

PILOT'S OPERATING HANDBOOK

PIPER CHEROKEE ARCHER II



FAA APPROVED IN NORMAL AND UTILITY CATEGORIES BASED ON CAR 3 AND FAR PART 21, SUBPART J. THIS HANDBOOK INCLUDES THE MATERIAL REQUIRED TO BE FURNISHED TO THE PILOT BY CAR 3 AND FAR PART 21, SUBPART J AND CONSTITUTES THE APPROVED AIRPLANE FLIGHT MANUAL AND MUST BE CARRIED IN THE AIRPLANE AT ALL TIMES.

AIRPLANE SERIAL NO. 28-7790002

AIRPLANE REGISTRATION NO. N4052F

PA-28-181
REPORT: VB-790

FAA APPROVED BY: Ward Evans
WARD EVANS
D.O.A. NO. SO-1
PIPER AIRCRAFT CORPORATION
VERO BEACH, FLORIDA

DATE OF APPROVAL: JUNE 18, 1976

WARNING

EXTREME CARE MUST BE EXERCISED TO LIMIT THE USE OF THIS MANUAL TO APPLICABLE AIRCRAFT. THIS MANUAL REVISED AS INDICATED BELOW OR SUBSEQUENTLY REVISED IS VALID FOR USE WITH THE AIRPLANE IDENTIFIED ON THE FACE OF THE TITLE PAGE WHEN OFFICIALLY APPROVED. SUBSEQUENT REVISIONS SUPPLIED BY PIPER AIRCRAFT CORPORATION MUST BE PROPERLY INSERTED.

MODEL PA-28-181, CHEROKEE ARCHER II

PILOT'S OPERATING HANDBOOK, REPORT: VB-790 REVISION

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PIPER AIRCRAFT CORPORATION

APPROVAL SIGNATURE AND STAMP

M. Keller



Published by
PUBLICATIONS DEPARTMENT
Piper Aircraft Corporation
Issued: June 18, 1976

APPLICABILITY

Application of this handbook is limited to the specific Piper PA-28-181 model airplane designated by serial number and registration number on the face of the title page of this handbook.

This handbook cannot be used for operational purposes unless kept in a current status.

REVISIONS

The information compiled in the Pilot's Operating Handbook will be kept current by revisions distributed to the airplane owners.

Revision material will consist of information necessary to update the text of the present handbook and/or to add information to cover added airplane equipment.

I. Revisions

Revisions will be distributed whenever necessary as complete page replacements or additions and shall be inserted into the handbook in accordance with the instructions given below:

1. Revision pages will replace only pages with the same page number.
2. Insert all additional pages in proper numerical order within each section.
3. Page numbers followed by a small letter shall be inserted in direct sequence with the same common numbered page.

II. Identification of Revised Material

Revised text and illustrations shall be indicated by a black vertical line along the outside margin of the page, opposite revised, added or deleted material. A line along the outside margin of the page opposite the page number will indicate that an entire page was added.

Black lines will indicate only current revisions with changes and additions to or deletions of existing text and illustrations. Changes in capitalization, spelling, punctuation or the physical location of material on a page will not be identified by symbols.

ORIGINAL PAGES ISSUED

The original pages issued for this handbook prior to revision are given below:

Title, ii through v, 1-1 through 1-14, 2-1 through 2-8, 3-1 through 3-12, 4-1 through 4-16, 5-1 through 5-28, 6-1 through 6-52, 7-1 through 7-26, 8-1 through 8-16, 9-1 through 9-14, 10-1 through 10-2.

PILOT'S OPERATING HANDBOOK LOG OF REVISIONS


Current Revisions to the PA-28-181 Cherokee Archer II Pilot's Operating Handbook, REPORT: VB-790
issued June 18, 1976

Revision Number and Code	Revised Pages	Description of Revision	FAA Approval Signature and Date
Rev. 1 - 761 624 (PR760804)	2-1	Revised "Never Exceed Speed" KIAS value.	<i>Ward Evans</i> Ward Evans August 4, 1976
	2-2	Revised Airspeed Indicator Markings.	
	6-i	Revised report number at bottom of page.	
	6-41	Revised Arm and Moment for item 177.	
	6-43	Revised items 193, 195 and 197.	
Rev. 2 - 761 624 (PR770120)	3-4	Revised Open Door procedure.	<i>Ward Evans</i> Ward Evans Jan. 20, 1977
	3-11	Revised para. 3.27 info.	
	4-7	Added Caution to para. 4.9; relocated material to page 4-8.	
	4-8	Added relocated material from page 4-7.	
	4-14	Added Note to para. 4.31.	
	4-15	Revised stall speed in para. 4.35.	
	5-4	Revised wording in para. 5.5 (c).	
	5-6	Revised fuel quantity figure in para. 5.5 (g).	
	5-23	Revised 55% & 75% range figures in Fig. 5-25.	
	6-4	Added A & B values to Fig. 5-1.	
	6-5	Revised weight and balance formula.	
	6-21	Added Weight, Arm and Moment to item 29 a.; added item 29 b.; changed existing item 29 b. to 29 c.	
	6-35	Revised item 79 Arm and Moment.	
	6-37	Revised item 115 Dwg. 99002-5 to -8 and item 117 Dwg. 99003-5 to -7.	
	6-44	Revised footnote.	
	6-48	Revised item 257b. Arm and Moment.	
	7-21	Added info to para. 7.25.	
	10-1	Revised 10.3(c); relocated material to page 10-2.	
	10-2	Added relocated material from page 10-1.	

PILOT'S OPERATING HANDBOOK LOG OF REVISIONS (cont)

Revision Number and Code	Revised Pages	Description of Revision	FAA Approval Signature and Date
Rev. 4 - 761 624 (PR770712)	1-3	Added new propeller to 1.5 and added footnote.	
	1-11, 1-12, 1-13, 1-14	Revised section 1.21, Conversion Factors.	
	2-2	Added new propeller to 2.7, item (j) and added footnote.	
	4-4	Revised Starting With External Power Source.	
	4-9	Revised item 4.13 (d) Starting Engine With External Power Source.	
	4-10	Added CAUTION.	
	5-9	Revised page nos.; revised titles; added pages; added figures.	
	5-19	Added ser. nos.	
	5-20	Relocated Fig. 5-19 to page 5-21; added new chart (Fig. 5-18).	
	5-21	Relocated Fig. 5-21 to page 5-23; added re-located Fig. 5-19; added ser. nos.	
	5-22	Relocated Fig. 5-23 to page 5-25; added new chart (Fig. 5-20).	
	5-23	Relocated Fig. 5-25 to page 5-27; added re-located Fig. 5-21; added ser. nos.	
	5-24	Relocated Fig. 5-27 to page 5-29; added new chart (Fig. 5-22).	
	5-25	Relocated Fig. 5-29 to page 5-30; added re-located Fig. 5-23; added ser. nos.	
	5-26	Relocated Fig. 5-31 to page 5-31; added new chart (Fig. 5-24).	
	5-27	Relocated Fig. 5-33 to page 5-32; added re-located Fig. 5-25; added ser. nos.	
	5-28	Relocated Fig. 5-35 to page 5-33; added new chart (Fig. 5-26).	
	5-29	Added page (added relocated Fig. 5-27).	
	5-30	Added page (added relocated Fig. 5-29).	
	5-31	Added page (added relocated Fig. 5-31).	
	5-32	Added page (added relocated Fig. 5-33).	
	5-33	Added page (added relocated Fig. 5-35).	
	5-34	Added page (int. blank).	
	6-17	Added item 3.	
	6-33	Added items 76 and 77.	
	6-45	Added item 223; renumbered items; re-located item.	
	6-46	Added relocated items; renumbered items; added new items; relocated items; removed footnotes; added footnote.	
	6-47	Added relocated items; renumbered items; added new items; relocated items; added footnote.	

PILOT'S OPERATING HANDBOOK LOG OF REVISIONS (cont)

Revision Number and Code	Revised Pages	Description of Revision	FAA Approval Signature and Date
Rev. 4 - 761 624 (PR770712) (cont)	6-48	Added relocated items; renumbered items; added new items; revised item 277; relocated items; added footnotes.	 Ward Evans July 12, 1977
	6-48a	Added page (added relocated items and new item).	
	6-48b	Added page.	
	6-49	Renumbered items; revised items 325 and 329.	
	6-50	Renumbered items; revised item 349.	
	7-1	Added new propeller model to para. 7.5.	
	7-18	Revised alternate static source description in para. 7.21.	

PILOT'S OPERATING HANDBOOK LOG OF REVISIONS (cont)

Revision Number and Code	Revised Pages	Description of Revision	FAA Approval Signature and Date
Rev. 6 - 761 624 (PR790228)	1-6 1-12, 1-13 6-1 6-33 6-37 6-41 7-10 7-11 7-24	Revised para. 1.19. Revised para. 1.21. Revised para. 6.1. Renumbered existing items 75, 76, 77 to 74, 75, 76; added new items 77 and 78. Revised item 113. Added item 178. Revised para. 7.15. Revised para. 7.15. Revised para. 7.37.	<i>Ward Evans</i> Ward Evans Feb. 28, 1979
Rev. 7 - 761 624 (PR790413)	6-48 6-48a 7-24, 7-25	Revised item 279. Added item 280. Revised para. 7.37.	<i>Ward Evans</i> Ward Evans April 13, 1979
Rev. 8 - 761 624 (PR800523)	iii 1-3 1-4 2-2 2-3 2-4 3-i 3-4 3-11 4-i 4-5 4-6 4-13 4-14 5-1 5-3-5-6 5-18 5-25 5-26 5-27 5-28 5-29 5-30 5-31 6-1 6-3 6-14 6-19 6-37	Revised applicability. Revised para. 1.3. Revised para. 1.11. Revised para. 2.7. Revised para. 2.11. Revised para. 2.13. Added para. 3.28. Added Carburetor Icing. Added para. 3.28. Renumbered para.; added para. 4.28. Added descent info.; moved info. to pg. 4-6. Relocated info. from pg. 4-5. Added para. 4.28. Conti. para. 4.28. Added warning. Revised para. 5.5. Revised fig. 5-15. Revised fig. 5-23. Revised fig. 5-24. Revised fig. 5-25. Revised fig. 5-26. Revised fig. 5-27. Revised fig. 5-29. Revised fig. 5-31. Revised para. 6.1. Added caution. Revised Fig. 6-15. Revised item 11; added item 17. Added item 122; moved items 129 and 131 to pg. 6-38.	

Revision Number and Code	Revised Pages	Description of Revision	FAA Approval Signature and Date
Rev. 8 - 761 624 (PR800523) (cont)	6-38	Relocated items 129 and 131 from pg. 6-37.	<i>Ward Evans</i> Ward Evans May 23, 1980
	6-40	Relocated items 169 thru 177 from pg. 6-41; Revised items 173 and 175.	
	6-41	Moved items 169 thru 177 to pg. 6-40; added item 180; relocated item 183 from pg. 6-42.	
	6-42	Moved item 183 to pg. 6-41.	
	7-1	Revised para. 7.5.	
	7-10	Revised para. 7.13.	
	8-11	Revised para. 8.19.	
	10-2	Added para. (j).	
Rev. 9 - 761 624 (PR840330)	v	Revised Table of Contents	<i>Ward Evans</i> Ward Evans March 30, 1984
	1-3	Revised para. 1.7	
	1-6.	Revised para. 1.19	
	1-7		
	2-1	Revised para. 2.1	
	2-2	Revised para. 2.7	
	3-i	Revised Table of Contents	
	3-1	Revised para. 3.1	
	4-i	Revised Table of Contents	
	4-3.	Revised para. 4.5	
	4-5.		
	4-6		
	4-8	Added Note	
	4-12	Added Note	
	4-14	Revised para. 4.29	
	4-15	Move para. 4.31 from 4-14	
	6-1	Revised para. 6.1	
	6-3	Revised para. 6.3	
	6-6	Revised para. 6.5	
	6-7	Revised Fig. 6-5	
	6-9.	Revised Fig. 6-7	
	6-10		
	6-17	Revised para. 6.9	
	7-11	Added Caution	
	7-22	Revised para. 7.31	
	8-3	Revised para. 8.3	
	8-4	Revised para. 8.5	
	8-11	Revised para. 8.21	
	8-11a.	Added new page	
	8-11b		
	9-13	Revised Sec. 3(a)	
	10-i	Revised Table of Contents	
	10-1.	Changed Sec. Title	
	10-2		

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GENERAL

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SECTION 1

GENERAL

1.1 INTRODUCTION

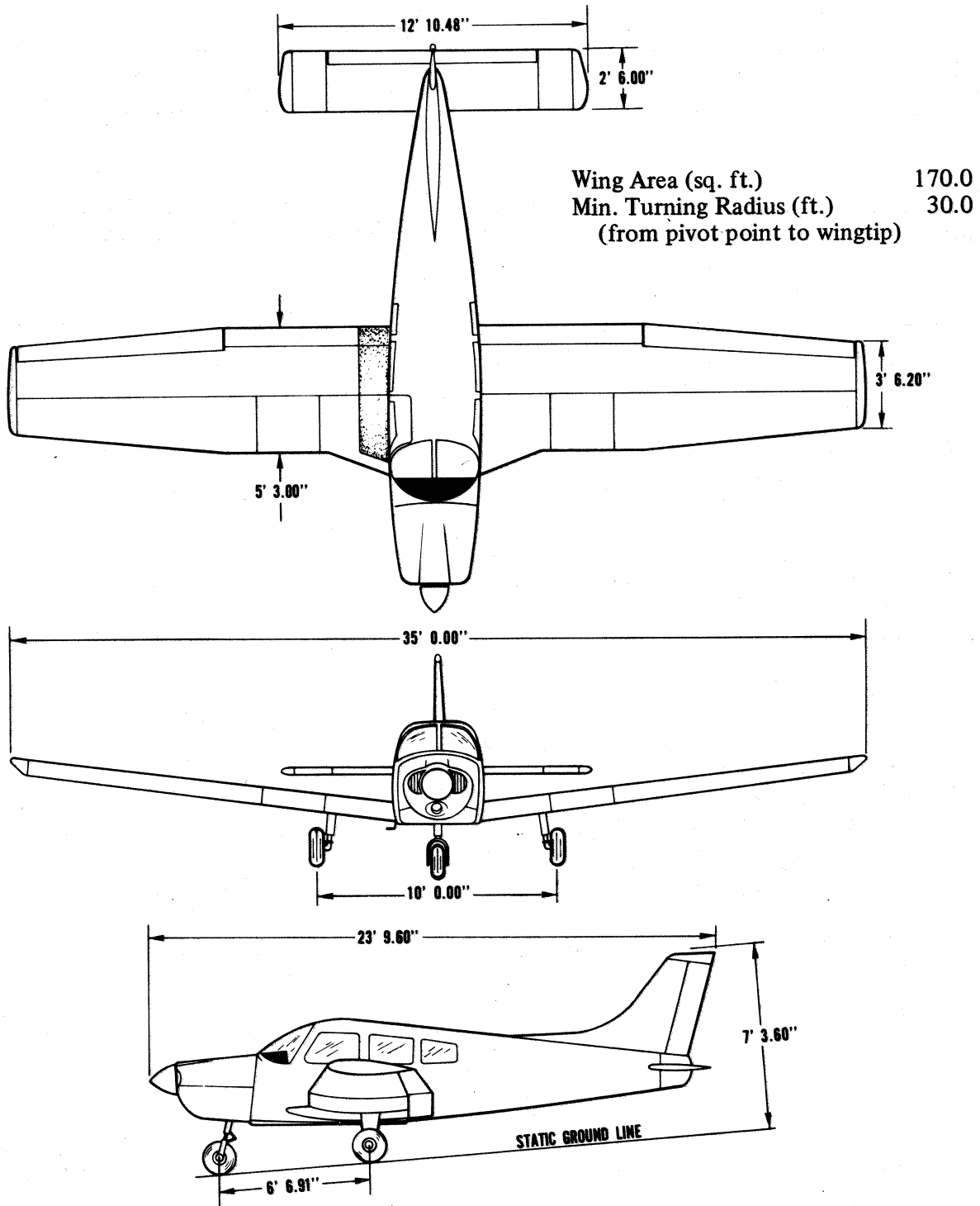
This Pilot's Operating Handbook is designed for maximum utilization as an operating guide for the pilot. It includes the material required to be furnished to the pilot by C.A.R. 3 and FAR Part 21, Subpart J. It also contains supplemental data supplied by the airplane manufacturer.

This handbook is not designed as a substitute for adequate and competent flight instruction, knowledge of current airworthiness directives, applicable federal air regulations or advisory circulars. It is not intended to be a guide for basic flight instruction or a training manual and should not be used for operational purposes unless kept in a current status.

Assurance that the airplane is in an airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the airplane is safe for flight. The pilot is also responsible for remaining within the operating limitations as outlined by instrument markings, placards, and this handbook.

Although the arrangement of this handbook is intended to increase its in-flight capabilities, it should not be used solely as an occasional operating reference. The pilot should study the entire handbook to familiarize himself with the limitations, performance, procedures and operational handling characteristics of the airplane before flight.

The handbook has been divided into numbered (arabic) sections, each provided with a "finger-tip" tab divider for quick reference. The limitations and emergency procedures have been placed ahead of the normal procedures, performance and other sections to provide easier access to information that may be required in flight. The "Emergency Procedures" Section has been furnished with a red tab divider to present an instant reference to the section. Provisions for expansion of the handbook have been made by the deliberate omission of certain paragraph numbers, figure numbers, item numbers and pages noted as being left blank intentionally.



THREE VIEW

Figure 1-1

1.3 ENGINES

(a) Number of Engines	1
(b) Engine Manufacturer	Lycoming
(c) Engine Model Number	0-360-A4A or 0-360-A4M
(d) Rated Horsepower	180
(e) Rated Speed (rpm)	2700
(f) Bore (inches)	5.125
(g) Stroke (inches)	4.375
(h) Displacement (cubic inches)	361.0
(i) Compression Ratio	8.5:1
(j) Engine Type	Four Cylinder, Direct Drive, Horizontally Opposed, Air Cooled

1.5 PROPELLERS

(a) Number of Propellers	1
(b) Propeller Manufacturer	Sensenich
(c) Model	76EM8S5-0-60* or 76EM8S5-0-62 **
(d) Number of Blades	2
(e) Propeller Diameter (inches)	
(1) Maximum	76
(2) Minimum	76
(f) Propeller Type	Fixed Pitch

1.7 FUEL

AVGAS ONLY

(a) Fuel Capacity (U.S. gal) (total)	50
(b) Usable Fuel (U.S. gal) (total)	48
(c) Fuel Grade, Aviation	
(1) Minimum Octane	100/130 Green
(2) Specified Octane	100/130 Green
(3) Alternate Fuel	Refer to latest issue of Lycoming Instruction No. 1070.

1.9 OIL

(a) Oil Capacity (U.S. quarts)	8	
(b) Oil Specification	Refer to latest issue of Lycoming Service Instruction 1014.	
(c) Oil Viscosity per Average Ambient Temp. for Starting		
	SINGLE	MULTI
(1) Above 60°F	S.A.E. 50	S.A.E. 40 or 50
(2) 30°F to 90°F	S.A.E. 40	S.A.E. 40
(3) 0°F to 70°F	S.A.E. 30	S.A.E. 40 or 20W-30
(4) Below 10°F	S.A.E. 20	S.A.E. 20W-30

*Serial nos. 28-7790001 through 28-7790607.

**Serial nos. 28-7890001 and up.

1.11 MAXIMUM WEIGHTS

	NORMAL	UTILITY
(a) Maximum Takeoff Weight (lbs)	2550	2130
(b) Maximum Landing Weight (lbs)	2550	2130
(c) Maximum Weights in Baggage Compartment	200	0

1.13 STANDARD AIRPLANE WEIGHTS*

(a) Standard Empty Weight (lbs): Weight of a standard airplane including unusable fuel, full operating fluids and full oil.	1416
(b) Maximum Useful Load (lbs): The difference between the Maximum Takeoff Weight and the Standard Empty Weight.	1134

1.15 BAGGAGE SPACE

(a) Compartment Volume (cubic feet)	24
(b) Entry Width (inches)	22
(c) Entry Height (inches)	20

1.17 SPECIFIC LOADINGS

(a) Wing Loading (lbs per sq ft)	15.0
(b) Power Loading (lbs per hp)	14.2

*These values are approximate and may vary from one aircraft to another. Refer to Figure 6-5 for the Standard Empty Weight value and Useful Load value to be used for C.G. calculations for the aircraft specified.

1.19 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following definitions are of symbols, abbreviations and terminology used throughout the handbook and those which may be of added operational significance to the pilot.

(a) General Airspeed Terminology and Symbols

CAS	Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
KCAS	Calibrated Airspeed expressed in "Knots."
GS	Ground Speed is the speed of an airplane relative to the ground.
IAS	Indicated Airspeed is the speed of an aircraft as shown on the airspeed indicator when corrected for instrument error. IAS values published in this handbook assume zero instrument error.
KIAS	Indicated Airspeed expressed in "Knots."
M	Mach Number is the ratio of true airspeed to the speed of sound.
TAS	True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude, temperature and compressability.
V_A	Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V_{NE}/M_{NE}	Never Exceed Speed or Mach Number is the speed limit that may not be exceeded at any time.
V_{NO}	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and then only with caution.
V_S	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V_{SO}	Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
V_Y	Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.

(b) Meteorological Terminology

ISA

International Standard Atmosphere in which:
The air is a dry perfect gas;
The temperature at sea level is 15° Celsius (59° Fahrenheit);
The pressure at sea level is 29.92 inches hg. (1013.2 mb);
The temperature gradient from sea level to the altitude at which the temperature is -56.5° C (-69.7° F) is -0.00198° C (-0.003564° F) per foot and zero above that altitude.

OAT

Outside Air Temperature is the free air static temperature, obtained either from inflight temperature indications or ground meteorological sources, adjusted for instrument error and compressibility effects.

**Indicated Pressure
Altitude**

The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of mercury (1013.2 millibars).

Pressure Altitude

Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error. In this handbook, altimeter instrument errors are assumed to be zero.

Station Pressure

Actual atmospheric pressure at field elevation.

Wind

The wind velocities recorded as variables on the charts of this handbook are to be understood as the headwind or tailwind components of the reported winds.

(c) Power Terminology

Takeoff Power	Maximum power permissible for takeoff.
Maximum Continuous Power	Maximum power permissible continuously during flight.
Maximum Climb Power	Maximum power permissible during climb.
Maximum Cruise Power	Maximum power permissible during cruise.

(d) Engine Instruments

EGT Gauge	Exhaust Gas Temperature Gauge
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(e) Airplane Performance and Flight Planning Terminology

Climb Gradient	The demonstrated ratio of the change in height during a portion of a climb, to the horizontal distance traversed in the same time interval.
Demonstrated Crosswind Velocity	The demonstrated crosswind velocity is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests.
Accelerate-Stop Distance	The distance required to accelerate an airplane to a specified speed and, assuming failure of an engine at the instant that speed is attained, to bring the airplane to a stop.
Route Segment	A part of a route. Each end of that part is identified by: (1) a geographical location; or (2) a point at which a definite radio fix can be established.

(f) Weight and Balance Terminology

Reference Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	A location along the airplane fuselage usually given in terms of distance from the reference datum.
Arm	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
Moment	The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits.)
Center of Gravity (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
C.G. Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	The extreme center of gravity locations within which the airplane must be operated at a given weight.
Usable Fuel	Fuel available for flight planning.
Unusable Fuel	Fuel remaining after a runout test has been completed in accordance with governmental regulations.
Standard Empty Weight	Weight of a standard airplane including unusable fuel, full operating fluids and full oil.
Basic Empty Weight	Standard empty weight plus optional equipment.
Payload	Weight of occupants, cargo and baggage.
Useful Load	Difference between takeoff weight, or ramp weight if applicable, and basic empty weight.
Maximum Ramp Weight	Maximum weight approved for ground maneuver. (It includes weight of start, taxi and run up fuel.)
Maximum Takeoff Weight	Maximum weight approved for the start of the takeoff run.
Maximum Landing Weight	Maximum weight approved for the landing touchdown.
Maximum Zero Fuel Weight	Maximum weight exclusive of usable fuel.

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1.21 CONVERSION FACTORS

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>	<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
acres	0.4047 43560 0.0015625	ha sq. ft. sq. mi.	cubic inches (cu. in.)	16.39 1.639×10^{-5} 5.787×10^{-4} 0.5541 0.01639 4.329×10^{-3} 0.01732	cm ³ m ³ cu. ft. fl. oz. l U.S. gal. U.S. qt.
atmospheres (atm)	76 29.92 1.0133 1.033 14.70 2116	cm Hg in. Hg bar kg/cm ² lb./sq. in. lb./sq. ft.	cubic meters (m ³)	61024 1.308 35.3147 264.2	cu. in. cu. yd. cu. ft. U.S. gal.
bars (bar)	0.98692 14.503768	atm. lb./sq. in.	cubic meters per minute (m ³ /min.)	35.3147	cu. ft./min.
British Thermal Unit (BTU)	0.2519958	kg-cal	cubic yards (cu. yd.)	27 0.7646 202	cu. ft. m ³ U.S. gal.
centimeters (cm)	0.3937 0.032808	in. ft.	degrees (arc)	0.01745	radians
centimeters of mercury at 0°C (cm Hg)	0.01316 0.3937 0.1934 27.85 135.95	atm in. Hg lb./sq. in. lb./sq. ft. kg/m ²	degrees per second (deg./sec.)	0.01745	radians/sec.
centimeters per second (cm/sec.)	0.032808 1.9685 0.02237	ft./sec. ft./min. mph	drams, fluid (dr. fl.)	0.125	fl. oz.
cubic centimeters (cm ³)	0.03381 0.06102 3.531×10^{-5} 0.001 2.642×10^{-4}	fl. oz. cu. in. cu. ft. l U.S. gal.	drams, avdp. (dr. avdp.)	0.0625	oz. avdp.
cubic feet (cu.ft.)	28317 0.028317 1728 0.037037 7.481 28.32	cm ³ m ³ cu. in. cu. yd. U.S. gal. l	feet (ft.)	30.48 0.3048 12 0.33333 0.0606061 1.894×10^{-4} 1.645×10^{-4}	cm m in. yd. rod mi. NM
cubic feet per minute (cu. ft./min.)	0.472 0.028317	l/sec. m ³ /min.	feet per minute (ft./min.)	0.01136 0.01829 0.508 0.00508	mph km/hr. cm/sec. m/sec.

**SECTION 1
GENERAL**

**PIPER AIRCRAFT CORPORATION
PA-28-181, CHEROKEE ARCHER II**

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
feet per second (ft./sec.)	0.6818 1.097 30.48 0.5921	mph km/hr. cm/sec. kts.
foot-pounds (ft.-lb.)	0.1383255 3.24×10^{-4}	m-kg kg-cal
foot-pounds per minute (ft.-lb./min.)	3.030×10^{-5}	hp
foot-pounds per second (ft.-lb./sec.)	1.818×10^{-5}	hp
gallons, Imperial (Imperial gal.)	277.4 1.201 4.546	cu. in. U.S. gal. 1
gallons, U.S. dry (U.S. gal. dry)	268.8 1.556×10^{-1} 1.164 4.405	cu. in. cu. ft. U.S. gal. 1
gallons, U.S. liquid (U.S. gal.)	231 0.1337 4.951×10^{-3} 3785.4 3.785×10^{-3} 3.785 0.83268 128	cu. in. cu. ft. cu. yd. cm^3 m^3 1 Imperial gal. fl. oz.
gallons per acre (gal./acre)	9.353	1/ha
grams (g)	0.001 0.3527 2.205×10^{-3}	kg oz. avdp. lb.
grams per centimeter (g/cm)	0.1 6.721×10^{-2} 5.601×10^{-3}	kg/m lb./ft. lb./in.
grams per cubic centimeter (g/cm^3)	1000 0.03613 62.43	kg/m^3 lb./cu. in. lb./cu. ft.

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
hectares (ha)	2.471 107639 10000	acres sq. ft. m^2
horsepower (hp)	33000 550 76.04 1.014	ft.-lb./min. ft.-lb./sec. m-kg/sec. metric hp
horsepower, metric	75 0.9863	m-kg/sec. hp
inches (in.)	25.40 2.540 0.0254 0.08333 0.027777	mm cm m ft. yd.
inches of mercury at 0°C (in. Hg)	0.033421 0.4912 70.73 345.3 2.540 25.40	atm lb./sq. in. lb./sq. ft. kg/m^2 cm Hg mm Hg
inch-pounds (in.-lb.)	0.011521	m-kg
kilograms (kg)	2.204623 35.27 1000	lb. oz. avdp. g
kilogram-calories (kg-cal)	3.9683 3087 426.9	BTU ft.-lb. m-kg
kilograms per cubic meter (kg/m^3)	0.06243 0.001	lb./cu. ft. g/cm^3
kilograms per hectare (kg/ha)	0.892	lb./acre
kilograms per square centimeter (kg/cm^2)	0.9678 28.96 14.22 2048	atm in. Hg lb./sq. in. lb./sq. ft.

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>	<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
kilograms per square meter (kg/m ²)	2.896 x 10 ⁻³ 1.422 x 10 ⁻³ 0.2048	in. Hg lb./sq. in. lb./sq. ft.	meters per minute (m/min.)	0.06	km/hr.
kilometers (km)	1 x 10 ⁻⁵ 3280.8 0.6214 0.53996	cm ft. mi. NM	meters per second (m/sec.)	3.280840 196.8504 2.237 3.6	ft./sec. ft./min. mph km/hr.
kilometers per hour (km/hr.)	0.9113 58.68 0.53996 0.6214 0.27778 16.67	ft./sec. ft./min. kt mph m/sec. m/min.	microns	3.937 x 10 ⁻⁵	in.
knots (kt)	1 1.689 1.1516 1.852 51.48	nautical mph ft./sec. statute mph km/hr. m/sec.	miles, statue (mi.)	5280 1.6093 1609.3 0.8684	ft. km m NM
liters (l)	1000 61.02 0.03531 33.814 0.264172 0.2200 1.05669	cm ³ cu. in. cu. ft. fl. oz. U.S. gal. Imperial gal. qt.	miles per hour (mph)	44.7041 4.470 x 10 ⁻¹ 1.467 88 1.6093 0.8684	cm/sec. m/sec. ft./sec. ft./min. km/hr. kt
liters per hectare (l/ha)	13.69 0.107	fl. oz./acre gal./acre	miles per hour square (m/hr. sq.)	2.151	ft./sec. sq.
liters per second (l/sec.)	2.12	cu. ft./min.	millibars	2.953 x 10 ⁻²	in. Hg
meters (m)	39.37 3.280840 1.0936 0.198838 6.214 x 10 ⁻⁴ 5.3996 x 10 ⁻⁴	in. ft. yd. rod mi. NM	millimeters (mm)	0.03937	in.
meter-kilogram (m-kg)	7.23301 86.798	ft.-lb. in.-lb.	millimeters of mercury at 0°C (mm Hg)	0.03937	in. Hg
			nautical miles (NM)	6080 1.1516 1852 1.852	ft. statute mi. m km
			ounces, avdp. (oz. avdp.)	28.35 16	g dr. avdp.
			ounces, fluid (fl. oz.)	8 29.57 1.805 0.0296 0.0078	dr. fl. cm ³ cu. in. l U.S. gal.

**SECTION 1
GENERAL**

**PIPER AIRCRAFT CORPORATION
PA-28-181, CHEROKEE ARCHER II**

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
ounces, fluid per acre (fl. oz./ acre)	0.073	l/ha
pounds (lb.)	0.453592 453.6 3.108×10^{-2}	kg g slug
pounds per acre (lb./acre)	1.121	kg/ha
pounds per cubic foot (lb./cu. ft.)	16.02	kg/m ³
pounds per cubic inch (lb./cu. in.)	1728 27.68	lb./cu. ft. g/cm ³
pounds per square foot (lb./sq. ft.)	0.1414 4.88243 4.725×10^{-4}	in. Hg kg/m ² atm
pounds per square inch (psi or lb./sq. in.)	5.1715 2.036 0.06804 0.0689476 703.1	cm Hg in. Hg atm bar kg/m ²
quart, U.S. (qt.)	0.94635 57.749	l cu. in.
radians	57.30 0.1592	deg. (arc) rev.
radians per second (radians/sec.)	57.30 0.1592 9.549	deg./sec. rev./sec. rpm
revolutions (rev.)	6.283	radians
revolutions per minute (rpm or rev./min.)	0.1047	radians/sec.
revolutions per second (rev./sec.)	6.283	radians/sec.

<u>MULTIPLY</u>	<u>BY</u>	<u>TO OBTAIN</u>
rod	16.5 5.5 5.029	ft. yd. m
slug	32.174	lb.
square centimeters (cm ²)	0.1550 0.001076	sq. in. sq. ft.
square feet (sq. ft.)	929 0.092903 144 0.1111 2.296×10^{-5}	cm ² m ² sq. in. sq. yd. acres
square inches (sq. in.)	6.4516 6.944×10^{-3}	cm ² sq. ft.
square kilometers (km ²)	0.3861	sq. mi.
square meters (m ²)	10.76391 1.196 0.0001	sq. ft. sq. yd. ha
square miles (sq. mi.)	2.590 640	km ² acres
square rods (sq. rods)	30.25	sq. yd.
square yards (sq. yd.)	0.8361 9 0.0330579	m ² sq. ft. sq. rods
yards (yd.)	0.9144 3 36 0.181818	m ft. in. rod