

Approved Flight Manual

AIR 2845

Aircraft Manufacturer PIPER AIRCRAFT CORPORATION
Aircraft Designation PA-18
Nationality and Registration Marks ZK-BQV
Aircraft Serial Number 18-5546

This Flight Manual applies to the Piper Model PA-18 and PA-19 (Army L-18C) approved under FAA Type Certificate No. 1A2 and is the Flight Manual referred to on the Airworthiness Certificate.

This Flight Manual comprises this cover page plus the Airplane Flight Manual for the Models PA-18 (Commercial) and PA-19 (Military), Piper Report 623 US C.A.A. Approved 1 April 1949 at the latest Revision Status and including any changes required by Airworthiness Directives, plus any other applicable approved Supplements. This Flight Manual is a re-issue of AIR 64 for the Piper Model PA-18.



for Director of Civil Aviation
Date of Approval: 10 November 2003

General Information

This Flight Manual shall be carried on board the aircraft on all flights, in accordance with CAR Part 91 §91.111. It is the responsibility of the pilot in command to be familiar with the contents of this manual and to comply with all limitations and directions contained therein relating to the operation of the aircraft, in accordance with CAR Part 91 §91.101(b) and §91.109.

Supplements

Supplements issued by the manufacturer of the aircraft are approved by the original certification authority and are included in the FMS Section of this Flight Manual.

Other Supplements may be approved on an individual basis indicated by a signature on the front page or on the Supplement Log of Pages or equivalent. Any such Supplements may be included in the Flight Manual if they are applicable to the Piper PA-18 and relevant to the actual aircraft configuration. These Supplements should be manually recorded in the Supplements incorporated page supplied by the CAA and which should be inserted after the cover page at the front of the Flight Manual.

The operator must ensure that all approved Supplements applicable to their particular aircraft are obtained and incorporated in the Flight Manual.

Revisions

The registered owner should ensure that this manual is kept current and all revisions to the manual are incorporated on receipt. Revisions to the manufacturer's manual are no longer notified to individual owners by the CAA. It is therefore the registered owner's responsibility to ensure they are on the mailing list to receive Revisions promptly. The CAA maintains a list of the current Revision status of all Flight Manuals and confirmation of the status of any particular manual is available on the CAA website. Details of recent manufacturer's revisions received by the CAA may also be published on a regular basis in CAA newsletters.

Performance Group Rating

Aircraft with a MTOW of less than 2270 kg are assigned a Performance Group Rating to use the simplified group rating number system for runways, as listed in NZAIP Flight Guides. This is calculated using Flight Manual data for MTOW on a level grass runway at ISA conditions (Sea level altitude and 15°C). The PA-18 at a MTOW of 680 kg (1500 lb) for Part 91 operations is classified as Performance Group Rating 3.

For Air Transport operations the basic Flight Manual data factored by the requirements in NZCAR Part 135 Subpart D must be used to determine aerodrome suitability.

THIS DOCUMENT MUST BE KEPT IN THE AIRPLANE AT ALL TIMES**DUPLICATE**

SERIAL NUMBER: 18-5546

C.A.A. Identification No. ZK-3QVC.A.A. APPROVED
APRIL 1, 1949
PIPER PA-18 (COMMERCIAL)
PIPER PA-19 (MILITARY)
NORMAL AND UTILITY
CATEGORIES
REVISED DECEMBER 21, 1949**AIRPLANE FLIGHT MANUAL****1. LIMITATIONS**

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

Engine	Continental C-90-8F or C-90-12F
Engine Limits	For all operations 2475 RPM 90 HP
Fuel	80 Octane Minimum Aviation Gasoline
Propellers	Fixed Pitch Wood: 72.0" Maximum Diameter
	70.5" Minimum Diameter
	Static Limits: Maximum 2400 RPM
	Minimum 2100 RPM
	Fixed Pitch Metal (McCauley 1B90):
	71.0" Maximum Diameter
	69.5" Minimum Diameter
	Static Limits: Maximum 2350 RPM
	Minimum 2200 RPM
	Fixed Pitch Metal (Sensenich M76AK-2):
71.0" Maximum Diameter	
72.5" Minimum Diameter	
Static Limits: Maximum 2350 RPM	
Minimum 2200 RPM	
Automatic Variable (Koppers F200/00-73):	73.0" Maximum Diameter
	71.5" Minimum Diameter
	Low Pitch Setting 12.5° measured at 24" station.
	Static RPM at Maximum permissible throttle setting: Not Over 2425 RPM
	Not Under 2375 RPM
	Installation and operation must be accomplished in accordance with Kopper's installation procedure and operating limitations No. 33.
Power Instruments	Oil Temperature - Unsafe if indicator exceeds Red Line (225°F). Yellow Arc: Caution (140°F to 90°F). Green Arc: Normal Operating Range (90°F to 225°F).

Oil Pressure - Unsafe if indicator exceeds
 Red line (40 lbs.) or is below
 the Red line (10 lbs. minimum)
 Yellow Arc: Caution (10 lbs. to 30 lbs.)
 Green Arc: Normal Operating Range
 (30 lbs. to 40 lbs.)

Tachometer - Red Line: Rated Engine Speed
 Green Arc: 2000 RPM to 2350 RPM
 Normal Operating Range
 Yellow Arc: Caution 2350 RPM to
 2475 RPM

Airspeed Limits

(True Ind. Airspeed)

	<u>Normal Category</u>	<u>Utility Category</u>
Maneuvering	94 MPH	94 MPH
Maximum Cruising Speed	110 MPH	110 MPH
Never Exceed	138 MPH	138 MPH
Flight Load Factors		
Max. Positive	4.4	4.4
Max. Negative	(No inverted maneuvers approved)	
Airplane Loading		
Max. Wt. (Take-Off and Landing)	1500 lbs.	1400 lbs.

C.G. Range (Normal Category)

Forward Limit (+11.5") (18.0% MAC) at 1200 lbs.
 Straight Line to (+14.0") (22.1% MAC) at 1500 lbs.
 Rear Limit (+21") (33.5% MAC) at 1500 lbs.

(Utility Category)

Forward Limit (+11.5") (18.0% MAC) at 1200 lbs.
 Straight Line to (+13.2") (17.2% MAC) at 1400 lbs.
 Rear Limit (+19") (30.2% MAC) at 1400 lbs.

Datum Leading Edge of Wing

MAC 61.5 inches; L.E. MAC (+0.4 in.)

Maximum Baggage Allowed: 50 lbs. (Normal Category Only)

NOTE: It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded (See Weight and Balance).

PLACARDS:

a. Utility Category

1. Solo flying front seat only.

MANEUVERS:

- a. No acrobatic maneuvers approved for Normal Category Operation.
- b. The following maneuvers are approved for operation in the Utility Category only, with recommended entry speeds shown:

ManeuverEntry Speed T.I.A.S.

Chandelles	100 MPH
Lazy Eights	100 MPH
Steep Turns	90 MPH
Spins	Stall
Stalls (Except Whip Stalls)	Stall

Airspeed
Instrument
Markings and
Their Significance

- (a) Radial Red Line marks the never exceed speed which is the maximum safe airspeed 138 MPH
- (b) Yellow Arc on indicator denotes range of speed in which operations should be conducted with caution and only in smooth air 110 MPH - 138 MPH
- (c) Green Arc denotes normal operating speed range 49 MPH - 110 MPH

II. PROCEDURES

- (a) Except as noted above, all operating procedures for this airplane are conventional.

III. PERFORMANCE

All performance given is for the following conditions:

1. A maximum gross weight 1500 lbs.
2. On level paved runways
3. In still air
4. With slowest turning fixed-pitch wood propeller approved.
5. Performance with any approved alternate engines and/or propellers will equal or exceed that shown herein.

In using the following data allowance for actual conditions must be made.

ITEM	ALT.	OUTSIDE AIR TEMPERATURE						
		0°F	20°F	40°F	60°F	80°F	100°F	
<u>Take-Off Distance (In Feet)</u>	Sea Level	960	1022	1087	1151	1220	1284	
Distance to Take-Off and climb 50 ft. at full throttle at 57.2 MPH TIAS	3000	1271	1354	1448	1539	1639	1735	
	5000	1557	1670	1797	1918	2049	2196	
	7000	1967	2124	2289	2463	2688	2900	
<u>Landing Distance (In Feet)</u>	Sea Level	1074	1089	1104	1119	1132	1148	
Distance required to land over 50 ft. obstacle and stop.	3000	1113	1129	1147	1163	1180	1197	
	5000	1143	1161	1180	1196	1215	1233	
Approach at 57.2 MPH TIAS	7000	1175	1194	1213	1233	1252	1272	
	Sea Level	683	664	644	624	605	590	
<u>Normal Rate of Climb</u>	3000	555	535	515	496	480	465	
(In feet per minute)	5000	468	450	430	415	395	380	
71 MPH TIAS	7000	386	367	350	330	315	297	
Climbing Speed	Angle	0	10	20	30	40	50	60
Angle of Bank	Speed	44	44	45	47	50	55	62
V_s								
Stalling Speeds (MPH TIAS)								
Power Off								

Skiplane Performance:

Climb: Skiplane climb performance is essentially equal to that of the landplane.

Take-Off and Landing: Under the most favorable conditions of smooth packed snow at temperature approximating 30 F., skiplane take-off distance is essentially equal to the landplane distance. Landing distance is approximately twenty percent greater than the landplane distance. In applying the performance data, caution should be exercised in that lower temperatures or other snow conditions will increase the ski friction and hence increase the take-off run and decrease the landing run.

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LOCK HAVEN, PENNA.

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MODEL PA-18&PA-19

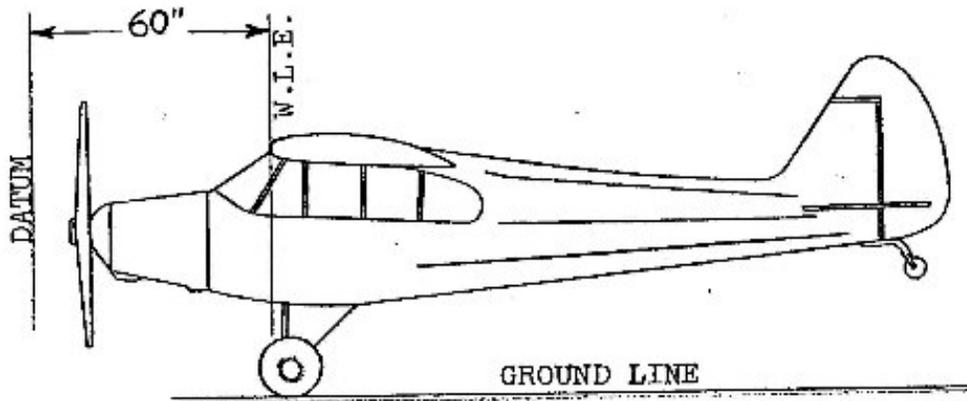
PIPER AIRCRAFT CORPORATION
 LOCK HAVEN, PENNSYLVANIA
 ACTUAL WEIGHT AND BALANCE
 MODEL PA-18

(CONTINENTAL C-90-8F OR C-90-12F ENGINE INSTALLATION)

SERIAL NO. 18-

CERTIFICATE NO. N

DATE



AIRPLANE WEIGHING DIAGRAM

Empty Weight as weighed (Includes Items checked on Pages 8,9,& 10.)

	<u>Scale Reading</u>	<u>Tare</u>	<u>Net</u>
Left Wheel	_____	_____	_____
Right Wheel	_____	_____	_____
Tail Scale (N)	_____	_____	_____
Total (T)	_____	_____	_____

Revised: June 21, 1960.
 580 817 November 15, 1960

PREPARED _____
 CHECKED _____
 APPROVED _____

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MODEL PA-18&PA-1

Empty Weight C. G. Aft Main Wheel Centerline is:

$$A. \frac{186 \times (N)}{(T)} = A \text{ In.}$$

B. Distance From Datum to Wheel C. L. is $60 + 2.25 = 62.25$ In.

Empty Weight C. G. Aft of Datum is:

$$C. 62.25 + A \text{ In.} = \text{In.}$$

MOST FORWARD C. G. (NORMAL CATEGORY) AND UTILITY CATEGORY

Item	Weight	Arm	Moment
Empty Weight			
Oil (5 Qts.)	9	26	234
Fuel (7.5 Gal.) Wing	45	84	3780
Pilot and Chute (Front Seat)	<u>190</u>	<u>71</u>	<u>13490</u>

TOTAL

MOST FORWARD C.G. IS _____ IN. APT OF WING L.E.

MOST REARWARD C. G. UTILITY CATEGORY

Item	Weight	Arm	Moment
Empty Weight			
Oil (5 Qts.)	9	26	234
Fuel (Gal.) Wing		84	
Pilot and Chute (Front Seat)	190	71	13490
Passenger and Chute (Rear Seat)	<u>190</u>	<u>97</u>	<u>18430</u>

TOTAL

MOST FORWARD C. G. IS _____ IN. APT OF WING L.E.

PREPARED _____

CHECKED _____

APPROVED _____

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PIPER AIRCRAFT CORPORATION

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MODEL PA-18&PA-19

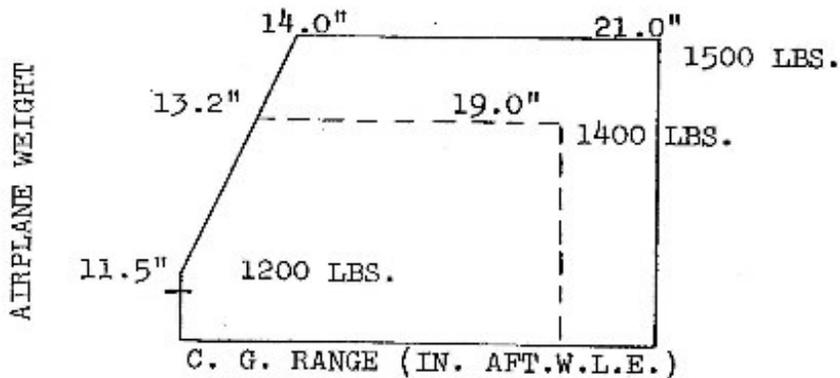
MOST REARWARD C. G. NORMAL CATEGORY

Item	Weight	Arm	Moment
Empty Weight	983	76.5	
Oil (5 Qts.)	9	26	234
Fuel (Gal.) Wing		84	
Pilot (Rear Seat)	170	97	16490
Baggage	<u>50</u>	<u>117</u>	<u>5850</u>

TOTAL

MOST REARWARD C. G. IS _____ IN. AFT WING L.E.

APPROVED C. G. RANGE VS. WEIGHT



Normal Category _____

Utility Category -----

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PREPARED _____
 CHECKED _____
 APPROVED _____

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MODEL PA-18&PA-19

ACTUAL WEIGHT AND BALANCE

MODEL PA-18

EQUIPMENT LIST

<u>Item</u>	<u>Weight</u>	<u>Arm About W. L.E.</u>
<u>Propellers and Propeller Accessories</u>		
a. Propeller - Sensenich 72GK50 Fixed Pitch Wood	11 lbs.	(-54)
b. Propeller - Sensenich M76AK-2 Fixed Pitch Metal	24 lbs.	(-54)
c. Propeller Spinner (Firestone)	1 lb.	(-55)
<u>Engine and Engine Accessories</u>		
a. Continental Engine C-90-12F	Actual	
b. Continental Engine C-90-8F	Actual	
c. Starter, Delco Remy 12V.,	15 lbs.	(-31)
<u>Landing Gear</u>		
Two Main Wheel - Brake Assemblies 8.00 - 4 Type III	10 lbs.	(+2)
a. Goodrich Model No. 841A Wheel Assembly No. D-3-13A-1 Brake Assembly No. D-2-113		
Two Main 4-Ply Rating Tires, 8.00 - 4 Type III with regular tubes	21 lbs.	(+2)
Tail Wheels		
a. Scott Model 3-2 1/2 B 6.00	6 lbs.	(+200)
b. Scott Model 2000 8.00	+2 lbs.	(+200)
c. Maule Model SFS-1-4-PG8 8.00	+1 lb.	(+200)
Skis		
a. Federal A-2000A Main Skis and NA-1200 Nose Ski, Per Federal Dwg. 11R262	-	
Edo Model 92-1400 Floats with Water Rudder Installed in accord- ance with EDO Dwg. No. 92-S-218	Use Actual Wt. Change	

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MODEL PA-18&PA-19

<u>Item</u>	<u>Weight</u>	<u>Arm About W. L.E.</u>
<u>Landing Gear (Cont'd.)</u>		
Scott Parking Brake Installation Scott Aviation Corporation, Lancaster, New York, Kit No. 2715 BK, Installation in Accordance with their Bulletin I-169 Wheel Streamlines	Neglect Weight Change 6 lbs.	(+2)
Tandem Gear Model GW-100 Installed in accordance with A. W. Whitaker, 5001 N.E. Union Avenue, Portland Oregon, Dwg. T-10 and Installation Instructions Dated June 8, 1949.	+46 lbs.	(+2)
<u>Electrical Equipment</u>		
Two Landing Lights, GE Model 4509 In W. L.E. PAC Dwg. 12534	4 lbs.	(+5)
Battery Reading R-33-12V (PAC Dwg. 12502)	28 lbs.	(+84)
Generator, Delco Remy. 12V., 20 Amp with Mounting Bracket	10.6 lbs.	(-31)
Navigation Lights - Grimes	3 lbs.	(+65)
<u>Interior Equipment</u>		
Flight Manual and Supplements		
a. CAA Approved Airplane Flight Manual Approved April 1, 1949, Revised December 21, 1949, for Landplanes and Skiplanes Equipped with Continental C-90- 12 Engines		
h. CAA Approved Airplane Flight Manual Approved December 9, 1950, for Scaplanes Equipped with Continental C-90 Engines		
Shoulder Harness Installation on Front and Rear Seats Per Piper Dwg. No. 12615		Use Actual Wt. Change
		PREPARED _____ CHECKED _____ APPROVED _____

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MODEL PA-18&PA-19

1:
10

	<u>Item</u>	<u>Weight</u>	<u>Arm About W. L.E.</u>
	<u>Miscellaneous Equipment</u>		
_____	Primary Group	5.0 lbs.	(-9)
_____	NARCO Super Homer	8.1 lbs.	(-13)
_____	NARCO Omnigator and Power Supply	15.6 lbs.	(-5)
_____	NARCO Simplexer and Power Supply	11.4 lbs.	(-5)
_____	NARCO LFR-3L and Power Supply	6.2 lbs.	(-5)
_____	Lear LTRA-6	11.6 lbs.	(-13)
_____	Omn1 Antenna	1.9 lbs.	(+173)
_____	Whip Antenna	.2 lbs.	(+15)
_____	Marker Beacon Antenna	.5 lbs.	(+40)
_____	Low Frequency Receiver Antenna	1.25 lbs.	(0)
_____	LTRA-6 Dynamotor	7.25 lbs.	(+7)
_____	Fire Extinguisher (With Bracket) Type A-20	8.00 lbs.	(+21)
_____	Fire Extinguisher (With Bracket) #2 1/2 DCK	5.00 lbs.	(+21)
_____	Venturi 4"	2.00 lbs.	(-12)
_____	Venturi 2"	.50 lbs.	(-12)
_____	Turn and Bank	2.0 lbs.	(- 8)

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CAA Approved Flight Manual Supplement
Piper PA-18 (95)
Installation of Rolls-Royce Continental O-200-A
Modification AAC 229
(Auckland Aero Club)

General

This modification installs a Rolls-Royce Continental O-200-A engine in lieu of the Continental C.90 and McCauley propeller in lieu of Sensenich.

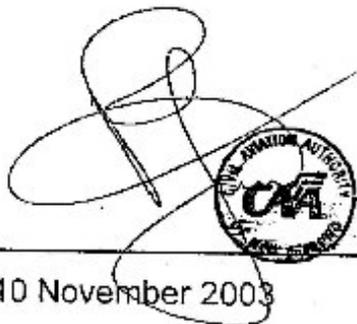
The information contained herein supplements or supersedes the basic Flight Manual only in those areas described. For Limitations, procedures and Performance Data not contained in this supplement consult the basic flight manual.

This supplement replaces Page 26 to AIR 64 dated 12 July 1979.

CAA Re-issued: _____

Date: 10 November 2003

Reference: E 2775



b

LIMITATIONS

Engine: Rolls-Royce Continental O-200-A
Maximum RPM 2,750 (100 H.P.) for all operations
Propeller: McCauley 1A90-CF (75 ins max dia.),
1A101DCM6948 or 1A105SCM6950

Engine Instrument Markings:

Tachometer:

Green Arc: 2000 – 2750 rpm - Normal operating
Delete Yellow Arc
Redline: 2750 rpm

Oil Pressure: Red line (maximum) 60 p.s.i.

Placard

ENGINE LIMITS – for all operations 2,750 RPM (100 HP)

EMERGENCY PROCEDURES

No change.

NORMAL PROCEDURES

No change.

PERFORMANCE

No change.

WEIGHT & BALANCE

Oil at 9.0 lb/gal	Weight	Arm	Moment
(max capacity 5 imp qts)	11 lbs	-34 ins	-374 lb ins

A

CAA Approved Flight Manual Supplement
Piper PA-18 (95)
Installation of Sensenich M76 AK-2-42 Propeller
Modification RTAM/47
(Reg Taylor Aero Maintenance)

General

This modification installs a Sensenich M76 AK-2-42 propeller on a Continental O-200-A powerplant in lieu of McCauley A190-CF7571, 1A101DCM6948 or 1A105SCM6950 propellers.

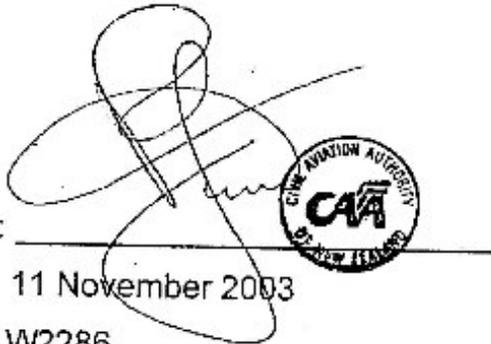
The information contained herein supplements or supersedes the basic Flight Manual only in those areas described. For Limitations, procedures and Performance Data not contained in this supplement consult the basic flight manual.

This supplement replaces Page 29 to AIR 64 dated 20 Feb 1987.

CAA Re-issued: _____

Date: 11 November 2003

Reference: W2286



Weight and Balance Data



ZK-3QV

A new sheet is to be completed whenever revised weight and balance data is established either by weighing or calculation.

Aircraft Make and Model	PIPER PA18
EMPTY WEIGHT (see Note 1)	9831b
Datum Reference	WING LEADING EDGE
C of G POSITION (state from Aft of Datum)	16.5" AFT
MOMENT	16230.9 "lb

(Note: 76.5 " aft of datum.)

Data established by weighing/calculation (delete as appropriate)

Performed by (state name and Licence/Approval No.)

	MCCARTY 10596
On (date)	12-09-08
Reason	INSTALLATION OF M16 LONG STEP STL
Report Ref (if applicable)	AFROS WITH S/N 12362

If established by calculation, state when aircraft last weighed.

20-05-1989

Note:

Empty weight includes unusable fuel, fixed ballast, full operating fluids and items in the equipment List over page.