AIRPLANE FLIGHT MANUAL

FOR

CHEROKEE WARRIOR

REPORT: VB-573
MODEL: PA-28-151

AIRPLANE FLIGHT MANUAL

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AIRPLANE FLIGHT MANUAL LOG OF REVISIONS

Revision	Revised Pages	Description and Revision	FAA Approved Date
1	All	Completely revised to printed format for assembly into Pilot's Operating Manual 761 563.	H. W. Barnhouse August 1, 1973
	3-5	Revised spin recovery technique, item 3. c.	
2	3-i	Revised Table of Contents	
	3-1	Revised Item C. Propeller Limitations	
	3-2	Revised Airspeed Range	
	3-7	Revised Stall Speed Chart	
	3-9	Revised List of Supplements	
	3-13	Added page and Supplement	
	3-14	Added page	
	3-15	Added page and Supplement C	H. W. Barnhouse
	3-16	Added page	August 30, 1973
3	Title	Added PAC Approval Form. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	D H. Trompler May 31, 1974
4	3-i	Added Item D. Installation of Piper AutoControl IIIB to supplements.	
	3-9	Added Item D. Installation of Piper AutoControl IIIB.	
	3-17, 3-18, 3- 19, 3-20	Added pages (AutoControl IIIB info)	D H. Trompler June 14 1974
5	3-i	Changed Section IV title from Supplements to Optional Equipment; under Section IV - revised item A.; deleted item B.; revised remaining item nos.; added AutoControl III to new item C.	
	3-9	Changed Section IV title from Supplements to Optional Equipment; revised NOTE; revised item A; deleted item B.; revised remaining item letters; added AutoControl III to new item C.	

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5 (cont)	3-11	Deleted (With Pitch Trim Switch) from item A. Electric Pitch Trim Installation	
	3-13	Deleted item B. AutoControl III Installation.	
	3-15	Changed item C. to B.; added new items 2. b. (1) and (2); revised remaining item nos.; deleted item 3 - Performance.	
	3-17	Changed item D. to C.; added AutoControl III to title.	Ward Evans Ward Evans Jan. 17, 1975
	3-20	Deleted IIIB designation from items c. (1) and (2).	
6	3-2	Added ser. no. effectivity to Flaps Extended speed; added new Flaps Extended speed; added ser. no. effectivity to White Arc instrument marking; added new White Arc instrument marking.	
	3-3	Added ser. no. effectivity to Landing Check List; added new Landing Check List.	Ward Evans Ward Evans July 14, 1975
	3-5	Revised item 3. (Spin procedure)	
7	3-20	Revised item c. (1).	Ward Evans Ward Evans Dec. 1, 1975
8	3-1	Revised item B. Fuel.	Ward Evans Ward Evans April 16, 1976
9	3-15	Revised Supplement B. AutoFlite II Installation.	Ward Evans Ward Evans June 3, 1977
10	Title	Added Applicable Serial Numbers (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	Ward Evans Ward Evans Oct. 21, 1977

AIRPLANE FLIGHT MANUAL LOG OF REVISIONS (cont)

Revision	Revised Pages	Description and Revision	FAA Approved Date
11	3-20	Revised item c. (1)	D H Trompler November 10, 1988

SECTION I

LIMITATIONS

The following limitations must be observed in the operation of this airplane:

A. ENGINE
Lycoming O-320-E3D

ENGINE LIMITS
For all operations 2700 RPM, 150 HP

B. FUEL
80/87 octane aviation fuel minimum grade

C. PROPELLER
Sensenich 74DM6, maximum diameter 74 inches. Minimum diameter 72 inches. Static RPM at maximum permissible throttle setting: Not over 2375, not under 2275. No additional tollerance permitted.

McCauley 1C160/EGM7653, maximum diameter 76 inches. Minimum diameter 74.5 inches. Static RPM at maximum permissible throttle setting: Not over 2400, not under 2300. No additional tollerance permitted.

D. POWER INSTRUMENTS

OIL TEMPERATURE	
Green Arc (Normal Operating Range)	75°F to 245°F
Red Line (Maximum)	245° F
OIL PRESSURE	
Green Arc (Normal Operating Range)	60 PSI to 90 PSI
Yellow Arc (Caution Range)	25 PSI to 60 PSI
Red Line (Minimum)	25 PSI
Red Line (Maximum)	90 PSI
FUEL PRESSURE	
Green Arc (Normal Operating Range)	.5 PSI to 8 PSI
Red Line (Minimum)	.5 PSI
Red Line (Maximum)	8 PSI
TACHOMETER	
Green Arc (Normal Operating Range)	500 to 2700 RPM
Red Line (Maximum Continuous Power)	2700 RPM

E. AIRSPEED LIMITATIONS AND AIRSPEED INSTRUMENT MARKINGS (Calibrated Airspeed)

NEVER EXCEED	176 MPH
MAXIMUM STRUCTURAL CRUISE	140 MPH
MANEUVERING	124 MPH
FLAPS EXTENDED(Ser. nos. 7415001 through 7515449)	125 MPH
FLAPS EXTENDED (Ser. nos. 7615001 and up)	115 MPH
MAXIMUM POSITIVE LOAD FACTOR	(Normal Category) 3.8
MAXIMUM POSITIVE LOAD FACTOR	(Utility Category) 4.4
MAXIMUM NEGATIVE LOAD FACTOR	No inverted maneuvers approved

AIRSPEED INSTRUMENT MARKINGS

Red Radial Line (Never Exceed)	176 MPH (153 KTS)
Yellow Arc (Caution Range) (Smooth Air Only)	140 MPH to 176 MPH (122 KTS to 153 KTS)
Green Arc (Normal Operating Range)	64.5 MPH to 140 MPH (56 KTS to 122 KTS)
White Arc (Flap Down Range) (Ser. nos. 7415001 through 7515449)	58 MPH to 125 MPH (50 KTS to 109 KTS)
White Arc (Flap Down Range) (Ser. nos. 7615001 and up)	58 MPH to 115 MPH (50 KTS to 100 KTS)

F. MAXIMUM WEIGHT

Normal Category	2325 LBS
Utility Category	1950 LBS

G. BAGGAGE CAPACITY 200 LBS

H. C. G. RANGE

The datum used is 78.4 inches ahead of wing leading edge at the intersection of the straight and tapered section.

1. Normal Category

Weight (Pounds)	Forward Limit (In. Aft of Datum)	Rearward Limit (In. Aft of Datum)
2325	87.0	93.0
1950	83.0	93.0

2. Utility Category

Weight (Pounds)	Forward Limit (In. Aft of Datum)	Rearward Limit (In Aft of Datum)
1950	83.0	86.5

Straight line variation between points given.

NOTE

It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded. See Weight and Balance Section for proper loading instructions

I. MANEUVERS

1. Normal Category - All acrobatic maneuvers including spins prohibited.
2. Utility Category - Approved maneuvers for Utility Category only.

	Entry Speed
Steep Turns	124 MPH
Lazy Eights	124 MPH
Chandelles	124 MPH

J PLACARDS

In full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATIONS, REFER TO THE AIRPLANE FLIGHT MANUAL.

NO ACROBATIC MANEUVERS ARE APPROVED FOR NORMAL CATEGORY OPERATIONS. SPINS ARE PROHIBITED FOR NORMAL AND UTILITY CATEGORIES."

In full view of the pilot, the following takeoff and landing check lists will be installed:

TAKEOFF CHECK LIST

Fuel on proper tank	Mixture set	Fasten belts/harness
Electric fuel pump on	Seat backs erect	Trim tab - set
Engine gauges checked		Controls - free
Flaps - set		Door - latched
Carb heat off		

1. On aircraft with ser. nos. 7415001 through 7515449.

LANDING CHECK LIST

Fuel on proper tank		Flaps - set (125 mph)
Mixture rich	Seat backs erect	Fasten belts/harness
Electric fuel pump on		

2. On aircraft with ser. nos. 7615001 and up.

LANDING CHECK LIST

Fuel on proper tank		Flaps - set (115 mph)
Mixture rich	Seat backs erect	Fasten belts/harness
Electric fuel pump on		

Adjacent to upper door latch:

"ENGAGE LATCH BEFORE FLIGHT."

On the instrument panel in full view of the pilot:

"DEMONSTRATED CROSSWIND COMPONENT 20 MPH. "

On inside of the baggage compartment door:

"BAGGAGE MAXIMUM 200 LBS"
"UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE AIRPLANE FLIGHT MANUAL WEIGHT AND BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS."

In full new of the pilot:

"ROUGH AIR OR MANEUVERING SPEED - 124 MPH."

"UTILITY CATEGORY OPERATION - NO AFT PASSENGERS ALLOWED."

On the instrument panel in full view of the pilot when the oil cooler winterization kit is installed:

"OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50°F."

In full view of the pilot:

"UTILITY CATEGORY ONLY."

ACROBATIC MANEUVERS ARE LIMITED TO THE FOLLOWING:

	ENTRY SPEED
SPINS PROHIBITED	
STEEP TURNS	124 MPH
LAZY EIGHTS	124 MPH
CHANDELLES	124 MPH

On the instrument panel in full view of the pilot when the supplementary white strobe lights are installed:

"WARNING - TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT, OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE."

SECTION II

PROCEDURES

1. The stall warning system is inoperative with the master switch off.

2. Electric fuel pump must be on for both landing and takeoff.

3 Intentional spins are prohibited. In the event that an unintentional spin is encountered, recovery can be accomplished by immediately using the following procedures:

   a. THROTTLE - IDLE
   b. AILERONS - NEUTRAL
   c. RUDDER - FULL OPPOSITE TO DIRECTION OF ROTATION
   d. CONTROL WHEEL - FULL FORWARD
   e. RUDDER - NEUTRAL (WHEN ROTATION STOPS)
   f. CONTROL WHEEL - AS REQUIRED TO SMOOTHLY REGAIN LEVEL FLIGHT ATTITUDE

4. Except as noted above, all operating procedures for this airplane are normal.

SECTION III

PERFORMANCE

The following performance figures were obtained during FAA type tests and may be realized under conditions indicated with the airplane and engine in good condition and with average piloting technique. All performance is given for 2325 pounds.

Loss of altitude during stalls varied from 100 to 275 feet, depending on configuration and power.

Stalling speeds, in mph, power off, versus angle of bank (Calibrated Airspeed):

Angle of Bank	0°	20°	40°	50°	60°
Flaps Up	64.5	67	74	80	91
Flaps Down	58	60	66	72	82

SECTION IV

OPTIONAL EQUIPMENT

NOTE

THE INFORMATION CONTAINED IN THIS SECTION APPLIES WHEN THE RELATED EQUIPMENT IS INSTALLED IN THE AIRCRAFT.

A. Electric Pitch Trim Installation

B. AutoFlite II Installation

C. Installation of Piper AutoControl III and/or AutoControl IIIB

A. ELECTRIC PITCH TRIM INSTALLATION

The following emergency information applies in case of electric pitch trim malfunction:

1. In case of malfunction, disengage electric pitch trim by pushing pitch trim switch on instrument panel to OFF position.

2. In an emergency, electric pitch trim may be overpowered using manual pitch trim.

3. In cruise configuration, malfunction results in 10° pitch change and 200 ft altitude variation.

4. In approach configuration, a malfunction can result in a 5° pitch change and 50 ft altitude loss.

B. AUTOFLITE II INSTALLATION

This supplement must be used in conjunction with the applicable FAA Approved Airplane Flight Manual when Piper AutoFlite II, Model AK430 is installed in accordance with STC SA1406SW or STC SA3066SW-D. The information contained herein supplements the information of the basic Airplane Flight Manual; for limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

1. LIMITATIONS
   - a. Autopilot use prohibited above 170 MPH CAS.
   - b. Autopilot OFF during takeoff and landing.

2. PROCEDURES
   - a. Normal Operation
     - (1) Engagement
       - (a) Rocker switch on instrument panel - ON.
       - (b) Interrupt switch on left hand side of pilot's control wheel - RELEASED.
     - (2) Disengagement
       - (a) Depress interrupt switch on pilot's control wheel (or)
       - (b) Rocker switch on instrument panel - OFF.
     - (3) Heading Changes
       - (a) Depress interrupt switch, make heading change, release interrupt switch.
       - (b) Move trim knob on instrument for drift correction from a constant heading.
       - (c) Move turn command knob on instrument for right or left banked turns.
     - (4) OMNI Tracker
       - (a) Center turn command knob and push IN to engage tracker.
       - (b) Trim knob - push IN for high sensitivity.
   - b. Emergency Operation
     - (1) In case of malfunction DEPRESS and hold interrupt switch on pilot's control wheel.
     - (2) Rocker switch on instrument panel - OFF.
     - (3) Unit may be overpowered manually.
     - (4) In climb, cruise or descent configuration a malfunction with a 3 second delay in recovery initiation results in 60 bank and 320' altitude loss. Maximum altitude loss measured at 170 MPH CAS in a descent.
     - (5) In approach configuration a malfunction with a 1 second delay in recovery initiation results in 15 bank and 20' altitude loss.

3. PERFORMANCE

   No change.

C. INSTALLATION OF PIPER AUTOCONTROL III AND/OR AUTOCONTROL IIIB

1. LIMITATIONS
   a. Autopilot OFF during takeoff and landing.
   b. Autopilot use prohibited above 140 MPH CAS.

2. PROCEDURES
   a. PREFLIGHT
      (1) Roll Section
         (a) Place Radio Coupler in "Heading" mode and place A/P ON/OFF switch in the "ON" position to engage roll section. Rotate roll command knob Left and Right and observe control wheel describes a corresponding Left and Right turn, then center knob.
         (b) Set proper D.G. Heading on D.G. and turn Heading Indice to aircraft heading. Engage "Heading" mode switch and rotate Heading Indice right and left. Aircraft control wheel should turn same direction as Indice. While D.G. indice is set for a left turn, grasp control wheel and override the servo to the right. Repeat in opposite direction for right turn.
         (c) If VOR signal available check Omni mode on Radio Coupler by swinging Omni needle left and right slowly. Observe that control wheel rotates in direction of needle movement.
         (d) Disengage by placing the A/P ON/OFF switch to the "OFF" position.

   b. IN-FLIGHT
      (1) Trim airplane (ball centered).
      (2) Check air pressure or vacuum to ascertain that the Directional Gyro and Attitude Gyro are receiving sufficient air.
      (3) Roll Section
         (a) To engage, center Roll Command Knob, place the A/P ON/OFF switch to the "ON" position. To turn rotate roll command knob in desired direction. (Maximum angle of bank should not exceed 30°.)
         (b) For heading mode, set Directional Gyro with Magnetic Compass. Push directional gyro HDG knob in, rotate to aircraft heading. Place the console HDG ON/OFF switch to the "ON" position. To select a new aircraft heading, push D.G. heading knob IN and rotate, in desired direction of turn, to the desired heading.

NOTE

In HDG mode the maximum bank angles are limited to approximately 20° and single command, heading changes should be limited to 150°. (HDG Indice not more than 150° from actual aircraft heading.)

(4) VOR

(a) To Intercept:

1. Using OMNI Bearing Selector, dial desired course, inbound or outbound.
2. Set identical heading on Course Selector D G.
3. After aircraft has stabilized, position coupler mode selector knob to OMNI mode. As aircraft nears selected radial, interception and crosswind correction will be automatically accomplished without further switching.

NOTE

If aircraft position is less than 45° from selected radial, aircraft will intercept before station. If position is more than 45°, interception will occur after station passage. As the aircraft nears the OMNI station, (1/2 mile) the zone of confusion will direct an "S" turn in alternate directions as-the OMNI indicator needle swings. This alternate banking limited to the standard D.G. bank angle, is an indication of station passage.

(b) To select new course:

1. To select a new course or radial, rotate the HDG indice to the desired HDG (match course).
2. Rotate OBS to the new course. Aircraft will automatically turn to the intercept heading for the new course.

(c) To change stations:

1. If same course is desired, merely tune receiver to new station frequency.
2. If different course is desired, position coupler mode selector to HDG mode. Dial course selector D.G. to new course. Dial OBS to new course and position coupler mode selector to OMNI mode.

(5) VOR Approach

Track inbound to station as described in VOR navigation section. After station passage:

(a) Dial outbound course on Course Selector D.G., then dial same course on OBS.

(b) After established on outbound radial, position coupler mode selector to HDG mode and select outbound procedure turn heading. After 40 seconds to 1 minute select a turn in the desired direction with the Course Selector D.G. to the inbound procedure turn heading.

(c) Set OBS to inbound course.

(d) When aircraft heading is 45° to the inbound course, dial Course Selector D.G. to inbound course and position coupler mode selector to OMNI mode.

NOTE

For precise tracking over OMNI station, without "S" turn, position coupler mode selector to HDG mode just prior to station passage. If holding pattern is desired, position coupler mode selector to HDG mode at station passage inbound and select outbound heading in direction of turn. After elapsed time, dial inbound course on Course Selector D.G. When aircraft heading is 45° to radial, position coupler mode selector to OMNI mode.

(6) LOC Approach Only
   (a) To intercept dial ILS outbound course on Course Selector D.G. When stabilized, position coupler mode selector to LOC REV mode.
   (b) After interception and when beyond outer marker position coupler mode selector to HDG mode and dial outbound procedure turn heading. After one minute, dial inbound procedure turn heading in direction of turn.
   (c) When aircraft heading is 45° to ILS inbound course dial inbound course on Course Selector D.G and position coupler mode selector to LOC NORM mode.
   (d) At the missed approach point (M.A.P.) or when missed approach is elected, position coupler mode selector to HDG mode and execute missed approach procedure.

(7) LOC Approach - Back Course (Reverse).
   (a) To intercept dial ILS Back Course outbound heading on Course Selector D.G. When stabilized, position coupler mode selector to LOC NORM mode.
   (b) After interception and when beyond fix, position coupler mode selector to HDG and dial outbound procedure turn heading. After one minute, dial inbound procedure turn heading in direction of turn.
   (c) When heading 45° to inbound course, dial inbound course on Course Selector D.G. and position coupler mode selector to LOC REV mode.
   (d) Approximately 1/2 mile from runway, position coupler mode selector to HDG mode to prevent "S" turn over ILS station near runway threshold.
   (e) Missed approach - same as Front Course. (See (6) d)

c. EMERGENCY OPERATION

(1) In an emergency the AutoControl can be disconnected by placing the A/P ON/OFF switch to the OFF position.

(2) The AutoControl can be overpowered at either control wheel.

(3) An Autopilot runaway, with a 3 second delay in the initiation of recovery while operating in a climb, cruise or descending flight could result in a 60° bank and 100 foot altitude loss.

(4) An Autopilot runaway, with a 1 second delay in the initiation of recovery during an approach operation, coupled or uncoupled. could result in a 10° bank and 100 foot altitude loss.

3. PERFORMANCE

No change.