REGISTRATION NOT TRANSFERABLE

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION

This certificate must be in the aircraft when operated.

NATIONALITY AND REGISTRATION MARKS **N** 887SP

AIRCRAFT SERIAL NO.
34-7350124

MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT
PIPER PA-34-200
ICAO Aircraft Address Code: 53034564

ISSUED TO

CYLINDER SHOP INC
14351 NW 41ST AVE
OPA LOCKA FL 33054-2328

CORPORATION

This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with Title 49, United States Code, and regulations issued thereunder.

DATE OF ISSUE
October 30, 2008

ACTING ADMINISTRATOR

U.S. Department of Transportation
Federal Aviation Administration

AC Form 8050-3 (5/2008) Supersedes previous editions

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION

STANDARD AIRWORTHINESS CERTIFICATE

1 NATIONALITY AND REGISTRATION MARKS	2 MANUFACTURER AND MODEL	3 AIRCRAFT SERIAL NUMBER	4 CATEGORY
N887SP	PIPER PA34-200	34-7350124	NORMAL

5 AUTHORITY AND BASIS FOR ISSUANCE
This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that, as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein
Exceptions

NONE.

6 TERMS AND CONDITIONS
Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventative maintenance, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States

DATE OF ISSUANCE	FAA REPRESENTATIVE	DESIGNATION NUMBER
R- 01/26/1973	ROBERT W. VAN LOON	SAT-FSDO SW17

Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding $1,000, or imprisonment not exceeding 3 years or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS

FAA Form 8100-2 (8-82)

GPO 570-189

WAYMAN AVIATION SERVICE, INC.
Bldg. 209 Musick Rd. Opa-Locka Airport Opa-Locka, FL 33054 Ph: 305.685.6468 Fax: 305.685.6449

Piper Seneca I
N887SP

E.L.T.	April 2009	April 2010
TRANSPONDER	April 2008	April 2010
STATIC SYSTEM	April 2008	April 2010
ANNUAL	April 2009	April 2010
100 HRS.	4,629.7 Tach	4,729.7 Tach

COMPUTED WEIGHT AND BALANCE

BASIC EMPTY WEIGHT	2862.8
TOTAL MOMENT	241794.1
NEW C.G.	84.46
USEFUL LOAD	1337.2

N887SP

WEIGHT AND BALANCE

DATE: April 1, 2005 WO# : 17018

A/C : PIPER PA-34-200 S/N : 34-7350124

REG # : N887SP TACH: 4138.9

THIS FORM SUPERSEDES WEIGHT AND BALANCE DATED: 12/17/01

ITEM	WEIGHT (LBS.)	ARM (IN)	MOMENT (IN LBS.)
PREVIOUS WEIGHT AND BALANCE:	2871.80	84.30	242092.90
REMOVED Left MZ-4216 Starter	-18.00	33.20	-597.60
INSTALLED Left MZ-6222 Starter	9.00	33.20	298.80
TOTAL:	2862.80	84.46	241794.10

NEW EMPTY WEIGHT: 2862.80 LBS.
NEW EMPTY WEIGHT C.G.: 84.46 IN.
MAX GROSS WEIGHT: 4200.00 LBS. Take-Off
USEFUL LOAD: 1337.20 LBS.

SYREK-MEE AVIATION

A&P 2761252

United States of America Department of Transportation – Federal Aviation Administration

Supplemental Type Certificate

Number SA01140WI

Garmin International, Inc.

1200 East 151st Street

Olathe, KS 66062

This certificate issued to

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 23 ***of the*** Federal Aviation ***Regulations.***

3A13

Original Product–Type Certificate Number :

Make : Piper

Model : PA-34

Description of Type Design Change: Installation of a Garmin GNS 430/530 VHF NAV/COMM/GPS System and associated GI 106A Course Deviation Indicators (CDI), GTX 327 ATCRBS Transponder, and GMA 340 Audio Panel. Data Required: (1) Garmin Master Drawing List (MDL) 005-C0001-00, Revision E, dated February 18, 2003; and (2) FAA Approved Airplane Flight Manual Supplement (AFMS), for Piper Modes with Garmin GNS 430 and GNS 530 VHF NAV/COMM/GPS and GI 106A Course Deviation Indicators, Garmin Document, Revision B, dated February 26, 2003; or later FAA Approved Revisions to (1) or (2).

Limitations and Conditions : Compatibility of this design change with previously approved modifications must be determined by the installer. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

Date of application : May 31, 2002

Date of issuance : February 27, 2003

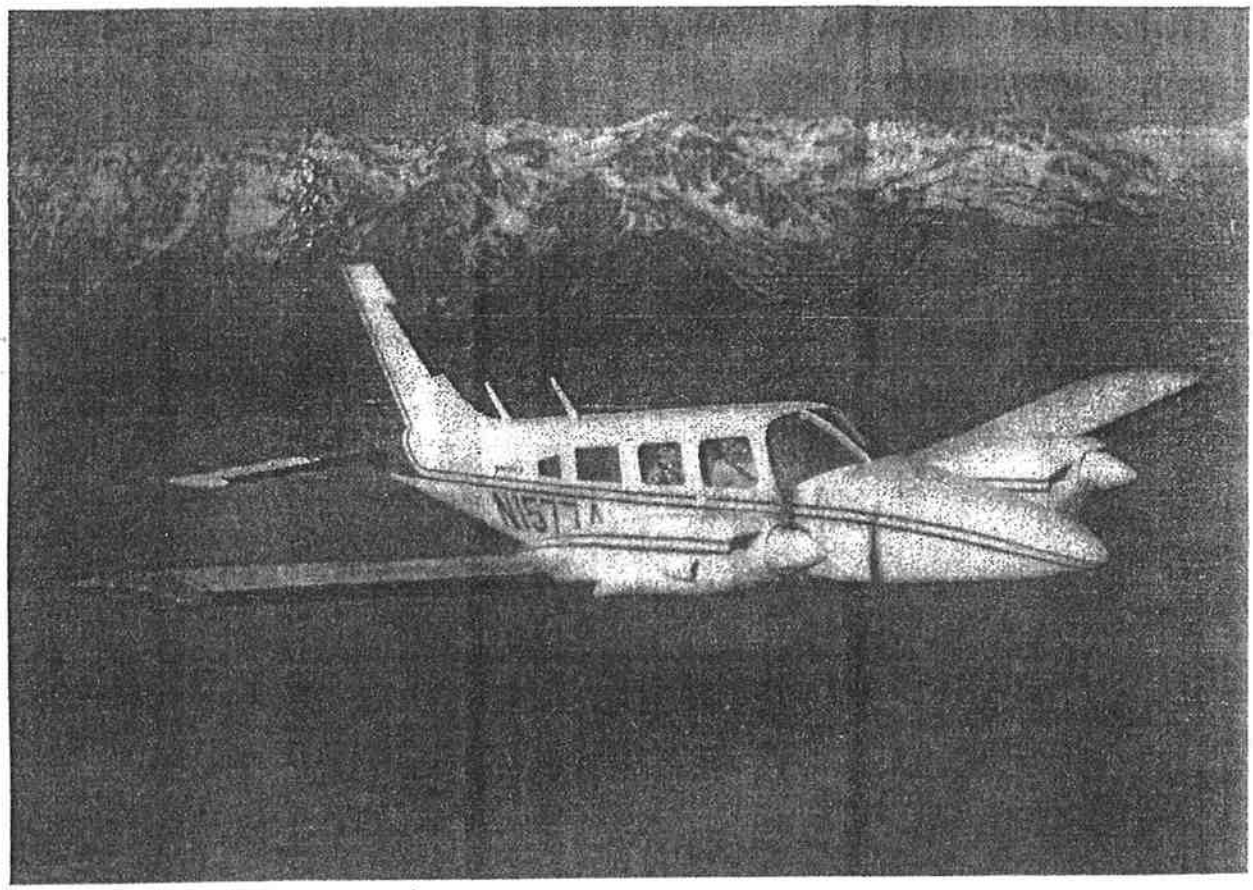
This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

THE

DUPLICATE

seneca

PILOT'S OPERATING MANUAL



BY

PIPER

This manual is incomplete without an APPROPRIATE FAA APPROVED AIRPLANE FLIGHT MANUAL and an APPROPRIATE WEIGHT AND BALANCE REPORT.

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 BELOW WHEN APPROVED BY PIPER AIRCRAFT CORPORATION. SUBSEQUENT REVISIONS SUPPLIED BY PIPER AIRCRAFT CORPORATION MUST BE PROPERLY INSERTED.

MODEL PA-34-200

AIRCRAFT SERIAL NO. 34-7350124 REGISTRATION NO. N8875P

PILOT'S OPERATING MANUAL, PART NUMBER 761 506 REVISION PR871130

PIPER AIRCRAFT CORPORATION
APPROVAL SIGNATURE AND STAMP

PP
30

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 outlined by the Airplane Flight Manual, instrument markings, and placards.

This Pilot's Operating Manual is not designed as a substitute for adequate and competent flight instruction, knowledge of the 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 for transition from single to multi-engine flying.

If an inconsistency of information exists between the Pilot's Operating Manual and the Airplane Flight Manual approved by the FAA, the Airplane Flight Manual shall be the authority.

A complete or partial replacement of this manual, Part No. 761 506, may be obtained only from Piper Customer Services.

Published by
PUBLICATIONS DEPARTMENT
Piper Aircraft Corporation
761 506
Issued: March 1972

GENERAL SPECIFICATIONS

APPLICABILITY

This manual is applicable to Piper Model PA-34-200 aircraft having serial numbers 34-7250001 through 34-7250189 when Piper Kit 760 607 is installed, 34-7250190 through 34-7250214 when Piper Kit 760 611 is installed and 34-7250215 through 34-7350353. Contact Piper Customer Services for specific information on the application of this manual.

REVISIONS

The information compiled in the Mot's Operating Manual 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 manual 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 manual 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 left hand margin of the page, opposite revised, added or deleted material. A line opposite the page number or section title and printing date, will indicate that the text or illustration was unchanged but material was relocated to a different page or 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.

III. Original Pages Issued

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

1-1 through 14, 2-1 through 2-22, 3-1 through 3-26, 4-1 through 4-34, 6-1 through 6-14, 7-1, 8-1 through 8-16, 9-1 through 9-11.

REVISIONS ISSUED

Current Permanent and Temporary Revisions to the PA-34 Pilot's Operating Manual issued March 10, 1972 are as follows:

761 506 (PR720508)	Permanent Revision to F/M	Dated May 8, 1972
761 506 (PR720707)	Permanent Revision	Dated July 7, 1972
761 506 (PR720802)	Permanent Revision to W/B	Dated August 2, 1972
761 506 (PR720802)	Permanent Revision to F/M General Specifications	Dated August 2, 1972
761 506 (PR720915)	Permanent Revision to F/M	Dated September 15, 1972
761 506 (PR721116)	Permanent Revision to F/M & W/B	Dated November 16, 1972
761 506 (PR721220)	Permanent Revision to F/M & P/O/M	Dated December 20, 1972
761 506 (PR721221)	Permanent Revision to W/B	Dated December 21, 1972
761 506 (PR730525)	Permanent Revision to F/M & W/B	Dated May 25, 1973
761 506 (PR730919)	Permanent Revision to F/M, W/B and P/O/M	Dated September 19, 1973
761 506 (PR731026)	Permanent Revision to P/O/M	Dated October 26, 1973
761 506 (PR740426)	Permanent Revision to F/M, W/B and P/O/M	Dated April 26, 1974
761 506 (PR741014)	Permanent Revision to F/M, W/B and P/O/M	Dated October 14, 1974
761 506 (PR750530)	Permanent Revision to F/M, W/B and P/O/M	Dated May 30, 1975
761 506 (PR750819)	Permanent Revision to F/M and P/O/M	Dated August 19, 1975
761 506 (PR770401)	Permanent Revision to F/M and P/O/M	Dated April 1, 1977
761 506 (PR790323)	Permanent Revision to W/B and P/O/M	Dated March 23, 1979
761 506 (PR830614)	Permanent Revision to F/M and P/O/M	Dated June 14, 1983

REVISIONS ISSUED (cont)

Current Permanent and Temporary Revisions to the PA-34 Pilot's Operating Manual issued March 10, 1972 are as follows (continued):

761 506 (PR871130)	Permanent Revision to W/B and P/O/M	Dated November 30, 1987

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GENERAL SPECIFICATIONS

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GENERAL SPECIFICATIONS

PERFORMANCE

Published figures are for Standard PA-34* airplanes flown at gross weight under standard condition at sea level unless otherwise stated. Performance for a specific airplane may vary from published figures depending upon the equipment installed, the condition of engines, airplane and equipment, atmospheric conditions and piloting technique.

Gross Weight (pounds)	4000	4200
Take-off Run (ft) (short field effort, flaps 25)	750	800
Take-off Distance Over 50 ft Barrier (ft) (short field effort, flaps 25)	1140	1235
Minimum Controllable Single Engine Speed (mph)	80	80
Best Rate of Climb Speed (mph) (knots)	105 (91.5)	105 (91.5)
Best Rate of Climb (ft per min)	1460	1360
Best Angle of Climb Speed (mph) (knots)	90 (78)	90 (78)
Best Single Engine Rate of Climb Speed (mph) (knots)	105 (91.5)	105 (91.5)
Single Engine Rate of Climb @ S.L. (ft per min)	230	190
Service Ceiling (ft)	18,800	17,900
Absolute Ceiling (ft)	20,000	19,400
Single Engine Service Ceiling (50 fpm) (left engine out) (ft)**	5200	3650
Single Engine Absolute Ceiling (left engine out) (ft)	6600	5000
Top Speed (mph) (knots)	196 (170)	195.3 (169.8)
Cruising Speed (75% power at sea level) (mph) (knots)	173 (150)	171.6 (149.2)
Cruising Speed (75% power at 6000) (mph) (knots)	187 (162)	186.3 (162)
Optimum Cruising Speed (65% power at 9000) (mph) knots)	185 (160)	183.4 (159.5)
Stalling Speed (gear and flaps down) (power off) (mph) (knots)	67 (58)	69 (60)
Stalling Speed (gear down and flaps up) (power off) (mph) (knots)	73 (63.5)	76 (66)
Landing Roll (flaps down) (ft) (short field)	705***	
Landing Over 50 ft Barrier (flaps down) (ft) (short field)	1335***	
Fuel Consumption (75% power) (gph) (both engines)	20.6	20.6
Fuel Consumption (65% power) (gph) (both engines)	18.3	18.3
Cruising Range (75% power at 6000 ft) (mi)	804	804
Cruising Range (65% power at 9000 ft) (mi)	885	885

*200 BHP, Counter-Rotating Engines, 4200 lb. G.W., Maximum Take-off Weight
4000 lb. G.W., Maximum Landing Weight

**5000 Ft. Single Engine Service Ceiling Occurs at 4030 Pounds Gross Weight.

***This value applies only for the conditions stated on the Landing Distance vs Density Altitude Chart.

WEIGHTS

Gross Weight (lbs) Max. Take-off	4200
Max. Landing	4000
Empty Weight (Standard) (lbs)	2625*
USEFUL LOAD (Standard) (lbs)	1575*
*These weights are approximate	

POWER PLANT

Right Engine - Lycoming	LIO-360-C1E6
Left Engine - Lycoming	IO-360-C1E6
Rated Horsepower	200
Rated Speed (rpm)	2700
Bore (in.)	5.125
Stroke (in.)	4.375
Displacement (cubic in.)	361.0
Compression Ratio	8.7:1
Dry Weight (lbs)	350.0

FUEL AND OIL

Fuel Capacity (U.S. gal)	98
Unusable fuel	5
Fuel, Aviation Grade (minimum octane)	100/130
Oil Capacity (qts) (each engine)	8

BAGGAGE AREA

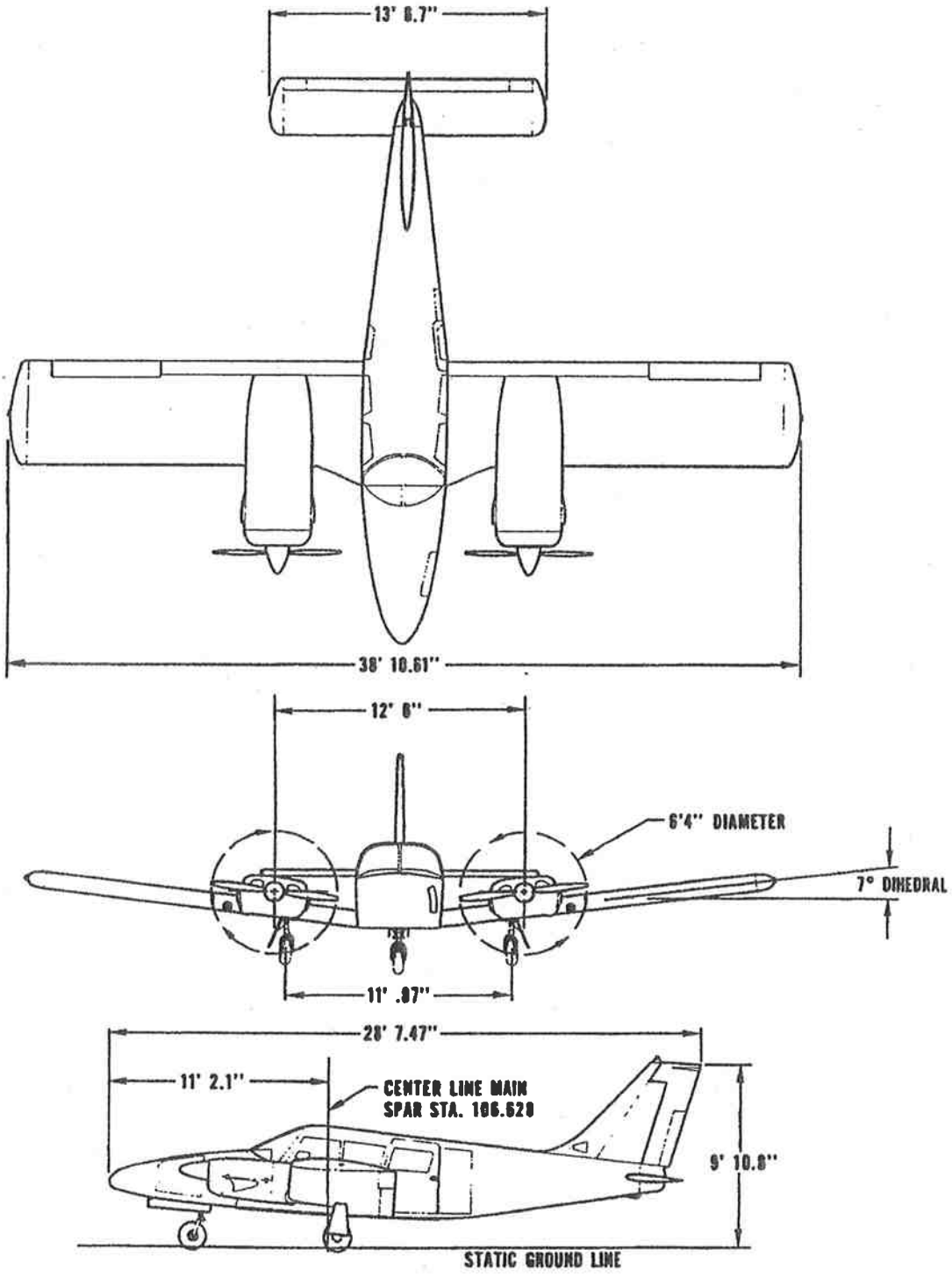
Maximum Baggage (lbs) Forward Compartment	100
Maximum Baggage (lbs) Rear Compartment	100
Baggage Space (cubic ft) Forward Compartment	15.3
Baggage Space (cubic ft) Rear Compartment	20
Baggage Door Size (in.) Forward Compartment	24 x 21

DIMENSIONS

Wing Span (ft)	38.88
Wing Area (sq ft)	208.7
Length (ft)	28.5
Height (ft)	9.9
Wing Loading (lbs per sq ft)	20.1
Power Loading (lbs per hp)	10.5
Propeller Diameter (in.)	76

LANDING GEAR

Wheel Base (ft)		7.0
Wheel Tread (ft)		11.1
Tire Pressure (psi)	Nose	31
	Main	50
Tire Size	Nose (six-ply rating)	6.00 x 6
	Main (eight-ply rating)	6.00 x 6


13' 8.7"
38' 10.61"
12' 6"
6'4" DIAMETER
7° DIHEDRAL
11' .87"
28' 7.47"
11' 2.1"
CENTER LINE MAIN
SPAR STA. 186.628
9' 10.8"
STATIC GROUND LINE

DESCRIPTION
AIRPLANE AND SYSTEMS

DESCRIPTION
AIRPLANE AND SYSTEM

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DESCRIPTION

AIRPLANE AND SYSTEMS

THE AIRPLANE

The Seneca is a twin-engine, all metal retractable landing gear airplane. It has seating for up to seven occupants and two separate luggage compartments.

AIRFRAME

Except for the steel used in the engine mount and landing gear, and the fiberglass used in such portions as the nose and wing tips, the structural components of the airframe are made of aircraft aluminum alloy which has been heat treated and protected from corrosion. The airframe has been designed and tested to a limit positive load factor of 3.8. The Seneca is not designed for acrobatic flight, and consequently aerobatics are prohibited.

The fuselage is a conventional semi-monocoque structure, which has a front door on the right side and a rear door on the left. An additional large-size rear door, which facilitates the loading of large pieces of cargo, is available.

The wing is of conventional metal design using one main spar located at approximately 40% of the chord aft of the leading edge, to take bending loads, and a rear spar for mounting the flaps and ailerons and to assist in taking torque and drag loads. Slotted wing flaps, which are mechanically operated by a four-position handle located between the two front seats, are provided to reduce landing speed and to give the pilot a high degree of glide path control. Two interconnected fuel tanks form an integral part of each wing. Both tanks on one side are filled through a single filler neck located well outboard of the engine nacelle.

The wings are attached to each side of the fuselage by the butt ends of the main spars, which are bolted into a spar box carry through, an integral part of the fuselage structure. There are also fore and aft attachments at the rear spar and at an auxiliary front spar.

The empennage of the Seneca consists of a vertical stabilizer, a rudder, and a horizontal stabilator. The rudder has a trim tab capable of relieving the pilot of excessive pedal force during single-engine operation. The stabilator incorporates an anti-servo tab which improves longitudinal stability and provides longitudinal trim. This tab moves in the direction the stabilator moves but with increased travel.

ENGINES

The 400 total horsepower of the Seneca engines makes possible a high cruise speed and excellent climb performance. The aircraft is powered by two four-cylinder, Lycoming, fuel-injected engines, each rated at 200 horsepower at 2700 RPM. Asymmetric thrust is eliminated during take-off and climb by counter-rotation of the engines, the left engine rotating in a clockwise direction when viewed from the cockpit and the right engine rotating counterclockwise.

The engine compartments are easily accessible for inspection through top-hinged side panels on either side of the engine cowlings. The cowlings are cantilever structures, attached at the firewalls. Engine mounts are constructed of steel tubing, and dynafocal mounts are provided to reduce vibration.

The exhaust system is a crossover type, with exhaust gases directed outboard of the nacelles into muffler-heaters to minimize exhaust noise and provide heated air for the cabin and defroster.

The cowl flaps are located on the bottom of the engine nacelle and are manually operated by control levers below the throttle quadrant. The control levers have three positions: open, intermediate and closed. A lock, incorporated into each control lever, locks the cowl flap in the selected position. To operate, depress the lock and move the control to the desired position. Release the lock after initial movement of the control; the flap will then stop automatically in the next intermediate, open or closed position. The lock must be depressed for each selection of cowl flap.

An oil cooler for each engine is mounted on the forward side of the firewall. Air is picked up by air scoops on the side of the cowl, passed through the oil cooler and ducted overboard in the lower cowling.

The fuel injection system reduces the possibility of induction system ice and provides better fuel distribution than does a carburetor system. Each engine is equipped with a Bendix RSA-5 fuel injection system, which operates on the principle of measuring engine air consumption and using the air flow to control fuel flow to the engine. Fuel pressure regulation by means of a servo valve causes a minimal drop in fuel pressure throughout the metering system. Metering pressure is maintained above vapor forming conditions, yet fuel inlet pressure is low enough to allow the use of a diaphragm fuel pump. Thus vapor lock and associated problems of difficult starting are minimized.

PROPELLERS

Counter-rotation of the propellers provides balanced thrust during take-off and climb and eliminates the "critical engine" factor in single-engine flight.

The propellers are constant speed, controllable pitch, full feathering Hartzell propellers, operated by oil and nitrogen pressure. Compressed air may be used instead of nitrogen, provided it contains no moisture. Oil pressure sends the propeller toward the high RPM or unfeather position, while nitrogen pressure sends the propeller toward the low RPM or feather position and keeps the propeller from overspeeding. The recommended nitrogen pressure to be used when charging the unit is listed on placards on the propeller dome and inside the spinner. This pressure varies with ambient temperature at the time of charging. A governor, mounted on each engine, supplies oil through the propeller shaft at various pressures to maintain constant RPM settings.

Each propeller is controlled by use of the propeller control lever located in the center of the power control quadrant. Feathering of a propeller is accomplished by moving the control fully aft through the low RPM detent, into the feather position. Feathering takes place in approximately six seconds. Unfeathering is accomplished by moving the propeller control ahead and engaging the starter until the propeller is windmilling.

A feathering lock, operated by centrifugal force, prevents feathering during engine shut-down, by making it impossible to feather any time the engine speed is less than 800 RPM. For this reason if an engine is being feathered to save it the pilot must be sure to move the control to feather position before the engine speed drops below 800 RPM.

LANDING GEAR SYSTEM

To increase cruise speed, climb and other performance, the Seneca is equipped with a retractable tricycle landing gear, which is hydraulically operated. Rugged gear construction and a heavy duty braking system permit operation from a wide variety of landing areas.

Hydraulic pressure for gear operation is furnished by an electrically-powered reversible pump controlled by a two-position selector switch located on the instrument panel to the left of the control quadrant. The gear selector switch, which has a wheel-shaped knob, must be pulled out before it is moved to the "UP" or "DOWN" position. When hydraulic pressure is exerted in one direction the gear is retracted; when it is exerted in the other direction the gear is extended. If the landing gear is in transit and the hydraulic pump is running, it is inadvisable to move the gear selector switch to the opposite direction before it has reached its travel limit, because this sudden reversal may be harmful to the electric pump. Retraction or extension normally takes six to seven seconds.