. ADF RECEIVER AND INDICATOR
14. DME CONTROL AND INDICATOR
15. CIGAR LIGHTER
16. VACUUM SUCTION INDICATOR
17. HEAT AND DEFROST CONTROLS
18. AUTOCONTROL III AUTOPILOT
19. ENGINE INSTRUMENT CLUSTER
20. OMNI-COUPLER
21. MAGNETO SWITCHES AND STARTER
22. FUEL SYSTEM CLUSTER
23. MANIFOLD PRESSURE
24. TAKEOFF AND LANDING CHECK LISTS
25. TACHOMETER
26. ENGINE PRIMER
27. THROTTLE QUADRANT
28. THROTTLE QUADRANT FRICTION KNOB
29. CARBURETOR HEAT CONTROL
30. EXHAUST GAS TEMPERATURE GAUGE
31. SWITCH PANEL
32. CIRCUIT BREAKER PANEL

## Cherokee 235 C

Cabin Heat, Defroster, Fresh Air




1. Fresh Air Control
2. Defroster Control
3. Heater Control
4. Defroster Air Outlet
5. Fresh Air Inlet
6. Cabin Exhaust Outlet

The cabin interior includes a pilot storm window, two sun visors, ash trays, two map pockets, and pockets on the backs of each front seat. The front seats are adjustable fore and aft for pilot-passenger comfort and ease of entry and exit. Recessed armrests are also provided for the front seats. The 24 cubic foot baggage area may be reached from the cabin or through a large 20 x 22 inch outside door.

# SECTION III

## OPERATING INSTRUCTIONS

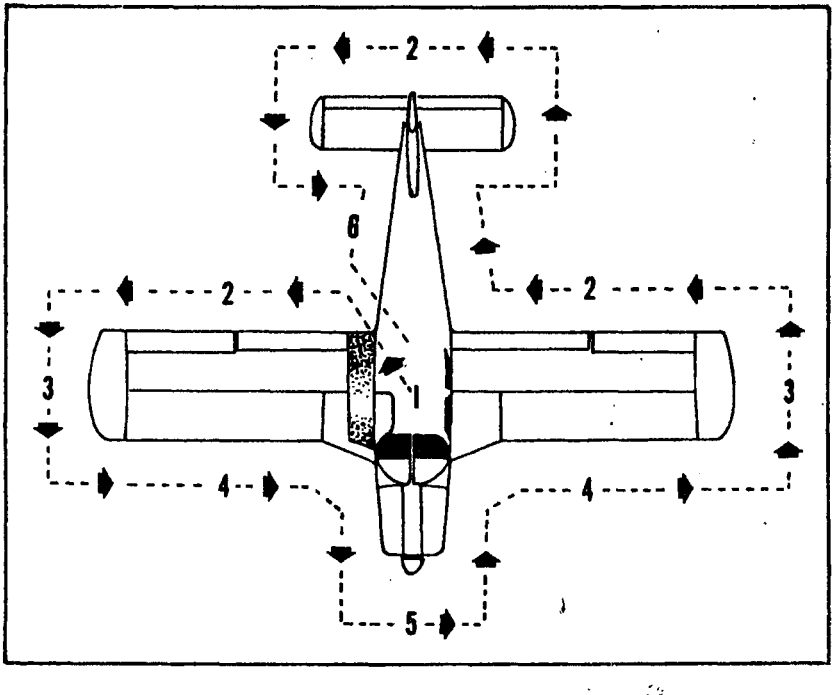
# SECTION III

## OPERATING INSTRUCTIONS

### PREFLIGHT

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

1. a. Master switch "ON."
   b. Check fuel quantity indicators (four tanks).
   c. Master switch and ignition "OFF."



2. a. Check for external damage, 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 fuel supply, secure caps.
   b. Drain fuel tank sumps. (See Fuel System for procedure.)
   c. Check navigation lights.
4. a. Visually check fuel supply, secure caps.
   b. Drain fuel tank sumps. (See Fuel System for procedure.)
   c. Check that fuel system vents are open.
   d. Check landing gear shock struts for proper inflation.
   e. Check tires for cuts, wear and proper inflation.
5. a. Inspect windshield for cleanliness.
   b. Check the propeller and spinner for defects or nicks.
   c. Check for obvious fuel or oil leaks.
   d. Check oil level, 8 quarts minimum. (Insure dipstick is properly seated.)
   e. Inspect cowling and inspection covers for security.
   f. Check nose wheel tire for inflation, wear.
   g. Check nose wheel shock strut for proper inflation.
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 Fuel System for procedure.)
7. a. Upon entering aircraft ascertain that all primary flight controls operate properly.
   b. Close and secure the cabin door.
   c. Check that required papers are in order and in the aircraft.

## STARTING ENGINE

1. Lock the wheels (brakes on).
2. Set the carburetor heat control in the full OFF position.
3. Set the propeller control in full "increase RPM" (if installed).
4. Select the desired tank with fuel selector valve.

Starting Engine When Cold:

1. Open throttle approximately 1/4 inch.
2. Turn the master switch ON.
3. Turn the electric fuel pump ON.
4. Move the mixture control to FULL RICH.
5. Engage the starter by rotating magneto switch clockwise and pressing in.
6. When the engine fires, advance throttle to desired setting. If the engine does not fire within five to ten seconds, disengage starter and prime with one to three strokes of the priming pump. Repeat starting procedure.

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 mixture control in IDLE CUT-OFF.
5. Engage the starter by rotating magneto switch clockwise and pressing in. When the engine fires, advance the mixture control and move the throttle to 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 mixture control in IDLE CUT-OFF.
5. Engage the starter by rotating magneto switch clockwise and pressing in. When the engine fires, 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 will shorten the life of the starter.

## 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.

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

## GROUND CHECK

The magnetos should be checked at 2000 RPM. Airplanes equipped with a constant speed propeller should be checked with the propeller control set at high RPM. Switch from both magnetos to only one and note the RPM loss; switch back to both and allow RPM to recover. Then switch to the other magneto and again note the RPM loss. Switch back to both. Drop off on either magneto should not exceed 175 RPM and should be within 50 RPM of each other. Operation on one magneto should not exceed 10 seconds.

Check vacuum gauge, indicator should read 5" ± .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 takeoff.

The propeller control should be moved through its complete range to check for proper operation, and then placed in full high RPM for takeoff. To obtain maximum RPM, push the pedestal mounted control fully toward the instrument panel.

In cold weather, the propeller control should be cycled at least three times, to assure that warm engine oil has circulated through the system.

Check the operation of the engine-driven fuel pump by switching off the electric fuel pump and observing the fuel pressure gauge.

Carburetor heat should also 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.

## 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. Propeller - set
6. Mixture - set
7. Flaps - set
8. Trim tab - set
9. Controls - free
10. Door latched
11. Altimeter - set
12. Seat backs - erect
13. Fasten seat belts

The takeoff 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 55 to 65 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 takeoff. After takeoff let the airplane accelerate to the desired climb speed by lowering the nose slightly.

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

## CLIMB

The best rate of climb at gross weight will be obtained at 100 miles per hour. The best angle of climb may be obtained at 90 miles per hour. At lighter than gross weight these speeds are reduced somewhat. For climbing en route a speed of 115 miles per hour is recommended. This

will produce better forward speed and increased visibility over the nose during the climb.

## STALLS

The stall characteristics of the Cherokee are conventional. Visual stall warning is provided by a red light located on the left side of the instrument panel which is turned on automatically between 5 and 10 miles per hour above the stall speed. The gross weight stalling speed of the Cherokee with power off and full flaps is 60 miles per hour. With the flaps up this speed is increased 10 miles per hour.

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

## 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 V of this handbook.

Use of the mixture control in cruising flight reduces fuel consumption significantly, especially at high altitudes. The mixture should always be leaned during cruising operations at 75% power or less, but during the climb only at altitudes above 5000 feet.

When selecting cruising RPM below 2300, limiting manifold pressure for continuous operation, as specified by the Lycoming Operators Manual, should be observed.

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.

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. The electric fuel pump should be turned on before switching tanks, and should be left on for a short period thereafter. To preclude making a hasty selection, and to provide continuity of flow, it is desired that the selector be changed to another tank before fuel is exhausted from the tank in use.

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. 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.

In order to keep the airplane in best lateral trim during cruise flight, the fuel should be used alternately from each main tanks, and when they 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 intervals to maintain lateral trim.

## ROUGH 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 distractions caused by the conditions.

## APPROACH AND LANDING

Before landing check list:

1. Fuel on proper tank.
2. Electric fuel pump - on
3. Mixture - rich
4. Propeller - set
5. Carburetor heat - off (unless icing conditions exist)
6. Flaps - set (115 mph max.)
7. Seat backs - erect
8. Fasten seat belts

The airplane should be trimmed to an approach speed of about 90 miles per hour and flaps extended. The flaps can be lowered at speeds up to 115 miles per hour, 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 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 (55 to 65 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.

## 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 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 form supplied with each airplane.

## OPERATING TIPS

1. Learn to trim for takeoff so that only a very light back pressure on the wheel is required to lift the airplane off the ground.

2. The best speed for takeoff is about 65 MPH under normal conditions. Trying to pull the airplane off the ground at too low an airspeed decreases the controllability of the airplane in event of engine failure.

3. Flaps may be lowered at airspeeds up to 115 MPH. To reduce flap operating loads, it is desirable to have the airplane at a slower speed before extending the flaps.

4. Before attempting to reset any circuit breaker, allow a two to five minute cooling off period.

5. Before starting the engine, check that all radio switches, light switches and the pitot heat switch are in the off position so as not to

create an overloaded condition when the starter is engaged.

6. The overvoltage relay is provided to protect the electronics equipment from a momentary overvoltage condition (approximately 16.5 volts and up), or a catastrophic regulator failure. In the event of a momentary condition, the relay will open and the ammeter will indicate "0" output from the alternator. The relay may be reset by switching the master switch to OFF for approximately one second and then returning the master switch to ON. If after recycling the master switch the condition persists, the flight should be terminated as soon as practical, reduce the battery load to a minimum.

7. The vacuum gauge is provided to monitor the pressure available to assure the correct operating speed of the vacuum driven gyroscopic flight instruments, it also monitors the condition of the common air filter by measuring the flow of air through the filter.

If the vacuum gauge does not register 5" ± .1" Hg at 2000 RPM, the following items should be checked before flight:

a. Common air filter could be dirty or restricted.

b. Vacuum lines could be collapsed or broken.

c. Vacuum pump worn.

d. Vacuum regulator not adjusted correctly. The pressure, even though set correctly, can read lower under two conditions: (1) Very high altitude, above 12000 feet, (2) Low engine rpm usually on approach or during training maneuvers. This is normal and should not be considered a malfunction.

8. The shape of the wing fuel tanks is such that in certain maneuvers the fuel may move away from the tank outlet. If the outlet is uncovered, the fuel flow may be interrupted and a temporary loss of power may result. Pilots can prevent inadvertent uncovering of the outlet by avoiding maneuvers which could result in uncovering the outlet.

Running turning takeoffs should be avoided as fuel flow interruption may occur when the tank selected is not full.

Prolonged slips or skids in any pitch attitude or other unusual maneuvers which could cause uncovering of the fuel outlet must be avoided when the tank selected is not full.

9. Anti-collision lights should not be operating when flying through overcast and clouds, since reflected light can produce spacial

disorientation. Do not operate strobe lights when taxiing in the vicinity of other aircraft.

10. The rudder pedals are suspended from a torque tube which extends across the fuselage. The pilot should become familiar with the proper positioning of his feet on the rudder pedals so as to avoid interference with the torque tube when moving the rudder pedals or operating the toe brakes.

# SECTION IV

## EMERGENCY PROCEDURES

# SECTION IV

## EMERGENCY PROCEDURES

### INTRODUCTION

This section contains procedures that are recommended if an emergency condition should occur during ground operation, takeoff, or in flight. These procedures are suggested as the best course of action for coping with the particular condition described, but are not a substitute for sound judgement and common sense. Since emergencies rarely happen in modern aircraft, their occurrence is usually unexpected, and the best corrective action may not always be obvious. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise.

Most basic emergency procedures, such as power off landings, are a normal part of pilot training. Although these emergencies are discussed herein, this information is not intended to replace such training, but only to provide a source of reference and review, and to provide information on procedures which are not the same for all aircraft. It is suggested that the pilots review standard emergency procedures periodically to remain proficient in them.

### ENGINE POWER LOSS DURING TAKEOFF

The proper action to be taken if loss of power occurs during takeoff will depend on circumstances.

1. If sufficient runway remains for a normal landing, land straight ahead.

2. If insufficient runway remains, maintain a safe airspeed and make only a shallow turn if necessary to avoid obstructions. Use of flaps depends on circumstances. Normally, flaps should be fully extended for touchdown.

3. If you have gained sufficient altitude to attempt a restart, proceed as follows:

a. MAINTAIN SAFE AIRSPEED
b. FUEL SELECTOR - SWITCH TO ANOTHER TANK CONTAINING FUEL
c. ELECTRIC FUEL PUMP - CHECK ON
d. MIXTURE - CHECK RICH
e. CARBURETOR HEAT - ON

NOTE

If engine failure was caused by fuel exhaustion, power will not be regained after tanks are switched until empty fuel lines are filled, which may require up to ten seconds.

If power is not regained, proceed with the POWER OFF LANDING procedure.

## ENGINE POWER LOSS IN FLIGHT

Complete engine power loss is usually caused by fuel flow interruption, and power will be restored shortly after fuel flow is restored. If power loss occurs at low altitude, the first step is to prepare for an emergency landing (See POWER OFF LANDING). Maintain an airspeed of at least 95 MPH IAS, and if altitude permits, proceed as follows:

1. Fuel Selector - Switch to another tank containing fuel
2. Electric Fuel Pump - On
3. Mixture - Rich
4. Carburetor Heat - On
5. Engine Gauges - Check for an indication of the cause of power loss
6. Primer - Check Locked
7. If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.

When power is restored:

8. Carburetor Heat - Off
9. Electric Fuel Pump - Off

If the above steps do not restore power, prepare for an emergency landing.

If time permits:

1. Ignition Switch - "L" then "R" then back to "BOTH."
2. Throttle and Mixture - Different settings. (This may restore power if problem is too rich or too lean a mixture, or a partial fuel system restriction.)
3. Try other fuel tanks. (Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power. If power loss is due to water, fuel pressure indications will be normal.)

**NOTE**

If engine failure was caused by fuel exhaustion, power will not be regained after tanks are switched until empty fuel lines are filled, which may require up to ten seconds.

If power is not restored, proceed with POWER OFF LANDING procedures.

## POWER OFF LANDING

If loss of power occurs at altitude, trim the aircraft for best gliding angle, 95 MPH IAS, and look for a suitable field. If measures taken to restore power are not effective, and if time permits, check your charts for airports in the immediate vicinity; it may be possible to land at one if you have sufficient altitude. If possible, notify the FAA by radio of your difficulty and intentions. If another pilot or passenger is aboard, let them help.

When you have located a suitable field, establish a spiral pattern around this field. Try to be at 1000 feet above the field at the downwind position, to make a normal approach. When the field can easily be reached, slow up to 85 MPH IAS for the shortest landing. Excess altitude may be lost by widening your pattern, using flaps or slipping, or a combination of these.

Touchdown should normally be made at the lowest possible airspeed, with full flaps.

When committed to landing:

1. Ignition - Off
2. Master Switch - Off
3. Fuel Selector - Off
4. Mixture - Idle Cut-Off
5. Seat belt - Tight

FIRE

The presence of fire is noted through smoke, smell, and heat in the cabin. It is essential that the source of the fire be promptly identified through instrument readings, character of the smoke, or other indications, since the action to be taken differs somewhat in each case.

Source of fire - Check

1. Electrical Fire (smoke in cabin):
   a. Master Switch - Off
   b. Vents - Open
   c. Cabin Heat - Off
   d. Land as soon as possible.

2. Engine Fire In Flight:
   a. Fuel Selector - Off
   b. Throttle - Closed
   c. Mixture - Idle cut-off
   d. Heater - Off (In all cases of fire)
   e. Defroster - Off (In all cases of fire)
   f. If terrain permits, land immediately.

The possibility of an engine fire in flight is extremely remote. The procedure given above is general and pilot judgment should be the deciding factor for action in such an emergency.

3. Engine Fire During Start:
   a. If engine has not started
      (1) Mixture - Idle cut-off
      (2) Throttle - Open
      (3) Turn engine with starter (This is an attempt to pull the fire into the engine.)
   b. If engine has already started and is running, continue operating to try pulling the fire into the engine.
   c. In either case stated a. and b., if the fire continues longer than a few seconds, the fire should be extinguished by the best available external means.
   d. If external fire extinguishing is to be applied:
      (1) Fuel Selector - Off
      (2) Mixture - Idle cut-off

Engine fires during start are usually the result of over priming. The procedure above is designed to draw the excess fuel back into the induction system.

## LOSS OF OIL PRESSURE

Loss of oil pressure may be either partial or complete. A partial loss of oil pressure usually indicates a malfunction in the oil pressure regulating system, and a landing should be made as soon as possible to

investigate the cause and prevent engine damage.

A complete loss of oil pressure indication may signify oil exhaustion or may be the result of a faulty gauge. In either case, proceed toward the nearest airport, and be prepared for a forced landing. If the problem is not a pressure gauge malfunction, the engine may stop suddenly. Maintain altitude until such time as a dead stick landing can be accomplished. Don't change power settings unnecessarily, as this may hasten complete power loss.

Depending on the circumstances, it may be advisable to make an off airport landing while power is still available, particularly if other indications of actual oil pressure loss, such as sudden increases in temperatures, or oil smoke, are apparent, and an airport is not close.

If engine stoppage occurs, proceed to POWER OFF LANDING.

## LOSS OF FUEL PRESSURE

1. Electric Boost Pump - On
2. Fuel Selector - Check on Full Tank

If problem is not an empty fuel tank, land as soon as practical, and have engine-driven fuel pump checked.

## HIGH OIL TEMPERATURE

An abnormally high oil temperature indication may be caused by a low oil level, an obstruction in the oil cooler, damaged or improper baffle seals, a defective gauge, or other causes. Land as soon as practical at an appropriate airport and have the cause investigated.

A steady, rapid rise in oil temperature is a sign of trouble. Land at the nearest airport and let a mechanic investigate the problem. Watch the oil pressure gauge for an accompanying loss of pressure.

## ALTERNATOR FAILURE

Loss of alternator output is detected through a zero reading on the ammeter. Before executing the following procedure, insure that the reading is zero and not merely low by actuating an electrically powered device, such as the landing light. If no increase in the ammeter reading is noted, alternator failure can be assumed.

1. Reduce Electrical Load.
2. Alternator Circuit Breakers - Check
3. Master Switch - Off (for 1 second), Then On

If the ammeter continues to indicate no output, or alternator circuit breaker will not stay reset, maintain minimum electrical load and land as soon as practical. All electrical load is being supplied by the battery.

## ENGINE ROUGHNESS

Engine roughness is usually due to carburetor icing, and may be accompanied by serious power loss. This power loss may be evidenced by a loss of RPM, or with a constant speed propeller, a slight loss of manifold pressure, and may be accompanied by a slight loss of airspeed or altitude. If too much ice is allowed to accumulate, restoration of full power may not be possible; therefore, prompt action is required.

Carburetor Heat - On (See Note) RPM will decrease slightly and roughness will increase. Wait for a decrease in engine roughness or an increase in RPM, indicating ice removal. If no change in approximately one minute, return carburetor heat to COLD. If the engine is still rough, try steps below.

1. Mixture - Adjust for maximum smoothness. Engine will run rough if too rich or too lean.
2. Electric Fuel Pump - On
3. Fuel Selector - Change tanks to see if fuel contamination is the problem.
4. Engine Gauges - Check for abnormal readings. If any gauge readings are abnormal, proceed accordingly.

5. Magneto Switch - "L" then "R," then back to "BOTH." If operation is satisfactory, on either magneto, proceed on that magneto at reduced power, with mixture full rich, to a landing at the first available airport.

If roughness persists, prepare for a precautionary landing at pilot's discretion.

NOTE

Partial carburetor heat may be worse than no heat at all, since it may partially melt the ice, which will refreeze in the intake system. When using carburetor heat, therefore, always use full heat and when ice is removed, return the control to the full cold position.

## PROPELLER OVERSPEED (CONSTANT SPEED PROPELLER)

Propeller overspeed is caused by a malfunction in the propeller governor, or low oil pressure, which allows the propeller blades to rotate to full low pitch. If this should occur, proceed as follows:

1. THROTTLE - RETARD
2. OIL PRESSURE - CHECK
3. PROPELLER CONTROL - FULL DECREASE RPM, THEN SET IF ANY CONTROL IS AVAILABLE.
4. REDUCE AIRSPEED
5. THROTTLE - AS REQUIRED TO REMAIN BELOW 2700 RPM

## SPINS

Intentional spins are prohibited in this aircraft. If a spin is inadvertently entered, immediately use the following recovery procedures:

1. THROTTLE - IDLE

2. RUDDER - FULL OPPOSITE TO DIRECTION OF ROTATION
3. CONTROL WHEEL - FULL FORWARD
4. RUDDER - NEUTRAL (WHEN ROTATION STOPS)
5. CONTROL WHEEL - AS REQUIRED TO SMOOTHLY REGAIN LEVEL FLIGHT ATTITUDE

## OPEN DOOR

The cabin door on the Cherokee is double latched, so the chance of its springing open in flight at both the top and bottom is remote. However, should you forget the upper latch, or not fully engage the lower latch, the door may spring partially open. This will usually happen at takeoff or soon afterward. A partially open door will not affect normal flight characteristics, and a normal landing can be made with the door open. If both upper and lower latches open, the door will trail slightly open, and airspeed will be reduced slightly.

To close a door in flight, proceed as follows:

1. Slow aircraft to 100 MPH IAS
2. Cabin Vents - Close
3. Storm Window - Open
4. If upper latch is open - latch. If lower latch is open - open top latch, push door further open, and then close rapidly. Latch top latch. A slip in the direction of the open door will assist in latching procedure.

# SECTION V

## PERFORMANCE CHARTS

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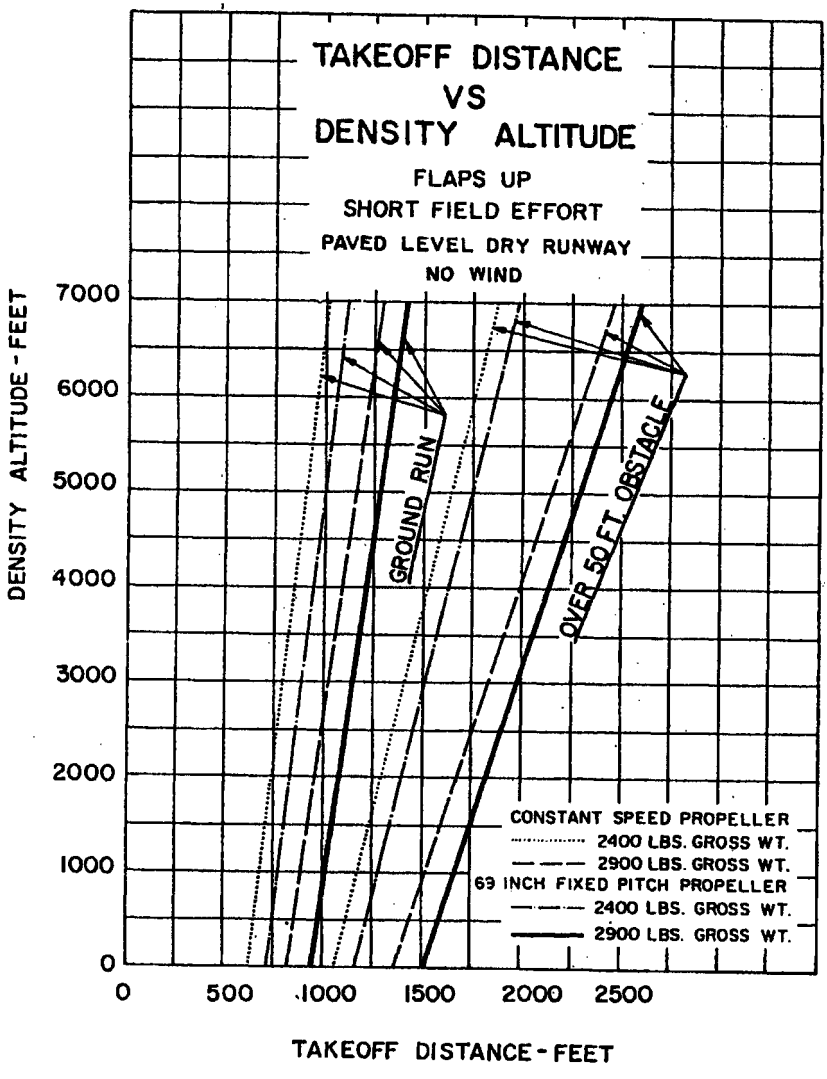

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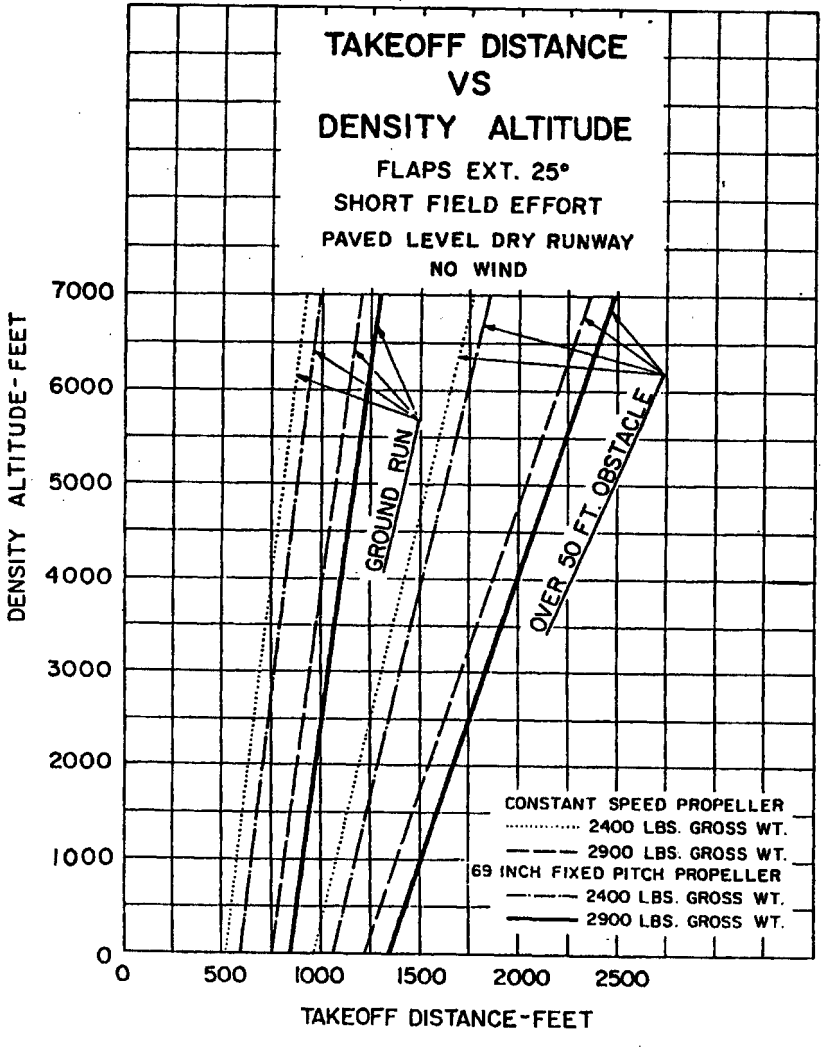

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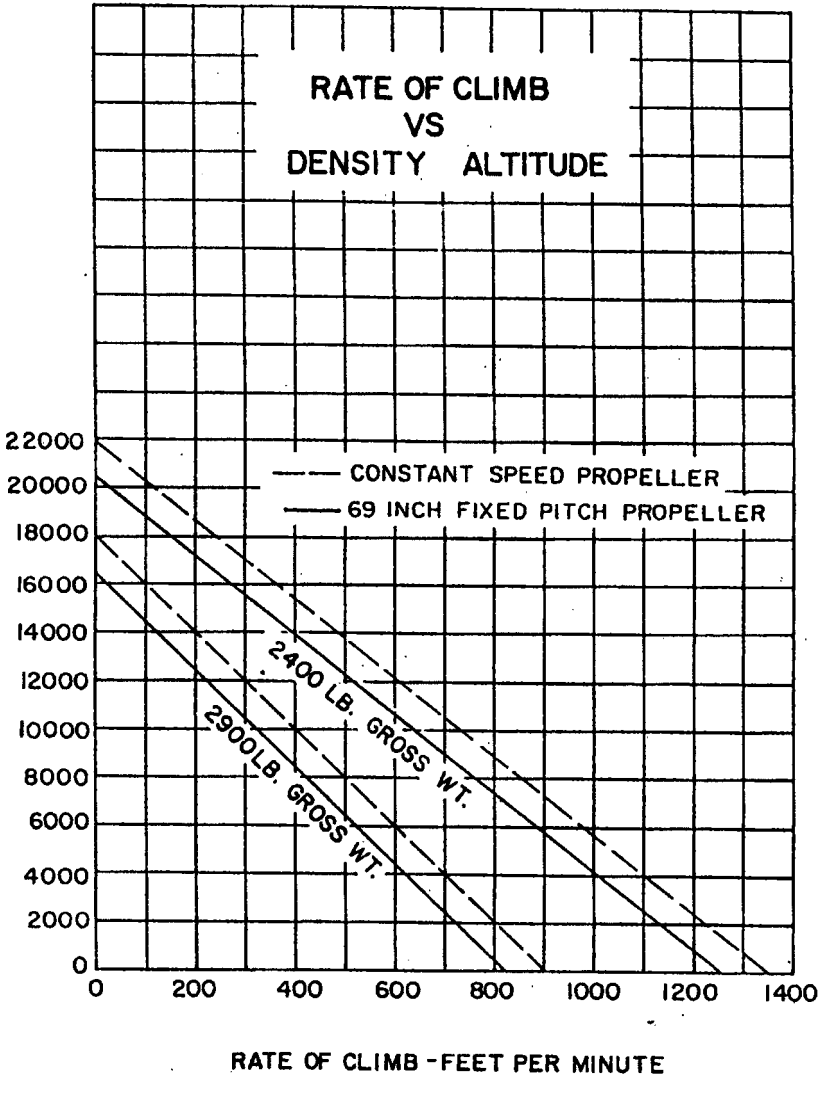

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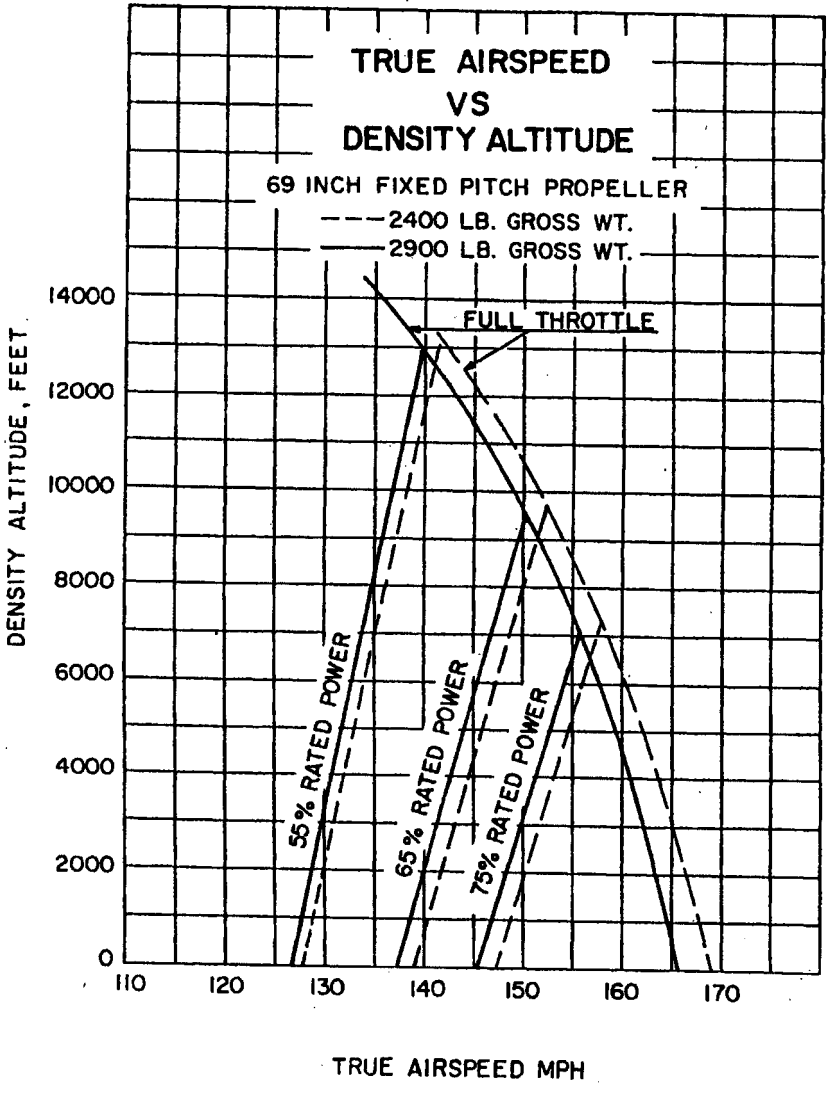

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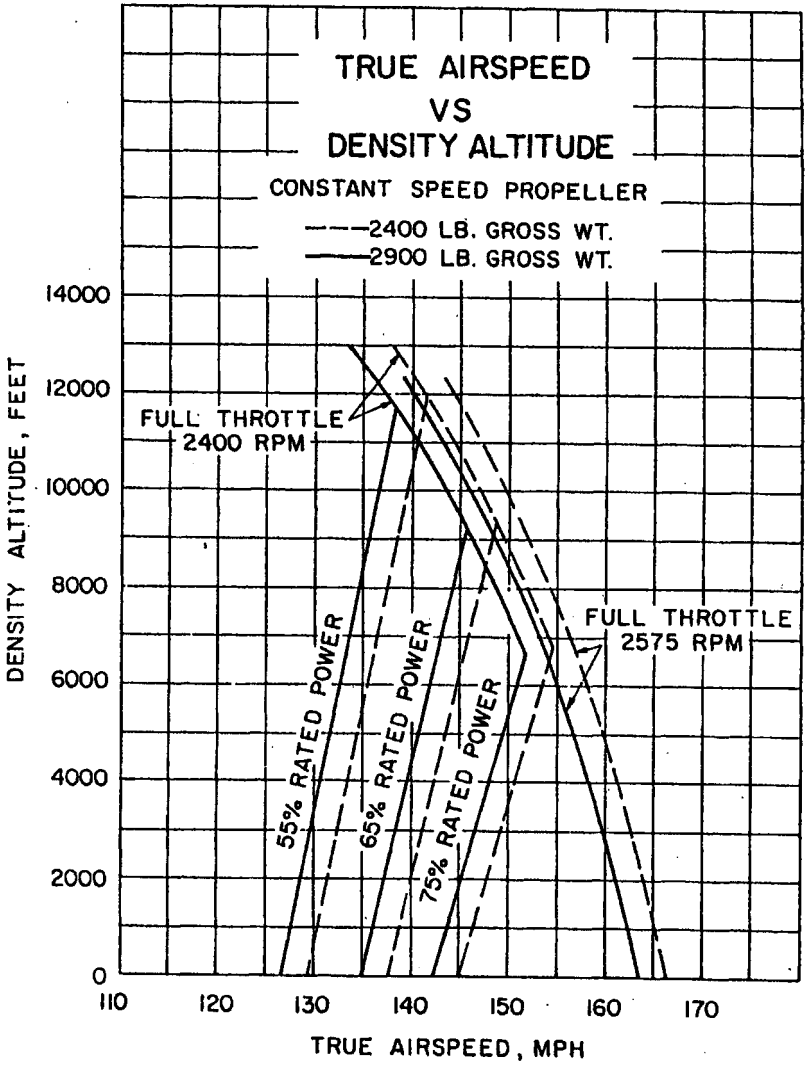

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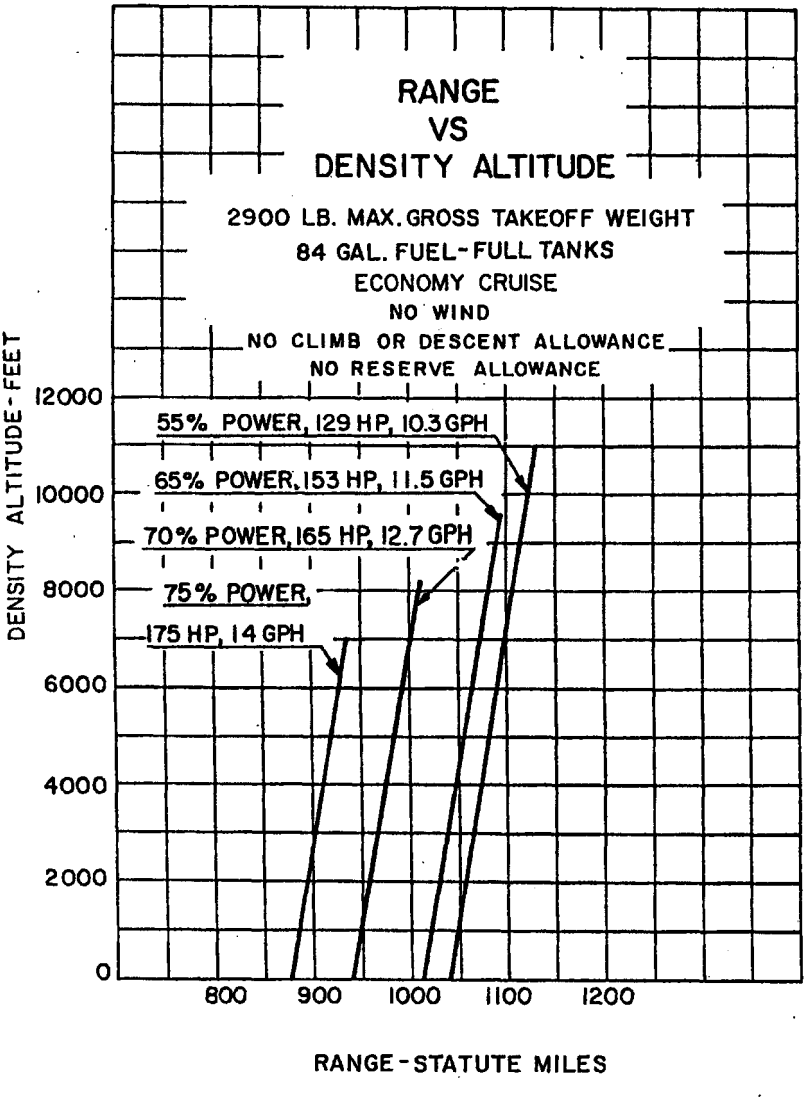

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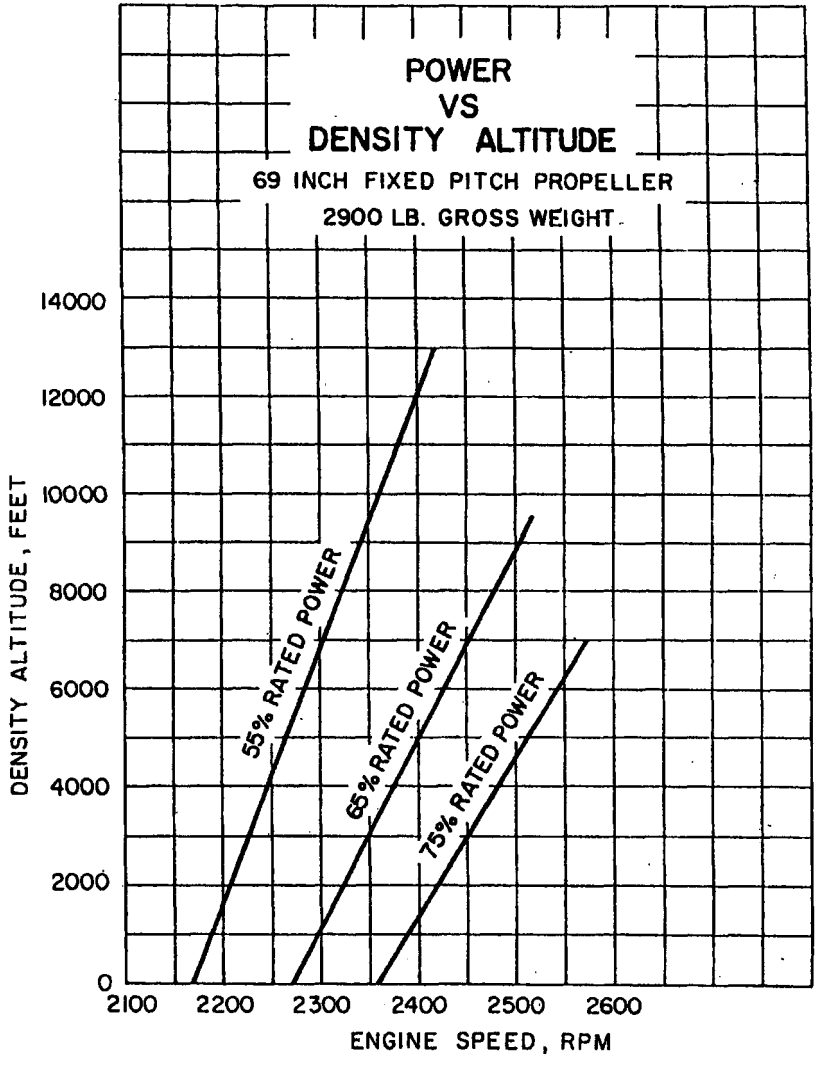

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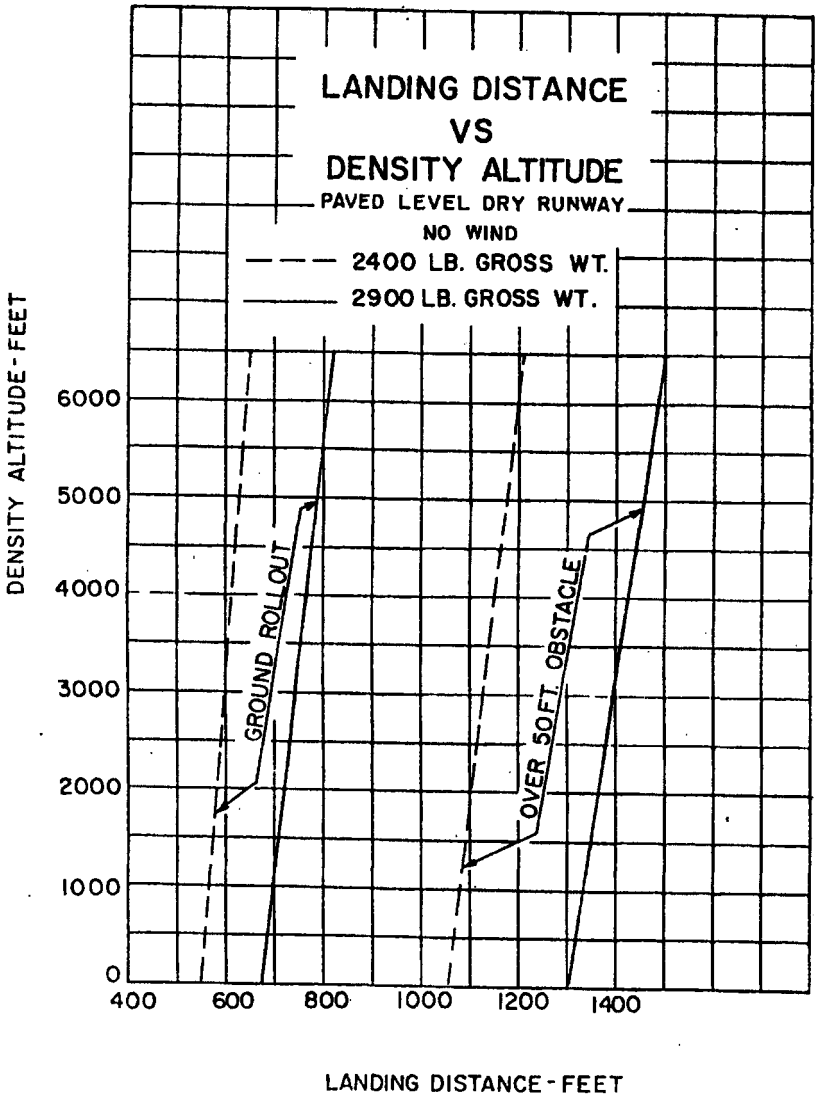




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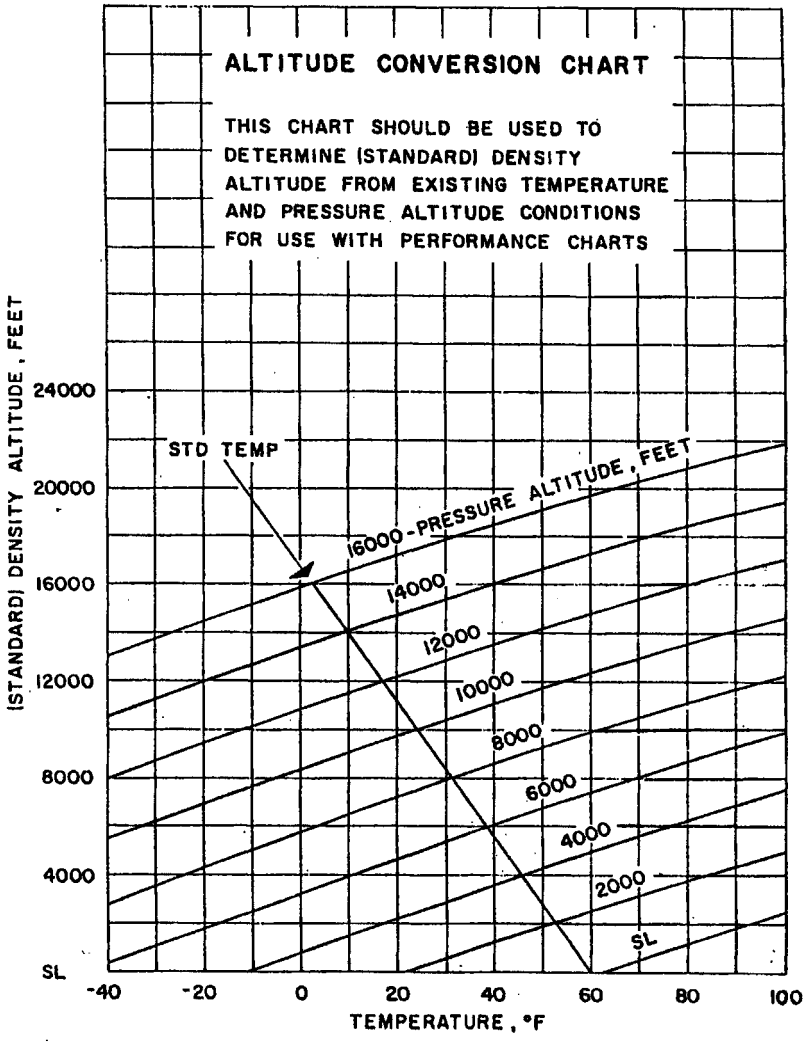

# Power Setting Table - Lycoming O-540-B Engine - Constant Speed Propeller

| Press. Alt 1000 Feet | Std Alt Temp °F | 129 HP – 55% Rated RPM AND MAN. PRESS. 2100 | 2200 | 2300 | 2400 | 153 HP – 65% Rated RPM AND MAN. PRESS. 2100 | 2200 | 2300 | 2400 | 176 HP – 75% Rated RPM AND MAN. PRESS. 2100 | 2200 | 2300 | 2400 | Press. Alt 1000 Feet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SL | 59 | 20.6 | 20.1 | 19.6 | 19.2 | 23.2 | 22.6 | 22.0 | 21.5 | 25.7 | 25.0 | 24.4 | 23.7 | SL |
| 1 | 55 | 20.3 | 19.8 | 19.3 | 18.9 | 22.9 | 22.3 | 21.7 | 21.2 | 25.4 | 24.7 | 24.1 | 23.4 | 1 |
| 2 | 52 | 20.1 | 19.6 | 19.1 | 18.7 | 22.7 | 22.1 | 21.5 | 21.0 | 25.2 | 24.5 | 23.8 | 23.1 | 2 |
| 3 | 48 | 19.8 | 19.3 | 18.8 | 18.4 | 22.4 | 21.8 | 21.2 | 20.7 | 24.9 | 24.2 | 23.5 | 22.8 | 3 |
| 4 | 45 | 19.6 | 19.1 | 18.6 | 18.2 | 22.2 | 21.6 | 21.0 | 20.5 | 24.7 | 24.0 | 23.3 | 22.5 | 4 |
| 5 | 41 | 19.3 | 18.8 | 18.3 | 17.9 | 21.9 | 21.3 | 20.7 | 20.2 | – | 23.7 | 23.0 | 22.3 | 5 |
| 6 | 38 | 19.1 | 18.6 | 18.1 | 17.7 | 21.7 | 21.1 | 20.5 | 19.9 | – | – | 22.7 | 22.0 | 6 |
| 7 | 34 | 18.8 | 18.3 | 17.8 | 17.4 | 21.4 | 20.8 | 20.2 | 19.7 | – | – | – | 21.6 | 7 |
| 8 | 31 | 18.6 | 18.1 | 17.6 | 17.2 | 21.2 | 20.6 | 20.0 | 19.4 | | | | | 8 |
| 9 | 27 | 18.4 | 17.9 | 17.4 | 17.0 | – | 20.4 | 19.8 | 19.2 | | | | | 9 |
| 10 | 23 | 18.2 | 17.7 | 17.2 | 16.8 | – | – | 19.6 | 19.0 | | | | | 10 |
| 11 | 19 | 18.0 | 17.5 | 17.0 | 16.6 | | | | | | | | | 11 |
| 12 | 16 | 17.8 | 17.3 | 16.8 | 16.4 | | | | | | | | | 12 |
| 13 | 12 | – | 17.1 | 16.6 | 16.2 | | | | | | | | | 13 |
| 14 | 9 | – | – | 16.4 | 16.1 | | | | | | | | | 14 |
| 15 | 5 | – | – | – | 15.9 | | | | | | | | | 15 |

To maintain constant power, correct manifold pressure approximately 0.18" Hg for each 10° F variation in carburetor air temperature from standard altitude temperature. Add manifold pressure for air temperatures above standard; subtract for temperatures below standard.

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## Power Setting Table - Lycoming O-540-B Engine --Fixed Pitch Propeller

| Press. Alt | Std Alt Temp °F | 129 HP 55% Power RPM | 153 HP 65% Power RPM | 176 HP 75% Power RPM | Press. Alt |
|---|---|---|---|---|---|
| SL | 59 | 2170 | 2270 | 2360 | SL |
| 1,000 | 55 | 2190 | 2295 | 2390 | 1,000 |
| 2,000 | 52 | 2210 | 2320 | 2420 | 2,000 |
| 3,000 | 48 | 2230 | 2350 | 2450 | 3,000 |
| 4,000 | 45 | 2250 | 2375 | 2480 | 4,000 |
| 5,000 | 41 | 2270 | 2400 | 2510 | 5,000 |
| 6,000 | 38 | 2285 | 2425 | 2540 | 6,000 |
| 7,000 | 34 | 2305 | 2450 | 2570 | 7,000 |
| 8,000 | 31 | 2320 | 2475 | – | 8,000 |
| 9,000 | 27 | 2340 | 2500 | – | 9,000 |
| 10,000 | 23 | 2360 | – | – | 10,000 |
| 11,000 | 19 | 2380 | – | – | 11,000 |
| 12,000 | 16 | 2400 | – | – | 12,000 |
| 13,000 | 12 | 2420 | – | – | 13,000 |

# SECTION VI

## GENERAL MAINTENANCE

# SECTION VI

# GENERAL MAINTENANCE

## LANDING GEAR SERVICE

Main wheels are removed by taking off the wheel fairings, hub cap, axle nut, retainer pin, and the two bolts holding the brake segment in place. The wheel will slip easily from the axle.

Tires are removed from the wheels by first deflating the tire, removing the 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 3-1/4 inches for the nose gear and 4-1/2 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 stem of the filler plug and submerge the other end in a container of hydraulic fluid (MIL-H-5606). Fully compress and extend the strut several times thus drawing fluid from the container and expelling air from the strut chamber. To allow 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 service, a jack kit (available through the Piper Dealers and Distributors) should be used. This kit consists of two hydraulic jacks and a tail stand. At least 350 pounds of ballast should be placed on the tail stand before jacking the aircraft. The jacks should be placed under the jack points on 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 ballast, jacking may be continued until the aircraft is at the height desired.

## BRAKE SERVICE

The brake system is filled with MIL-H-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 firewall to the indicated level. If the system as a whole has to be refilled, it should be done by filling with fluid under pressure from the brake end of the system. This will eliminate air from the system.

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

## TIRE INFLATION

For maximum service from the Cherokee tires, keep the tires inflated to a pressure of 35 to 40 pounds for the main gear and 28 to 30 pounds for the nose gear. If necessary, interchange the tires on the main wheels 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 possible. Out of balance wheels can cause extreme vibration on take-off. In the installation of new components, it may be necessary to rebalance the wheel with the tires 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. 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.
6. If it is found that fog, stains, etc., appears on the inner surfaces of the double window assemblies, refer to the Cherokee Service Manual for cleaning instructions.

## BATTERY SERVICE

Access to the 12 volt battery is through the right rear baggage compartment panel. The stainless steel box has a plastic drain tube which should be opened occasionally to drain off any accumulation of liquid. Check the battery for proper fluid level (do not fill 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 amp rate and finishing with a 2 amp rate. Quick charges are not recommended.

## FUEL AND OIL REQUIREMENTS

Aviation grade 80/87 Octane (minimum) fuel must be used in the Cherokee. The use of lower grades can cause serious engine damage in a very short period of time, and is considered of such importance that the engine warranty is invalidated by such use.

The oil capacity of the Lycoming O-540 series engines is 12 quarts and the minimum safe quantity is 2-3/4 quarts. It is recommended that the oil filter element be changed every 50 hours or sooner under unfavorable conditions. Engine oil is normally changed with the filter. However, if the full flow (cartridge type) oil filter is used and changed every 50 hours of operation, the intervals between oil changes may be increased as much as 100 percent. The following grades are recommended for the specified temperatures:

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

## 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 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 +/-1°.
3. Fin should be vertical, and in line with center of fuselage.
4. Ailerons Travel: 30° up, 15° down, tolerance +/-2°.
5. Flaps Travel: 10°, 25°, 40°, tolerance +/-2°.
6. Rudder Travel: 27° right and left, tolerance +/-2°.
7. Stabilator Tab Travel: 3° up, 12° down, tolerance +/-1°.

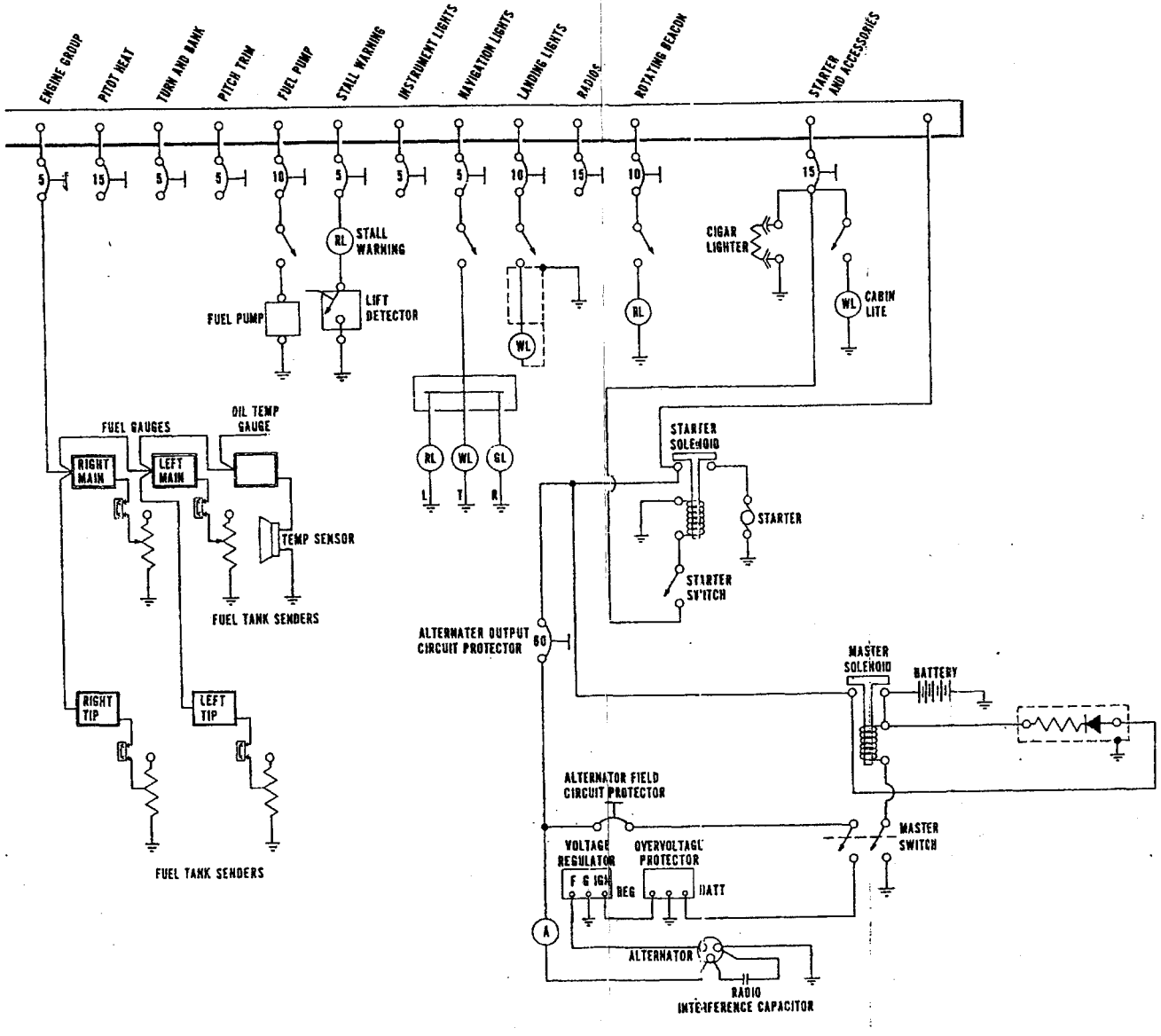
Cable tensions for the various controls are as follows:

| | |
|---|---|
| Rudder: 40+/-5 lbs | Stabilator: 40+/-5 lbs |
| Ailerons: 40+/-5 lbs | Stabilator Trim: 10+/-1 lb |

For extreme cases of wing heaviness, either of the flaps may be adjusted up or down from the zero positions.

## 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.


ENGINE GROUP
PITOT HEAT
TURN AND BANK
PITCH TRIM
FUEL PUMP
STALL WARNING
INSTRUMENT LIGHTS
NAVIGATION LIGHTS
LANDING LIGHTS
RADIOS
ROTATING BEACON
STARTER AND ACCESSORIES
5
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15
RL
STALL WARNING
FUEL PUMP
LIFT DETECTOR
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FUEL GAUGES
OIL TEMP GAUGE
RIGHT MAIN
LEFT MAIN
TEMP SENSOR
FUEL TANK SENDERS
STARTER SOLENOID
STARTER
STARTER SWITCH
ALTERNATER OUTPUT CIRCUIT PROTECTOR
60
MASTER SOLENOID
BATTERY
RIGHT TIP
LEFT TIP
FUEL TANK SENDERS
ALTERNATOR FIELD CIRCUIT PROTECTOR
MASTER SWITCH
VOLTAGE REGULATOR
F G IGN
REG
OVERVOLTAGE PROTECTOR
BATT
A
ALTERNATOR
RADIO INTERFERENCE CAPACITOR

# LUBRICATION CHART FOR PIPER CHEROKEE PA-28-235

| | HOURS | LUBRICANT |
|---|---|---|
| RUDDER HINGES AND HORN | 100 | ✓ |
| STABILATOR HINGES | 100 | ✓ |
| STABILATOR TRIM TAB | 100 | ✓ |
| STABILATOR ADJUSTMENT MECHANISM | 100 | ✓ |
| STABILATOR CONTROL PULLEYS | 100 | ✓ |
| BAGGAGE DOOR AND MAIN DOOR HINGES | 100 | ✓ |
| AILERON AND FLAP TORQUE TUBE, PULLEYS, BELLCRANK, LEFT AND RIGHT | 100 | ✓ |
| AILERON HINGES | 50 | ✓ |
| MAIN LANDING GEAR TORQUE LINKS | 50 | △ |
| MAIN WHEEL BEARINGS LEFT AND RIGHT | 100 | □ |

| LUBRICANT | HOURS | |
|---|---|---|
| ✓ | 250 | STABILATOR TRIM PULLEYS (SEE CAUTION 4) |
| ✓ | 100 | CONTROL COLUMN |
| ○ | 50 | BRAKE RESERVOIR MAINTAIN FLUID LEVEL INDICATED ON THE SIDE OF RESERVOIR |
| ✓ | 100 | RUDDER ADJUSTMENT MECHANISM AND RUDDER ASSEMBLY |
| △ | 100 | PROPELLER GREASE FITTINGS (SEE NOTE 2) |
| △ | 100 | FRONT SEAT ADJUSTMENT |
| △ | 100 | NOSE WHEEL STEERING |
| □ | 100 | NOSE WHEEL BEARINGS |
| ✓ | 50 | NOSE LANDING GEAR TORQUE LINKS |
| ENGINE | 50 | ENGINE OIL DRAIN AND REFILL 12 U.S. QTS. |
| | 100 | FUEL SELECTOR VALVE SEE NOTE 5 |

## NOTES

1. OLEO STRUTS AND BRAKE RESERVOIR – FILL PER INSTRUCTIONS ON UNIT OR CONTAINER, OR REFER TO SERVICE MANUAL, SECTION II.
2. INTERVALS BETWEEN OIL CHANGES CAN BE INCREASED AS MUCH AS 100% ON ENGINES EQUIPPED WITH FULL FLOW (CARTRIDGE TYPE) OIL FILTERS – PROVIDED THE ELEMENT IS REPLACED EACH 50 HOURS OF OPERATION.
3. PROPELLER – REMOVE ONE OF THE TWO GREASE FITTINGS FOR EACH BLADE. APPLY GREASE THROUGH FITTING UNTIL FRESH GREASE APPEARS AT HOLE OF REMOVED FITTING.
4. INDUCTION FILTER – CLEAN PAPER AIR FILTER BY TAPPING THE UNIT LIGHTLY AGAINST A HARD SURFACE. DO NOT USE SOLVENT OR COMPRESSED AIR. REPLACE WHEN NECESSARY.
5. FUEL SELECTOR VALVE– LUBRICATE AREA WHERE DETENT BALL MOVES ACROSS COVER PLATE WITH DUPONT ALL PURPOSE SLIP SPRAY #6611 OR EQUIVALENT.

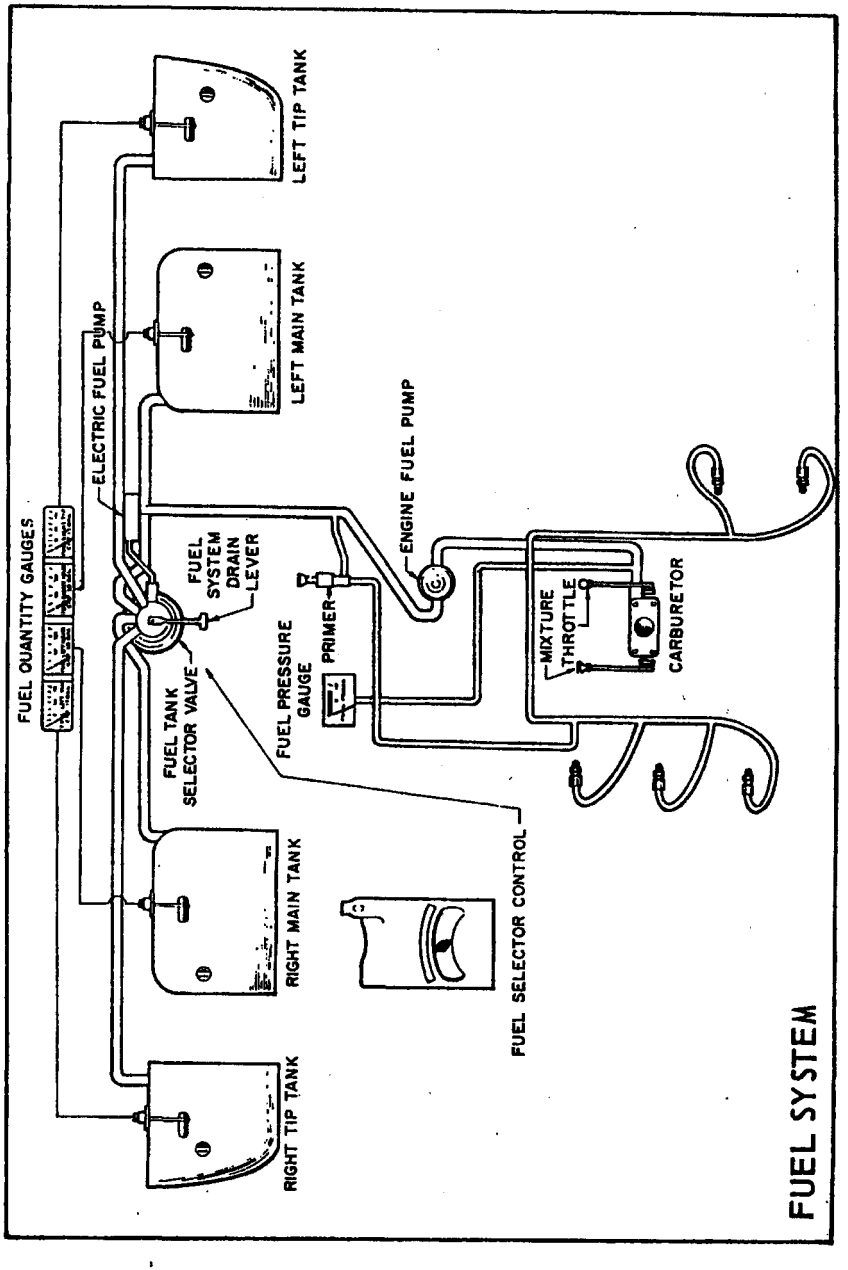
## LEGEND

| | |
|---|---|
| ✓ | MIL-L-7870 OIL - GENERAL PURPOSE LOW TEMP. LUBRICATION. |
| △ | MIL-G-23827 GREASE - LUBRICATION GENERAL PURPOSE AIRCRAFT. |
| □ | MIL-L-3545 GREASE - LUBRICATION HIGH TEMP. |
| ○ | MIL-H-5606 HYDRAULIC FLUID (RED). |
| ENGINE | SAE 50 ABOVE 60°F AIR TEMP. * |
| | SAE 40 30°F TO 90°F AIR TEMP. * |
| | SAE 30 0°F TO 70°F AIR TEMP. * |
| | SAE 20 BELOW 10°F AIR TEMP. * |

## CAUTIONS

1. DO NOT USE A HYDRAULIC FLUID WITH A CASTOR OIL OR ESTER BASE.
2. DO NOT OVER-LUBRICATE PEDESTAL CONTROLS.
3. DO NOT APPLY LUBRICANT TO RUBBER PARTS.
4. UNDER NO CIRCUMSTANCES SHOULD THE TRIM CABLES FROM THE COCKPIT TO THE REAR OF THE FUSELAGE BE LUBRICATED - AS THIS MAY CAUSE SLIPPAGE.
5. REMOVE ALL EXCESS GREASE FROM GREASE FITTINGS.
6. OIL AILERON HINGES EVERY FIFTY HOURS.

* NON-DETERGENT. SEE LYCOMING SERVICE INSTRUCTIONS NO. 1014 FOR USE OF DETERGENT OIL.


FUEL QUANTITY GAUGES
ELECTRIC FUEL PUMP
LEFT TIP TANK
LEFT MAIN TANK
ENGINE FUEL PUMP
FUEL SYSTEM DRAIN LEVER
PRIMER
MIXTURE
THROTTLE
CARBURETOR
FUEL TANK SELECTOR VALVE
FUEL PRESSURE GAUGE
RIGHT MAIN TANK
FUEL SELECTOR CONTROL
RIGHT TIP TANK
FUEL SYSTEM

**Petersen Aviation, Inc.**
984 K Road
Minden, NE 68959
Automotive & Aviation Fuel STC's

Phone 308-832-2200
info@autofuelstc.com
www.autofuelstc.com

Your auto fuel STC is enclosed. Thank you for ordering. Please read through all the paperwork carefully to insure that the information on your STC is correct. Check to make certain that the serial numbers match those of your airplane. Check also the final paragraph on the airframe STC to make certain that if a specific engine model number is called for that it corresponds to the model number of your engine. Some of our airframe STC's may require different model number engines, or may not specify a model number or an engine at all. DO NOT LOSE THIS PAPERWORK. It is intended to become a part of the permanent aircraft record. The enclosed STC's also approve both engine and airframe for UL91 (minimum) Aviation gasoline.

If you have purchased an engine STC only then it will be necessary for you to obtain airframe approval from the FAA if you intend to use the STC in a certificated airplane. Airframe approval must be obtained to legally install the engine STC and use auto fuel in certificated aircraft.

In the United States, an IA mechanic or Certified Repair Station must install these STC's, make a log book entry and send in FAA form 337. Aviation officials in other countries may require additional paperwork when installing the STC.

If a Flight Manual Supplement is enclosed with the STC paperwork, place it in your Airplane Flight Manual. Not all airplanes require a Flight Manual Supplement. Some airplanes require Flight Manual Supplements only for certain serial numbers. If a Flight Manual Supplement is not included with your paperwork it is because your serial number does not indicate that it is required.

A change from an 87 octane engine to one requiring 91 octane such as the 160hp 0-320 or the 0-360 requires a different set of STC's. The red number on your STC paperwork is used by us to look up your file. Please refer to the red number or your "N" number when requesting information regarding your paperwork. STC's are not transferable from one airplane to another.

Pay close attention to the octane called for on the engine STC and the fuel placards which are enclosed. Do not use an octane lower than what is called for on the engine STC. The placards that are enclosed must match the octane specified on the engine STC, and are to be installed near the fuel filler openings. Placards that do not originate at Petersen Aviation cannot be used in conjunction with the STC's.

The octane rating you see on the STC and fuel placards is arrived at by taking the Research Octane Number and adding it to the Motor Octane Number and averaging the two, hence (RON+MON)/2 = AKI or Anti-Knock Index.

If you reside outside North America then the octane rating posted on the gasoline pump will most likely only refer to the Research Octane Number (RON). In order to know that the fuel you are buying will have a high enough octane rating you must find out what the Motor Octane Number

VAPOR/PNEUMATIC LOCK - Under the right conditions, vapor lock can occur with either aviation or automotive gasoline. Due to its higher volatility and Initial Boiling Point (IBP) automotive gasoline has more potential for vapor and pneumatic lock. High wing gravity feed fuel systems are less prone to vapor formation than are pump fed systems. Vapor lock is a product of the fuel delivery system. Agitation of hot fuel or boiling of the fuel can result in vapor blockages in the fuel system which in turn starves the engine of a constant supply of liquid fuel. Pneumatic lock occurs when the carburetor is so hot that the fuel boils when it enters and the engine dies because it is too rich. The situation most conducive to vapor formation and pneumatic lock is using winter blend fuel during hot weather. Spring is the time of year when this combination of circumstances is most likely to be encountered. Caution should be exercised when flying with winter grade gasoline during warm days. Before takeoff conduct a full power run up to determine that full power is being developed. A full power run up will aid in removing hot fuel from within the engine compartment and replace it with cooler fuel from the tanks. Do not attempt a take off if full power cannot be obtained.

Aviation gasoline is blended with a Reid Vapor Pressure (RVP) between 5-7 year around. Automotive gasoline is blended with an RVP which the spec allows to be as high as 15 during the winter and as low as 7 during the summer depending upon geographic location. It is seldom above 10 in the US today. There is nothing wrong with using winter blend fuel in the winter. Storing fuel purchased during winter months, and then using it in your airplane during operations in an O.A.T. exceeding 75 degrees F is, however, not recommended. If you are transporting your fuel to the airport, purchase it from a busy service station that has a high turnover rate to insure that you are obtaining fresh fuel.

Vapor lock is not as likely today as it was before the turn of the century. In the 1990's EPA started requiring oil refiners to reduce RVP's across the board to reduce evaporative emissions. Hence auto gas today is more like avgas than ever with some areas having the same RVP as 100LL. Nonetheless, vapor lock is still possible given the right set of circumstances. Some things which can be done to help avoid vapor lock include checking the condition of all fuel system hoses and fittings. Be sure the hoses have not collapsed, or that old hoses are not allowing air to enter the fuel system through the hose wall. Fittings must be very tight to prevent air from entering the fuel system. Fittings and elbows in the fuel system introduce turbulence into the fuel and therefore increase the possibility of vapor lock Therefore long runs of tubing are superior to lines that use more fittings. Also check to be sure that fuel system lines cannot shift in flight and come into contact with hot spots within the engine compartment. Fuel lines should be secured in place in a manner that prevents the line from vibrating and hence adding turbulence to the fuel. Adding fire sleeve to fuel lines within the engine compartment will insulate the lines and cut down on heat absorbed from the engine. Vent position and condition should also be checked, as should the condition of "O" rings around the fuel filler caps. Deteriorating "O" rings in the fuel filler caps can result in creation of a vacuum in the fuel tank and subsequent loss of head pressure in the fuel system.

The most likely scenario for vapor lock occurs during a subsequent takeoff. That is, when the airplane is flown, and then parked for a short time, and then restarted for the next flight. Following engine shutdown, the temperature of the engine compartment will significantly rise due to the sudden loss of cooling air flow and the thermal mass of the hot engine. If the engine is started again shortly thereafter, the temperature of the fuel in the engine compartment may be beyond its IBP, and thus the risk of vapor lock is at its highest. Cooling the engine compartment after shutdowns of short duration and prior to restarting will help to alleviate this condition. Opening the cowling, or oil filler access door between flights provides a means for excess heat to

**Petersen Aviation, Inc.**
984 K Road
Minden, NE 68959
Automotive & Aviation Fuel STC's

Phone 308-832-2200
Info@autofuelstc.com
www.autofuelstc.com

# Permission Certificate

This certificate constitutes permission for: Dallas Hewett

to apply Supplemental Type Certificate (STC) number: SA1964CE

to one Aircraft serial number: 28-11221

Registration number: N9483W

and Engine Supplemental Type Certificate (STC) number: SE1909CE

to engine(s) serial number: L-12751-40

Permission for use of the airframe STC for autogas is granted only if the currently installed engine has a Petersen STC for autogas applied directly to it.

This certificate is required by order 8110.69 and as such is to remain part of the permanent aircraft maintenance records along with the STC paperwork. This document is invalid without an **original** signature of the STC holder and the corporate seal of Petersen Aviation, Inc.

Petersen Tracking Number: 11211587

Date: 11/18/2021

T.L. Petersen
Petersen Aviation, Inc.

DO NOT USE FUEL
CONTAINING ETHANOL

Petersen Aviation, Inc.
Route 1, Box 18
Minden, NE 68959

Supplement No. 1

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR

Piper Model PA-28-235 Cherokee

Registration Number N9483W

Serial Number 28-11221

This Supplement must be attached to the FAA Approved Airplane Flight Manual applicable to that particular airplane when the airplane has been modified in accordance with STC SA1964CE. The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

LIMITATIONS:

Fuel:

The use of unleaded automotive gasoline, 87 minimum antiknock index and leaded automotive gasoline, 88 minimum antiknock index (RON + MON)/2 per ASTM Specification D-439 is approved. Intermixing with aviation gasoline is also approved.

FAA APPROVED John Baker

FOR Manager, Wichita Aircraft Certification Office
Central Region
Wichita, Kansas

Date March 23, 1984

United States of America

Department of Transportation — Federal Aviation Administration

# Supplemental Type Certificate

*Number* SE1909CE

*This certificate, issued to* Petersen Aviation, Inc.
Route 1, Box 18
Minden, NE 68959

*certifies that the change in the type design for the following product with the limitations and conditions thereof as specified hereon meets the airworthiness requirements of Part* 13 *of the* Civil Air *Regulations.* (See Type Certificate Data Sheet 5E-1 for complete certification basis)

*Original Product — Type Certificate Number:* E-295
*Make:* Avco Lycoming
*Model:* O-540-B1A5, -B1B5, -B1D5, -B2A5, -B2B5, -B2C5, -B4A5, -B4B5

*Description of Type Design Change:*
Add the following approved fuel: unleaded automotive gasoline, 87 minimum antiknock index and leaded automotive gasoline, 88 minimum antiknock index, (RON + MON)/2, per ASTM Specification D-439. Intermixing with aviation gasoline also approved. Data Required: 1. A copy of this certificate. 2. Petersen Drawing P-91084 dated October 12, 1983, or later "FAA Approved" revisions.

*Limitations and Conditions:*
This approval should not be extended to other specific engines of the above models on which other previously approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of the engines. Specific approval must be obtained for each model aircraft to insure compatibility with its fuel system.

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* May 11, 1983

*Date of issuance:* November 18, 1983

*Date reissued:*

*Date amended:*

*By direction of the Administrator*

Robert E. Whittington
*(Signature)*

Robert E. WHittington
Director, New England Region
*(Title)*

*Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.*

*This certificate may be transferred in accordance with FAR 21.47.*

FAA Form 8110-2 (10-68)

United States of America

Department of Transportation — Federal Aviation Administration

# Supplemental Type Certificate

*Number* SA1964CE

*This certificate, issued to* Petersen Aviation, Inc.
Route 1, P. O. Box 18
Minden, Nebraska 68959

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part* 3 *of the* Civil Air Regulations.

*Original Product — Type Certificate Number:* 2A13

*Make:* Piper

*Model:* PA-28-235

*Description of Type Design Change:*

Operation of airplane on unleaded automotive gasoline, 87 minimum antiknock index and leaded automotive gasoline, 88 minimum antiknock index (RON + MON)/2 per ASTM Specification D-439. Intermixing with aviation gasoline also approved. DATA REQUIRED: Petersen Drawing List Piper Cherokee 235 dated December 12, 1983, or later "FAA Approved" revision. Airplane Flight Manual Supplement dated March 23, 1984, or later "FAA Approved" revisions.

*Limitations and Conditions:*

Limited to those airplanes equipped with Lycoming O-540-B2B5, -B1B5 and -B4B5 engines modified in accordance with STC SE1909CE. This approval should not be extended to other specific airplanes of this model on which other previously approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of the airplanes.

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* November 6, 1983

*Date of issuance:* March 23, 1984

*Date reissued:* 1 1 1 1 8 5

*Date amended:*

*By direction of the Administrator*

Robert A. Gambrill, Jr.
*(Signature)*

Robert A. Gambrill, Jr., Manager
Wichita Aircraft Certification Office
*(Title)*

*Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.*

*This certificate may be transferred in accordance with FAR 21.47.*

FAA Form 8110-2 (10-68)

FAA - PMA
Petersen Aviation, Inc.
Fuel Placard #LP91098
For Installation on:
Piper Cherokee 235 PA-28

INSTALL

Kit AF PA-28

Step 1:
Install enclosed fuel placard at all fuel loading points.

The installation of this STC is dependent upon STC # SE1909CE being installed on the aircraft engine. The airframe cannot have as STC without installing the engine STC.

Note: When Kit AF PA-28 is installed, complete FAA Form 337 and make entry in logbook.



**N9483W**

1121157

| | | | |
|---|---|---|---|
| Date | 12/12/83 | Installation Instructions | Petersen Aviation Route 1, Box 18 Minden, NE 68959 |
| Scale | None | | |
| Draftsman | L.L. Petersen | Piper Cherokee 235 PA-28 | Drawing Number |
| Check | L.L. Petersen | | LP91098A |

ENGINEERING CHANGE NOTICE No. 5 Sheet 1 of 2

| PRODUCT: Adel Clamp/Engine Placard | No. | Revision Date | By |
|---|---|---|---|
| EFFECTIVITY DATE: May 23, 2007 | A | 5/23/07 | TLP |
| Change by: TLP Date: May 23, 2007 | | | |

Subject of Change: Replace Adel Clamps with Embossed Stainless Steel Placard Material.
Reason for Change: Adel Clamps increase shipping charges and change mail classification.

INSTRUCTIONS: Use MS20613-3C2 Rivet to attach enclosed the stainless steel embossed engine placard in place of the Clamp-Identification Plate, in the location called out on the engine STC Installation Instructions.

| Inst. Dwg No. | Clamp Dwg No. | STC No. | New Dwg No. | Engine | Distribution: Primary File | FAA/Wichita | FAA/KC MIDO |
|---|---|---|---|---|---|---|---|
| SS-50-2 | SS-50-1 | SE2590CE | 325 | Warner | Yes | Yes | No |
| SS-50-2 | SS-50-1 | SE2591CE | 325 | Warner | Yes | Yes | No |
| SS-50-2 | SS-50-1 | SE2592CE | 325 | Warner | Yes | Yes | No |
| SS-50-2 | SS-50-1 | SE2593CE | 325 | Warner | Yes | Yes | No |
| F-97210 | F-97211 | SE2127CE | 325 | Franklin | Yes | Yes | No |
| J-764878 | J-764877A-E | SE2416CE | 325 | Jacobs | Yes | Yes | No |
| J-764878 | J-764877A-E | SE2417CE | 325 | Jacobs | Yes | Yes | No |
| J-764878 | J-764877A-E | SE2418CE | 325 | Jacobs | Yes | Yes | No |
| J-764878 | J-764877A-E | SE2419CE | 325 | Jacobs | Yes | Yes | No |
| J-764878 | J-764877A-E | SE2420CE | 325 | Jacobs | Yes | Yes | No |
| A-65 | C8915 | SE2029CE | 325 | A-65 | Yes | Yes | No |
| A-75 | C8918 | SE2030CE | 325 | A-75 | Yes | Yes | No |
| C-75/C-85 | C8914 | SE2030CE | 325 | C-75/C-85 | Yes | Yes | No |
| C-90/0-200 | C8912 | SE2031CE | 325 | C-90/0-200 | Yes | Yes | No |
| C-115/C-125 | C8913 | SE2032CE | 325 | C-115/C-125 | Yes | Yes | No |
| C-165/185 | C8919 | SE2033CE | 325 | E-165/E-185 | Yes | Yes | No |
| C-225 | 8920 | SE2034CE | 325 | E-225 | Yes | Yes | No |
| C791277 | C891278 | SE2006CE | 325 | 0-300/C-145 | Yes | Yes | No |
| C791277 | C891278 | SE2105CE | 325 | GO-300 | Yes | Yes | No |
| P-764956 | P-764957 | SE1997CE | 325 | 0-470 | Yes | Yes | No |
| P-764956 | P-764957 | SE2094CE | 325 | 0-470 | Yes | Yes | No |
| P-764956-10 | P-764957 | SE2016CE | 325 | I0-470 | Yes | Yes | No |
| C-764878 | C-764877 | SE2028CE | 325 | W-670 | Yes | Yes | No |
| LO-764878 | LO-764877 | SE2466CE | 325 | 0-145-A1 | Yes | Yes | No |
| LO-764878 | LO-764877 | SE2465CE | 325 | 0-145-B1 | Yes | Yes | No |
| L-235 | C8916 | SE2035CE | 325 | 0-235 | Yes | Yes | No |
| 235-2-91 | 235-1-91 | SE2606CE | 325 | 0-235-L, M, N, F | Yes | Yes | No |
| L-290 | C8917 | SE2036CE | 325 | 0-290 | Yes | Yes | No |
| L742 | P-91084 | SE1931CE | 325 | 0-320 | Yes | Yes | No |
| 320-2-91 | 320-91 | SE2587CE | 325 | 0-320-160hp | Yes | Yes | No |
| 360-4 | 360-3 | SE2574CE | 325 | 0-360 | Yes | Yes | No |

# BRACKETT AIRCRAFT RADIO, INC.
# 1911 McKINLEY AVENUE
# LA VERNE, CALIFORNIA 91750

# WEIGHT AND BALANCE COMPUTATION
# REPAIR STATION #T03R874L

rk Order: 1675
raft Make: Piper
al Number: 24-11221

Dated: 18 MARCH,1994
Model: PA-24-235
Registration: N9483W

rious Aircraft Data:

| | |
|---|---|
| Gross Weight (lbs)= | 2,900.0 |
| Empty Weight (lbs)= | 1607.0 |
| Arms (ins)= | 84.2 |
| Moment (lb-ins)= | 135397 |

anges:

| | Weight (lbs) | Arm (ins) | Moment (lb-ins) |
|---|---|---|---|
| emove NARCO MK12B COM/NAV | -6.5 | -61.9 | |
| emove V0A9/VOR/ILS | -2.95 | -64.4 | |
| EMOVE MP-12A1 AUDIO POWER | -4.2 | -186.0 | |
| EMOVE UGR-2 G/S RECEIVER | -2.1 | -173.8 | |
| DD NARCO MK12D COM/NAV | 6.0 | 63.0 | |
| DD NARCO ID825 ILS/IND | 1.0 | 66.0 | |
| DD CI-1125 COUPLER | 0.2 | 63.0 | |

w Aircraft Data:

| | |
|---|---|
| Useful Load (lbs)= | 1299.2 |
| Empty Weight (lbs)= | 1600.8 |
| Arms (ins)= | 83.9 |
| Moment (lb-ins)= | 134244.4 |

prepared by Frank Phillips