CHEROKEE 'B' OWNER'S HANDBOOK 11 23 -180 See 28- 1244 ~ 599, 3 5 4 4 4 4 555 57 555 57 4 PP 67 67 29 67 85 67 Start L my Rung 1800 BAC 74 BRL 85 Call 100 - de

and the second Juer a hee PIPER AIRCRAFT CORPORATION Model PA-28-150, PA-28-160 & PA-28-180 Owner's Handbook 5/1 1294 Piper PA28-180 SR VERO BEACH, FLORIDA the 5 · Angle diser **Madd** The ridder pechals are suspended from a torque tide Which extends we say the fisclage . The pulot Abould besome function with the proper positioning of his feet on the vides pedals so as to avoid whethere with the torque Jube when woring the richer polals on operatury the tac brakes, N/ARNING

, 85<sup>-</sup> Sr. CI 18 29 BAC 74 80 60 BP ( Fuel Cap. 50 gal. Usable Fuel 50 gal. Fuel Oct. 9/46 Color 8/20 GW<u>2460</u> lbs. EW <u>1318</u> lbs. Useful Wt. <u>(b/1</u> lbs. Baggage Cap. 200 lbs AC MAKE & MODEL PIPEA PA 28-180 REMARKS AIRCRAFT PERFORMANCE AND EQUIPMENT SUMMARY Distance (50 ft.) /625-Distance (50 ft.) //50 \*Standard Day Conditions @ Maximum Gross Weight Vy PS mph 4.6 V<sub>51</sub> mph = V<u>r 60</u> mph ۷<sub>×</sub> <u>کل</u> mph V<sub>cl</sub> *[00* mph dam V<sub>fe</sub> // 5 mph Vso 57 mph V<sub>s167</sub> mph Vne 210 mph V<sub>no</sub> <u>73 </u>mph Va 129 mph 1.2 Vso 69 mph 1.3 Vso ZS mph Vg BB mph 1.4 V so & 2 mph -1.5 V<sub>52</sub>\_\_\_\_\_h Oil Capacity 8 ats. Grade 9442 50 Engine Ratin<u>g 180 hp @ 2*1*00</u> rpm Ldg. Gear Extension Spee<del>d XX</del> Pwr-off Stall Speed Ldq. Conf. Takeoff Ground Run 720 ft. Electrical Output 60 amps Landing Ground Roll 600 ft. Pwr-off Stall Speed Clean Speed for Maximum Glide Design Maneuvering Speed Normal Operating Speed Flap Extension Speed Never Subceed Speed Never Exceed Speed Best Angle Climb Best Rate Climb Thim Speed (2) Rotation Speed Approach Speed Leim Spped (1) Normal Climb Fence Speed

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<b>Operating Instructions:</b>	Preflight	Starting	Warm-up	Ground Check	Take-off .	Climb .	Stalls .	Cruising .	Approach and Landing	Ground Handling and Mooring	Weight and Balance

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Additional copies of this manual may be purchased by writing to the SERVICE SPARES DIVISION, PIPER AIRCRAFT CORPORATION, Lock Haven, Pennsylvania, 17745, U.S.A.

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200 15 Published by PUBLICATIONS DEPARTMENT Piper Aircraft Corporation 753 600 Issued: November 1963 Revised: April 1966

### SECTION I

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Power Plant .	Performance	Weights .	Fuel	Baggage	Dimensions .	Landing Gear

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## SPECIFICATION FEATURES:

POWER PLANT	PA - 28 - 150	PA - 28 - 160	PA - 28 - 180
Engine - Lycoming	*O-320-A2B	*O-320-B2B	O-360-A2A
Engine - Lycoming	**0-320-E2A	7*U-32U-172A	180
Rated Horsepower	001	2700	2700
Rated Speed KFM	2/00	5 1 25	5.125
Bore, inches	071.C	241.0	4 375
Stroke, inches	c/8.E	C/0.C	
Displacement			0 170
(cubic inches)	319.8	319.8	0.105
Compression Ratio	7:1	8.5:1	8.5:1
Drv Weight, pounds	272	278	285
Fuel Consumption			1
(75% nower, gph)	6	6	10
Oil Sump Capacity (qts)	lts) 8	8	8
Fuel Aviation Grade			
Octane	80	91/96	96/16
Propeller (Sensenich) M74DM58	() M74DM58	M74DM60	M76EMM60
PERFORMANCE			
Take-off Run, ft.	800	775	775
Best Rate of Climb			
Speed (MPH)	85	85	85
Rate of Climb (ft.			
per min.)	660	700	7.20
Service Ceiling (ft.)	14, 300	15,000	15,700
Absolute Ceiling	16, 800	17, 500	18, 300
_ [	139 (142***)	141 (144***)	150

This engine used in Cherokee with Serial Nos. 28-1 to 28-510
This engine used in Cherokee with Serial Nos. 28-511 and up
\*\*Theel fenders optional equipment on PA-28-150 and -160

132

121 (124\*\*\*) 123 (126\*\*\*)

Cruising Speed (75%power, sea level

(HJW)

**SECTION I** 

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CORCIETCATION FRATHRES (CONT.)

SPECIFICATION FEATURES: (cont.)	S: (cont.)		
WEIGHTS P/	PA - 28 - 150	PA-28-160	PA -28-180
USEFUL LOAD			
(Standa rd) (lbs)	945	066	1175
Empty Weight			
(AutoFlight) (lbs)	1245	1250	1265
USEFUL LOAD			1
(AutoFlight) (lbs)	905	950	1135
FUEL AND OIL			
Fuel Capacity			
(Standa rd) (gal)	36	36	50
Fuel Capacity (with			
reserve) (gal)	50	50	
Oil Capacity (qts)	8	8	8
	(*2017001	100135*)	125
	1001	10711001	61
naggage space (current)	17	17	1) 80 00
Baggage Door Size (in)	20 x 22	77 X 77	77 X 07
DIMENSIONS			
Wing Span (ft)	30	30	30
Wing Area (sq ft)	160	160	160
Wing Loading (lbs per			
sq. ft)	13.4	13.8	15.0
Length (ft)	23.3	23.3	23.3
Height	7.3	7.3	7.3
Power Loading (lbs			
per HP)	14.3	13.8	13.3
I ANDING GEAR			
Wheel Base (ft)	6.2	6.2	6.2
Wheel Tread (ft)	10	10	10
Tire Pressure (lbs) Nose	24	24	24
Main	24	24	24

\*PA-28 - Scrial Nos. 28-725 and up

PA - 28 - 180 660 mi. 7 hrs. 750 mi. 5 hrs. 600 141 2 57 130 (133\*\*\*) 132 (135\*\*\*) PA - 28 - 160 5.5 hrs. 500 mi. 805 mi. 5 hrs. 580 mi. 695 mi. 7 hrs. 4 hrs.550 9 55 SPECIFICATION FEATURES: (cont) PA - 28 - 150 5.5 hrs. 490 mi. 570 mi. 680 mi. 7 hrs.790 mi. 4 hrs.5 hrs. σ 535 54 Cruising Range (75% 10, 000 ft, std. fuel, 10, 000 ft, reserve Cruising Range (75% Range (55% power, Range (55% power, Stalling Speed (flaps Speed (75% power, power, sea level, power, sea level, (gal. per hr. 75%) Landing Roll (flaps **Optimum Cruising Optimum Cruising Optimum Cruising** Fuel Consumption 7000 ft., MPH) PERFORMANCE reserve fuel) fuel 7.2 gph) down, MPH) down, ft.) std. fuel)

Performance figures are for standard airplanes flown at gross altitude. Any deviation from Standard equipment may result in weight under standard conditions at sea level, or stated changes in performance.

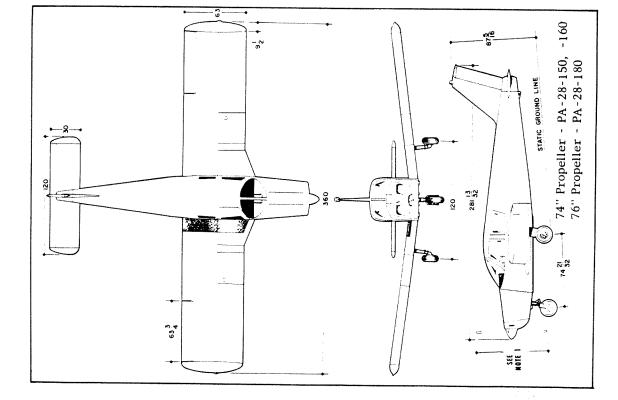
WEIGHTS	PA - 28- 150	<u>PA - 28- 160</u>	<u>PA - 28-180</u>
Gross Weight (lbs) Embty Weight	2150	2200	2400
(Standard) (lbs)	1205	1210	1225

\*\*\*Wheel fenders optional equipment on PA-28-150 and -160

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## SECTION II

## DESIGN INFORMATION

Engine and Propeller			•	·	·	•	•		S
Structures			•	٠	٠	•	•	•	ŝ
Landing Gear			•	٠	٠	•	•	•	9
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Heating and Ventilating System	S S	yst	em	•	•	•	•		6
Cabin Features			:	•	•	•	•		6

PER CHEROKEE SECTION II	SECTION II	DESIGN INFORMATION	ENGINE AND PROPELLER	The Cherokee is powered by a Lycoming engine of either 150, 160 or 180 H.P. (Refer to Power Plant Specifications on Page 1) Each engine is furnished with a starter, 35 ampere 12 volt *generator or **alternator, voltage regulator, shielded ignition, vacuum pump drive, fuel pump and a dry, automotive type carburetor air filter. The exhaust system is a stainless steel cross-over type. A large muffler with heater shroud is provided to supply heat for both the cabin and carburetor de-icing. The propeller used is a Sensenich fixed pitch, all metal aluminum alloy. Refer to the Power Plant Specifications on Page 1 for the model of propeller used with each engine.	URES	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 enamel. 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 652-415 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 <b>*PA-28 Serial Nos. 28-10 c28-507 Inclusive</b>
THE PIPER			ENGINE AN	The Ch 150, 160 or Page 1) Eac 12 volt *ger ignition, va type carbur The ex A large mu for both the The pr aluminum å Page 1 for 1	STRUCTURES	All str designed to requiremen primer and The w inserting th box carry structure, splices at aft attachm The w 652-415 wi ing edge. to be locat

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SECTION II

## THE PIPER CHEROKEE



floor space ahead of the rear seat.

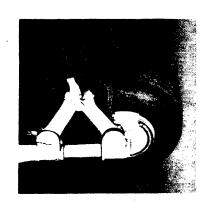
### LANDING GEAR

The three landing gears usea Cleveland 600 x 6 wheel, the main wheels being provided with brake drums and Cleveland single disc hydraulic brake assemblies, No. 30-18. All wheels use 600 x 6 four ply tires with tubes.

The nose gear is steerable through a 30 degree arc 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 three struts are of the air-oil type, with the normal extension being 3-1/2 inches for the nose gear and 2 inches for the main gear.

The brakes are actuated by a hand lever and master cylinder, which is located below and behind the left center of the instrument sub-panel. The brake-fluid reservoir is installed



-fluid reservoir is installed on the top, left, front face of the firewall. The parking brake is incorporated in the master cylinder and is actuated by pulling back on the brake lever and depressing the knob attached to the left side of the handle. Then release the brake lever. To release the parking brake, pull back on the brake lever to disengage the catch mechanism. Then allow the handle to swing forward.

THE PIPER CHERONEE

## CONTROL SYSTEMS

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 on the cabin ceiling. 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 also reduces 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 flaps have three extended positions, 10, 25 and 40 degrees.

### FUEL SYSTEM

Fuel is stored in two twenty-five gallon tanks which are secured to the leading edge structure of each wing by screws and nut plates. This allows easy removal for service or inspection.

The standard quantity of fuel is 36 gallons for the Cherokee 150 and 160 and 50 gallons for the Cherokee 180. To obtain the standard quantity of 36 gallon of fuel on the 150 and 160 fill the tanks only to the bottom of the filler necks, which extends some distance into the tanks. To fill to the standard plus

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<ul> <li>Sindard electrical accessions houlded: Sarter, Electric Fuglies points</li> <li>The fuel strainer, which is equipation to the open of panning is provisions are made to handle be trained regimed with a querk that misc.</li> <li>The fuel strainer, which is equipation.</li> <li>The fuel strainer should be trained regularly to check for water on and selector valve must be writeked to each that num, while selector valve must be writeked to each that num, while selector valve must be writeked to each that while strained strain who encourd on the right side of the instrument.</li> <li>The querture many on and the gaseodator drain who encourd on the right side of the instrument.</li> <li>The querture many on and the gaseodator drain who encourd on the right side of the instrument.</li> <li>The querture many on and the gaseodator drain who encourd on the right side of the instrument on the engine gauge cluster on the right side of the instrument on the engine gauge cluster on the right side of the instrument on the strate on the right side of the instrument on the engine gauge cluster on the right side of the instrument on the strate strate on the right side of the instrument on the strate strate on the right side of the instrument on the strate strate on the right side of the instrument on the strate strate on the right side of the instrument on the strate on the right side of the instrument on the strate on the right side of the instrument on the strate strate on the right side of the instrument on the strate on t</li></ul>		llows the	side of the instrument sub-panel.
<ul> <li>The relation of the frequency of the relation of the relation. The relation of th</li></ul>		to he varied	Standard electrical accessories include: Starter, Electric
<ul> <li>and Annieer.</li> <li>and Annieer.</li> <li>an antiary electric for pupp is provisions are of forcad as optime drawer pump. The exert exert for pupped with a query endinating.</li> <li>The field strainer, which is equipped with a query endinating.</li> <li>The field strainer, which is equipped with a query endinating.</li> <li>The field strainer, which is equipped with a query endinating.</li> <li>The field strainer, which is equipped with a query effaurt as optiment accumulation. To drain the firewalt. This strainer should be frame.</li> <li>The field strainer, which is equipped with a query drain and optiment accumulation. To drain the firewalt. This strainer should be frame.</li> <li>Circit pump on and the gascolater drain with endired.</li> <li>The dominic accumulation. To drain the firewalt. This strainer should be frame.</li> <li>The field strainer, which is equipped with a querk drain size edecire pump on and the gascolater drain with endired.</li> <li>The dominic accumulation.</li> <li>T</li></ul>		5	Fuel Pump, Fuel Gauge, Stall Warning Indicator, Cigar Lighter
			and Ammeter
Interfaction       Instrument Lighting and the Cabin Dome Light are offered as the weight of the output equive three drive the equive three drives the equive three drives of the construction. The equive three drives of the construction of the construction of the output equipacity of the construction. The fuel strainer, which is equipped with a quick drain as construction. The fuel strainer should be on the front hower lot construction. To drain the lines from the answell. This construction and mainteres of the model of the rowals. This construction the drain with the drained to each mark in turn, with the electric plane and the advantages beated the engine gauge cluster on the right seed on the right seed on the right seed on the grant the gascolator drain value gascolator drain value and mainteres. The main advantages beated the engine gauge cluster on the right seed on the rinstrumententh seed on the right seed on the right seed			Navigation Lights, Anti-Collision Light, Landing Light,
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<ul> <li>cated on the front lower left corner of the firevalt. This station and manterance. The main advantages both in settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the settiment secundation. To drain the lines from the tanks, the bottom and manterance. The main advantage is, of course section and the gasolator drain valve opened. Text corner.</li> <li>Fuel quantity and presenter are individed quick drain located at the bottom advantage of the instrument the engine gauge cluster on the right side of the instrument setting.</li> <li>ELECTRICAL SYSTEM</li> <li>The electrical system in the strepty site line. As the battery in the anneter will be indicating the tantor of charging current demanded by the lattery. The anneter will sectore advantage of full charge and relay are mounted in the battery. Will appear on the anneter will sectore advantage of indicating the lattery will appear on the anneter will sectore advantage of indicating the lattery will appear on the anneter will be indicating the lattery. Will appear on the anneter will sectore advantage of indicating the lattery will appear on the anneter will be indicating the lattery will appear on the anneter will be indicating the lattery will appear on the anneter will be indicating the lattery will appear on the anneter will be indicating the lattery will appea</li></ul>	The fuel strainer, which	h is equipped with a quick drain is	and up) is the Piper F.T.P. (Full Time Power) Electricat
<ul> <li>The setting between one of the value of the</li></ul>	located on the front lower	left corner of the firewall. This	System.
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The electrical system in- cludes a 12 volt *generator or **alternator, battery, voltage regulator and master switch relay. The battery voltage in the battery at the time. As the battery becomes charged the amount of current displayed on the ammeter will reduce t about two amperes. When each piece of electrical equipment is switched on, the currents will add up and the total, includin the battery, will appear on the ammeter. The maximum con tinuous load for night flight, with radios on, is about 3 amperes for a fully charged battery, will appear continuous battery conveniently obtained through a removable . <sup>Comerator installed on P. 28, Serial Nos. 28-50 inclusive</sup>	しい語		off (except master switch) the ammeter will be indicating the
Centerator mistalled on PA-28, Serial Nos. 28-50% and up **Alternator mistalled on PA-28, Serial Nos. 28-50% and up		The electrical system in-	amount of charging current demanded by the battery. This
<ul> <li>**alternator, battery, voltage</li> <li>**alternator</li> <li>**altery</li> <li>**alternator</li> <li>**altery</li> <li>**altery</li> <li>**altery</li> <li>**altery</li> <li>**altery</li> <li>**altery</li> <li>**altery</li> <li>**anout of</li> <li>*</li></ul>		cludes a 12 volt *generator or	amount will vary, depending on the percentage of full charge
regulator and master switch relay. The battery, regulator and relay are mounted in the battery compartment immed- iately aft of the baggage com- partment. Access for service or inspection is conveniently obtained through a removable . Generator installed on PA-28, Serial Nos. 28-503 and up . Alternator installed on PA-28, Serial Nos. 28-503 and up . Alternator installed on PA-28, Serial Nos. 28-503 and up		**alternator, battery, voltage	in the battery at the time. As the battery becomes charged,
Telay. The battery, regulator and relay are mounted in the battery compartment immed- iately aft of the baggage com- partment. Access for service or inspection is conveniently betterical switched on, the currents will add up and the total, includin the battery, will appear on the ammeter. The maximum con tinuous load for night flight, with radios on, is about 3 amperes. This 30-ampere value, plus approximately tw amperes for a fully charged battery, will appear continuousl .Generator installed on PA-28, Serial Nos. 28-507 inclusive .Alternator installed on PA-28, Serial Nos. 28-508 and up		regulator and master switch	the amount of current displayed on the ammeter will reduce to
and relay are mounted in the battery, will appear on the ammeter. The maximum con the battery, will appear on the ammeter. The maximum con tinuous load for night flight, with radios on, is about 3 maperes. This 30-ampere value, plus approximately two partnent through a removable or inspection is conveniently obtained through a removable these flight conditions. 28-507 inclusive these flight conditions.		relay. The battery, regulator	about two amperes. When each piece of electrical equipment
battery compartment immed- iately aft of the baggage com- partment. Access for servicethe battery, will appear on the ammeter. The maximum con tinuous load for night flight, with radios on, is about 3 amperes. This 30-ampere value, plus approximately tw amperes for a fully charged battery, will appear continuousl Generator installed on PA-28, Serial Nos. 28-507 inclusive • Alternator installed on PA-28, Serial Nos. 28-508 and upthe battery, will appear on the ammeter. The maximum con tinuous load for night flight, with radios on, is about 3 amperes. This 30-ampere value, plus approximately tw amperes flight conditions.		and relay are mounted in the	is switched on, the currents will add up and the total, including
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Partment. Access for service       amperes. This 30-ampere value, plus approximately two or inspection is conveniently         or inspection is conveniently       amperes for a fully charged battery, will appear continuousl         Electrical Switches       obtained through a removable       under these flight conditions.         *Generator installed on PA-28, Serial Nos. 28-507 inclusive         *Alternator installed on PA-28, Serial Nos. 28-507 inclusive		iately aft of the baggage com-	tinuous load for night flight, with radios on, is about 30
or inspection is conveniently       amperes for a fully charged battery, will appear continuousl         Electrical Switches       obtained through a removable         Generator installed on PA-28, Serial Nos. 28-507 inclusive       under these flight conditions.         *Alternator installed on PA-28, Serial Nos. 28-508 and up       and up		partment. Access for service	amperes. This 30-ampere value, plus approximately two
Electrical Switches obtained through a removable under these flight conditions. •Generator installed on PA-28, Serial Nos. 28-5 to 28-507 inclusive ••Alternator installed on PA-28, Serial Nos. 28-508 and up		or inspection is conveniently	amperes for a fully charged battery, will appear continuously
•Generator installed on PA-28, Serial Nos. 28-1 to 28-507 inclusive ••Alternator installed on PA-28, Serial Nos. 28-508 and up	Electrical Switches	obtained through a removable	under these flight conditions.
••Alternator installed on PA -28, Serial Nos. 28-508 and up	*Generator installed o	1 PA-28, Serial Nos. 28-1 to 28-507 inclusive	
	8 **Alternator installed o	n PA-28, Serial Nos. 28-508 and up	6

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### SECTION II

## THE PIPER CHEROKEE

The amount of current shown on the ammeter will tell immediately whether or not the generator system is operating normally as this amount of current shown should equal the total amount of amperes being drawn by the equipment which is operating.

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

# HEATING AND VENTILATING SYSTEM

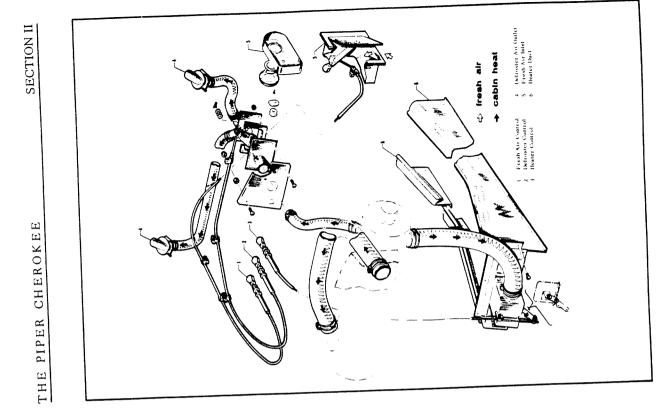
Heat for the cabin interior and the defroster system is provided by a heater muff attached to the exhaust system. The amount of heat desired can be regulated with the controls located on the lower right side of the instrument panel.

A control is provided to regulate the amount of fresh air to the cabin interior. Also provided are side vents at each seat location. These vents are regulated as desired by the seat occupant.

## CABIN FEATURES

The instrument panel of the Cherokee is designed to accommodate the customary advanced flight instruments and all the normally required power plant instruments. The Artificial Horizon, Directional Gyro and the Turn and Bank instruments are vacuum operated through use of a vacuum pump installed on the engine. A natural separation of the flight group and the power group is provided by placing the communications and radio navigational equipment in the center of the panel.

The front seats are adjustable fore and aft for pilot comfort and ease of entry and exit

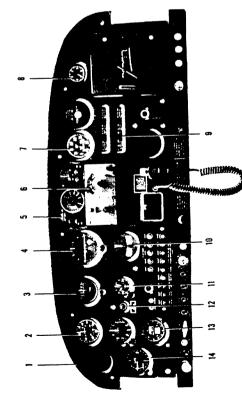


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### SECTION II

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# THE PIPER CHEROKEE



- Compass 1. 3.
- Airspeed Indicator
- **Directional Gyro Indicator** 
  - Gyro Horizon Indicator
  - AutoNav Radio 4. 5. 7.
- Piper PTR-I Radio
  - Tachometer

- Vacuum Gauge . 8 . 6
- Instrument Cluster
- Turn and Bank Indicator 10.
  - Clock 11.
- Stall Warning Light
  - Omni Indicator 12. 13. 14.
- Rate of Climb Indicator

### SECTION III

## OPERATING INSTRUCTIONS

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.00	Starting	Warm-up	Ground	Take-off	Climb	Stalls	Cruising	Approach and	Ground Handling and Mooring	Weight
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<ul> <li>3. a. Check fuel supply visually, and insure that capably secure.</li> <li>b. Drain the fuel tank sumps.</li> <li>c. Check to insure the fuel system vents are open.</li> </ul>	
The airplane should be given a thorough visual inspection prior to each flight. Particular attention should be given to the following items: 1. a. Ignition and battery switches "OFF". 2. a. There is no external damage or operational interfer- ence to the control surfaces, wings or fuselage. b. There is no snow, ice, or frost on the wings or control surfaces.	
see Warning Inside cover PREFLIGHT	
SECTION III OPERATING INSTRUCTIONS	
THE PIPER CHEROKEE SECTION III	

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SECTION III

THE PIPER CHEROKEE

SECTION III

## THE PIPER CHEROKEE

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

b. The tires are satisfactorily inflated and not excessively

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

The windshield is clean and free of defects.

c. The propeller is free of detrimental nicks.

d. There are no obvious fuel or oil leads.

e. The engine oil is at the proper level.

Drain the fuel strainer.

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

7. a. Upon entering the airplane, ascertain that all controls ly stowed.

b. Close and secure the cabin door. operate properly.

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

### STARTING

After completion of the preflight inspection:

1. Lock the wheel brakes.

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

3. Select the desired tank with the fuel valve.

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

 Open the throttle 1/8 to 1/4 inch.
 Turn the electric fuel pump "ON". Turn the electric fuel pump "ON"

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

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

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

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

### WARM-UP

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

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

SECTION III	THE PIPER CHEROKEE	THE PIPER CHEROKEE SECTION III
GROUND CHECK		CLIMB
With the engine running magnetos to only one and note	With the engine running at 1800 RPM, switch from both magnetos to only one and note the RPM loss, switch to the other	The best rate of climb at gross weight will be obtained at 85 miles per hour. The best angle of climb may be obtained
magneto and again note the RPM loss. Drop	RPM loss. Drop off on either	at 74 miles per hour. At lighter than gross weight these
magneto should not exceed 125 RPM. Check both the oil temperature	neto should not exceed 125 RPM. Check both the oil temperature and pressure. The tem-	speeds are reduced somewhat. For climbing enforced a speed of 100 miles per hour is recommended. This will produce
perature may be low for son	perature may be low for some time if the engine is being run	better forward speed and increased visibility over the nose
for the first time of the day, but as long as within limits the engine is ready for take-off.	for the first time of the day, but as long as the pressure is within limits the engine is ready for take-off.	during the climb.
Carburetor heat should	Carburetor heat should also be checked prior to take-off	<u>STALLS</u>
to be sure that the control is operating properly any ice which may have formed during taxiing.	s operating properly, and to clear led during taxiing.	The gross weight stalling speed of the Cherokee with power off and full flans is 54 MPH on the 150, 55 MPH on the 160 and
		57 MPH on the Cherokee 180. This speed is increased 9 miles
TAKE-OFF		per hour with the flaps up.
linet hefore take-off the following items shoul	following items should be checked:	CRUISING
1. Controls free		The cruising speed of the Cherokee is determined by many
2. Flaps "UP"		factors including power setting, altitude, temperature, loading,
3. Tab set		and equipment installed on the airplane.
4. Mixture "RICH"		The normal cruising power is 75% of the rated horsepower
5. Carburetor heat "OFF"	- H	of the engine. True airspeeds which may be obtained at various
6. Fuel on proper tank		altitudes and power settings can be determined from the charts
	ON"	in "Section IV" of this handbook.
	al	
9. Door latched		consumption significantly, especially at high altitudes. The
10. Altimeter set		mixture should always be leaned during cruising operations at
The take-off technique i	The take-off technique is conventional for the Cherokee	75% power or less, but during the climb only at all turbes above
The tab should be set slight	The tab should be set slightly aft of neutral, with the exact	The continuous use of carburetor heat during cruising
setting determined by the loc	setting determined by the loading of the aircraft. Allow the	flight decreases engine efficiency. Unless icing conditions in
airplane to accelerate to 50 to 60 miles per hot hack on the wheel around to be the similand for	airplane to accelerate to 50 to 60 miles per hour, then ease back on the wheel counce to lot the simples for itself off the	the carburetor are severe, do not cruise with the heat on
ground. Premature raising	ground. Premature raising of the nose, or raising it to an	Apply Iuli carburetor near stowly and out for a torn of a second of intervals determined by icing severity.
excessive angle will result in	excessive angle will result in a delayed take-off. After take-	In order to keep the airplane in best lateral trim during
off let the aircraft accelerat	off let the aircraft accelerate to the desired climb speed by	cruising flight the fuel should be used alternately from each
tower trig tile hose stignily.		tank. It is recommended that one tank shound be used for any

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## THE PIPER CHEROKEE

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

## APPROACH AND LANDING

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

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

Normally the best technique for short and slow landings is to use full flap and enough power to maintain the desired airspeed and approach flight path. Mixture should be full rich, fuel on the fullest tank, carburetor heat off, and electric fuel pump on. Reduce the speed during the flareout and contact the ground close to the stalling speed (50 to 60 MPH). After ground contact hold the nose wheel off, as long as possible. As the airplane slows down, drop the nose and apply the brakes. There will be less chance of skidding the tires if the flaps are retracted before applying the brakes. Braking is most effective when back pressure is applied to the control wheel, putting most of the aircraft weight on the main wheels. In high wind conditions, particularly in strong cross winds, it may be desirable to approach the ground at higher than normal speeds, with partial or no flaps.

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### SECTION III



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



secured by looping the safety belt through the control wheel, and pulling it tight. The rudder is held in position by its connections to the nose wheel steering, and normally does not have to be secured. The flaps are locked when in the full up position, and should be left retracted.

## WEIGHT AND BALANCE

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

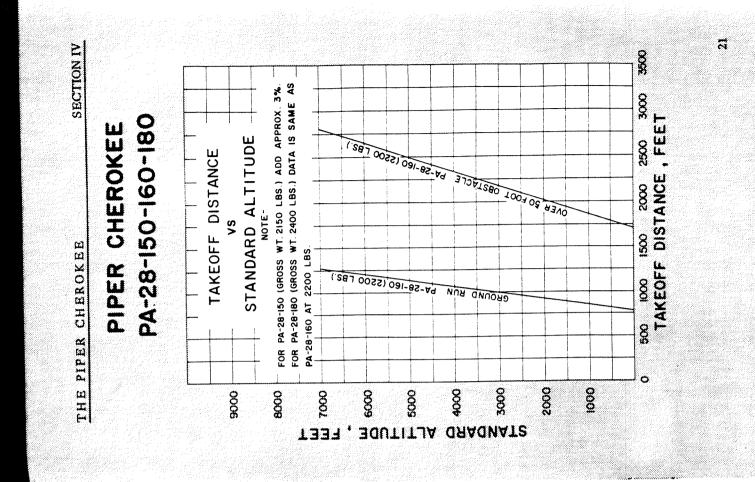
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PERFORMANCE CHARTS

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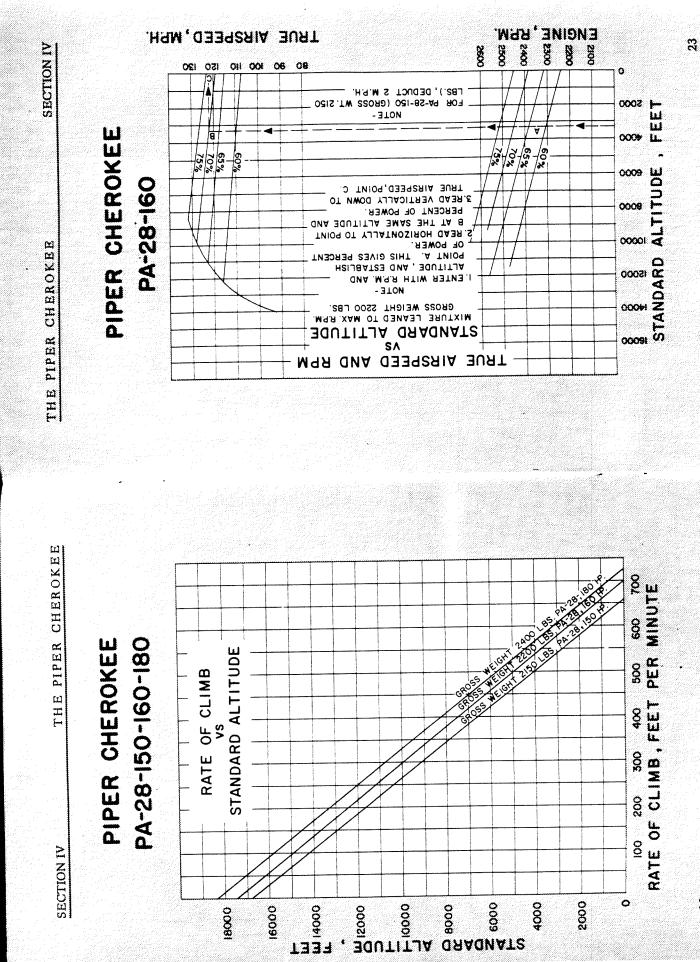
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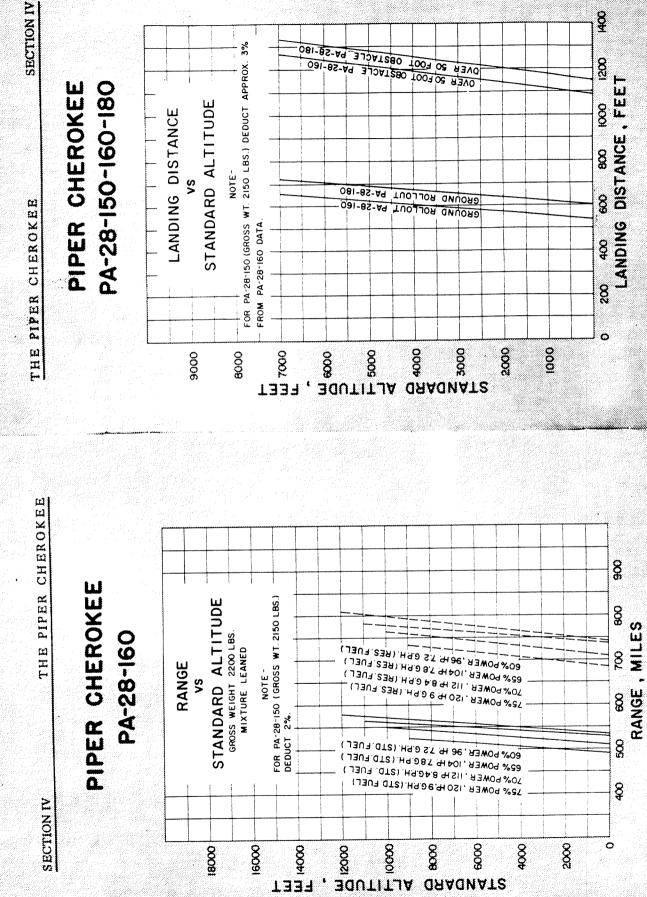
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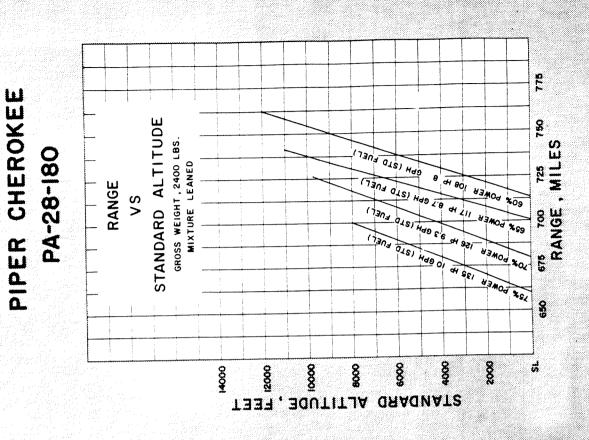
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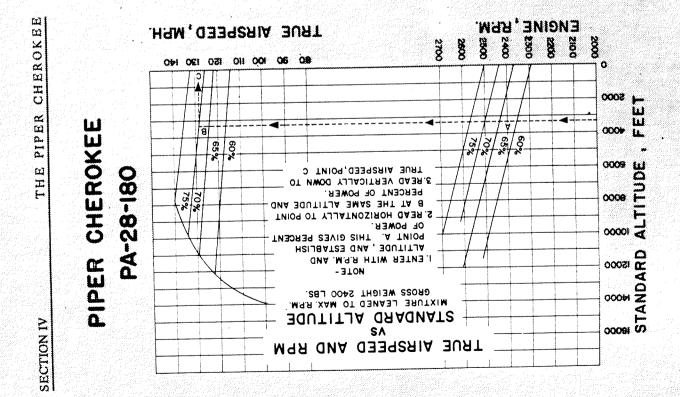




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### 30 . 30 30 . 31 . 31 . 28 27 27 27 . . . • . . . . . Care of Windshield and Windows . Care of Air Filter . Serial Number Plate . . . . . . Leveling and Rigging . . . . Fuel and Oil Requirements . . Landing Gear Service . • Brake Service . . . . . Tire Inflation . . . Battery Service . .

SECTION V

**GENERAL MAINTENANCE** 

THE PIPER CHEROKEE SECTION V	SECTION V	GENERAL MAINTENANCE	TIRE INFLATION	For maximum service from the tires on the Cherokee, keep the tires inflated to the proper pressure of 24 pounds for the main gear, and 24 pounds for the nose wheel. 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 main- tained if at all possible. Out of balance wheels can cause ex- treme vibration on take-off. In the installation of new compo- nents, it may be necessary to rebalance the wheel with the tires mounted.	BATTERY SERVICE	Access to the 12 volt battery is through the right rear bag- gage compartment panel. 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. 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 amprate and finishing with a 2 amp rate. Quick charges are not recommended.	BRAKE SERVICE	The brake system is filled with Univis No. 4 (Petroleum base) hydraulic brake fluid. This should be checked at every 100 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 with fluid, this should

SECTION V

be done by filling with the fluid under pressure, from the brake end of the system. 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.

## LANDING GEAR SERVICE

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.

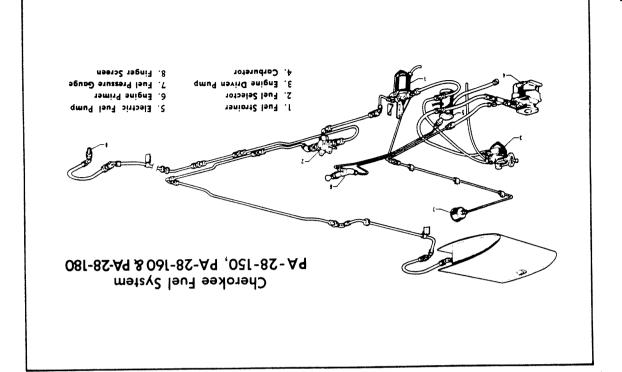
Tires are demounted from the wheels by first deflating the tire, then removing the three through bolts, and separating the wheel halves.

Landing gear oleos on the Cherokee should be serviced according to the instructions on the units. In order to obtain the correct static extension on the main gear struts it is necessary to jack the airplane up until the struts are clear of the ground and fully extended. Using a strut pump, add air until a pressure of 150 pounds is obtained. To add oil to the struts, release the air pressure in the strut, remove the valve core and add oil through this opening with the strut fully extended. After the strut is full compress it to full compression allowing excess air and oil to escape. With the strut as above. The nose strut is serviced with oil the same as the main struts, but in filling with air this strut may be left with the wheel on the ground, attaching the strut pump, and adding air until a strut extension of 3-1/2 inches is obtained.

In jacking the Cherokee for landing gear or other service, a jack kit (available through the Piper Aircraft Service Department) 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 jacking up the aircraft. The hydraulic jacks should be placed under the jack points on the bottom of the wing and the airplane jacked up until the tail

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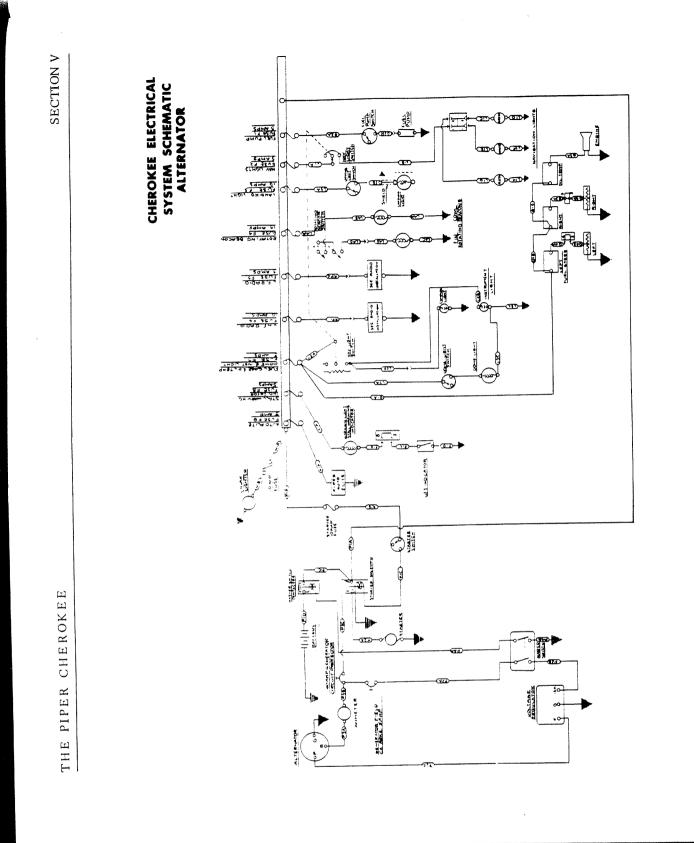


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skid is at the right height to attach the tail stand. After attach- ing the tail stand, and adding the ballast, the jacking may be continued until the aircraft is at the height desired.	windows clean and unmarred. The following procedure is recommended: 1. Flush with clean water and dislodge excess dirt, mud, etc., with your hand.
FUEL AND OIL REQUIREMENTS	ild soap and water. Use a soft cloth
Aviation grade 80 Octane (minimum) fuel must be used in the Cherokee 150 while the Cherokee 160 and 180 will utilize 91 Octane fuel. 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 0-320 series and 0-360	<ul> <li>3. Remove oil, grease or sealing compounds with a soft cloth and kerosene.</li> <li>4. After cleaning, apply a thin coat of hard polishing wax. Rub lightly with a soft cloth.</li> <li>5. A severe scratch or mar may be removed by using jeweler's rouge to rub out the scratch, smoothing, and then applying wax.</li> </ul>
is 8 quarts, and the minimum safe quantity is a quarter into recommended that the oil be changed every 50 hours, or sooner under unfavorable conditions. The following grades are recom-	SERIAL NUMBER PLATE
mended for the specified temperatures: Temperatures above 40 <sup>0</sup> F S.A.E. 50 Temperatures between 10 <sup>0</sup> and 40 <sup>0</sup> F S.A.E. 30 Temperatures below 10 <sup>0</sup> F S.A.E. 20	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.
CARE OF AIR FILTER	LEVELING AND RIGGING
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 following cleaning procedure is recommended by the filter manufacturer: 1. Remove the air-filter landing-light assembly. 2. Remove filter and tap gently to remove dirt particles. Do not blow out with compressed air. 3. Reinstall filter and replace the air-filter landing-light assembly. CARE OF WINDSHIELD AND WINDOWS A certain amount of care is needed to keep the plexiglas	Leveling the Cherokee for purposes of weighing or rigging is accomplished as follows: 1. Partially withdraw two machine screws located immed- iately 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
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movable surfaces all have adjustable stops, as well as adjust- able 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 <sup>0</sup> dihedral, *no wash, **2 <sup>0</sup> washout. 2. Stabilator Travel: 18 <sup>0</sup> up, 2 <sup>0</sup> down, tolerance +/-1 <sup>0</sup> .	CHEROKEE ELECTRICAL SYSTEM SCHEMATIC SYSTEM SCHEMATIC GENERATOR	
fuselage. 4. Ailerons Travel: $30^{\circ}$ up, $15^{\circ}$ down, tolerance +/- $2^{\circ}$ . 5. Flaps Travel: $10^{\circ}$ , $25^{\circ}$ , $40^{\circ}$ , tolerance +/- $2^{\circ}$ . 6. Rudder Travel: $27^{\circ}$ right and left, tolerance +/- $2^{\circ}$ . 7. Stabilator Tab Travel: $3^{\circ}$ up, $12^{\circ}$ down, tolerance		
Cable tensions for the various controls are as follows: Rudder: 40+/-5# Stabilator Trim: 5+/-1# Ailerons: 40+/-5# Flap: 10+/-2# Stabilator: 40+/-5#		<u>^ 1</u>
For purposes of changing the lateral trim, a fixed tab is provided on the leftaileron which may be adjusted as necessary. For extreme cases of wing heaviness, either of the flaps may be adjusted up or down from the zero position as desired.		
	Switch Switch Signified Si	
*Cherokee PA-28, Serial Nos. 28-1 to 28-45, 28-47 to 28-54, 28-56, 28-57, 28-61 to 28-77, 28-79 to 28-84, 28-86 to 28-89, 28-92 to 28-94 inclusive.		bit = collection according to the second se second second sec

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 28-92 to 28-94 inclusive.
 Cherokee PA - 28, Serial Nos. 28-46, 28-55, 28-58, 28-59, 28-60, 28-78, 28-90, 28-91, 28-95 and up.



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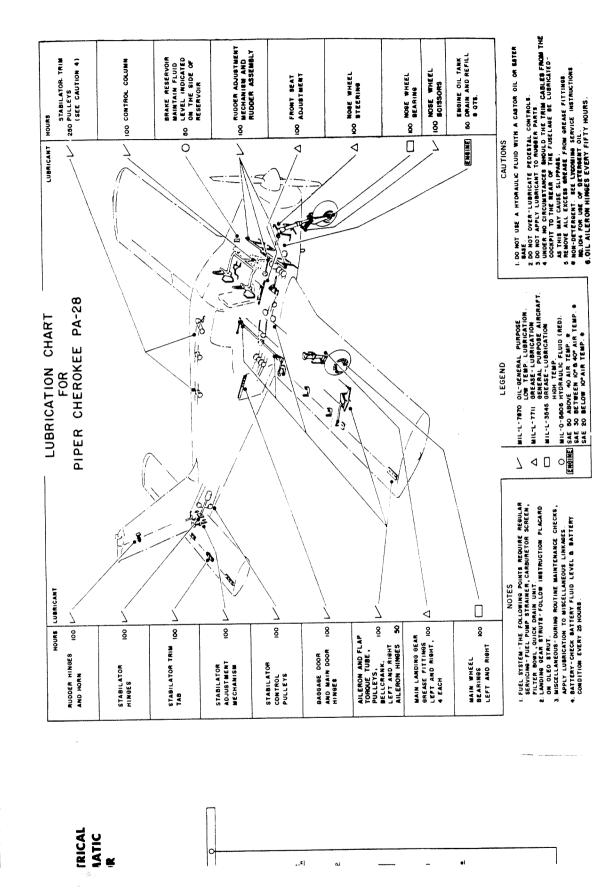
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