

Department of Transportation—Federal Aviation Administration

Supplemental Type CertificateNumber **SE1779NM**

This certificate, issued to **Precise Flight, Inc.**
63120 Powell Butte Rd.
Bend, OR 97701

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 33 of the Federal Aviation Regulations.

Original Product—Type Certificate Number: *See attached FAA Approved Model List (AML)
Make: No. SE1779NM for list of approved airplane models
Model: and applicable airworthiness regulations

Description of the Type Design Change: Installation of Precise Flight, Inc. Standby Vacuum System SVS III, in accordance with Engineering Drawing 000V0000, Revision -, dated March 10, 2000, and Installation Reprot No. 50050, Revision 25, dated August 26, 1999, or later approved revision. Or Installation of Precise Flight, Inc. SVS V, in accordance with Precise Flight, Inc. Engineering Drawing 000V0000, Revision -, dated March 10, 2000 and Installation Instructions 08072, Revision -, dated December 12, 1999, or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this certificate, Addendum No. SE1779NM, and FAA approved AML No. SE1779NM, December 30, 1983, or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft.

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.

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.

Date of application: December 13, 1982

Date reissued:

Date of issuance: December 28, 1982

Date amended: December 30, 1983; January 31, 1985;
 July 25, 1990; January 31, 1991
 April 21, 2000



By direction of the Administrator
Alfred J. Moughit
 (Signature)
 Acting Manager, Seattle Aircraft Certification Office
 (Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SE1779NM

SUPPLEMENTAL TYPE CERTIFICATE ADDENDUM NO. SE1779NM

The conditions and limitations of Type Certificate Data Sheet as listed in the attached AML apply except where superseded by the following:

This Supplemental Type Certificate Data Sheet, which is part of STC SE1779NM, prescribes the conditions and limitations under which the product for which the STC was issued meets the airworthiness requirements of the Federal Aviation Regulations:

SUPPLEMENTAL TYPE CERTIFICATE HOLDER: Precise Flight, Inc.

Engines:	Lycoming
Fuel:	See Type Certificate Data Sheet
Engine Limits:	See Type Certificate Data Sheet
Placards:	Placards and Operating Limits on appropriate Type Certificate Data Sheet apply except as noted herein: The following placard is mandatory on aircraft that are required to have POH/AFM's and must be located near instrument suction gauge in full view of pilot:

STANDBY VACUUM SYSTEM:
FOR OPERATING INSTRUCTIONS AND LIMITATIONS SEE SUPPLEMENT
IN OWNER'S MANUAL OR PILOT'S OPERATING HANDBOOK

NOTE: This STC covers modification of the engine only. Installation of this system in an aircraft requires aircraft installations approval and associated Airplane Flight Manual and Pilot Operating Handbook Supplement for the installation.

For those airplanes which do not have an AFM/POH, the placards provided in each Precise Flight, Inc. Installation Kit must be installed with the modification.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

APPROVED MODEL LIST NO. 3E1779NM
PRECISE FLIGHT STANDBY VACUUM SYSTEM
LIST OF ACTIVE PAGES

<u>PAGE</u>	<u>AMENDMENT DATE</u>
1	08/22/90
2	12/28/82
3	12/28/82

FAA Approved:

D.L. Rigney
for Assistant Manager, Seattle
Aircraft Certification Office

Amended: September 9, 1990

PRECISE FLIGHT, INC.
 FAA APPROVED MODEL LIST (AML) NO. SE1779NM
 FOR
 INSTALLATION OF STANDBY VACUUM SYSTEM (SVS)

Issue Date: October 31, 1999

Item	Engine Make	Engine Model	Original Type Certificate Number	Certification Basis For Alteration	FAA Approved Drawing No.	Revision No. and Date	AFM Supplement Number/Date	AML Amendment Date
1	LYCOMING	O-235 Series	E-223	CAR 13 and T.C. E-223	LYC. SVS 0010		12/28/82	04/11/83
2		O-290	E-229	CAR 13 and T.C. E-223	LYC. SVS 0010			
3		O-320	E-274	CAR13 and T.C. E-274	LYC. SVS 0010			
4		IO-320	1E12	CAR 13 and T.C. 1E12	LYC. SVS 0010			
5		O-340	E-277	CAR 13 and T.C. E-277	LYC. SVS 0010			
6		O-350	227	CAR13 and T.C. 227	LYC. SVS 0010			
7		0360, LO-360, IO-360, LIO360	E-286 1W10	CAR 13 and T.C. E-286	LYC. SVS 0010			05/10/85
8		AEIO-360	E1CE	CAR 13 and T.C. E1CE	LYC. SVS 0010			08/22/90

Supplemental Type Certificate

Number **SA2167NM**

This certificate, issued to **Precise Flight, Inc.**
63120 Powell Butte Rd.
Bend, OR 97701

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 21 of the Federal Regulations.

Original Product—Type Certificate Number: *See attached FAA Approved Model List (AML)
 Make: No. SA2167NM for list of approved airplane models
 Model: and applicable airworthiness regulations

Description of the Type Design Change: Installation of Precise Flight, Inc. Stand-By Vacuum System (SVS) in accordance with the appropriate Precise Flight, Inc. Engineering Drawing listed on FAA Approved Model List No. SA2167NM, dated May 4, 2000, or later FAA approved revision.

NOTE: As a prerequisite to this change, the engine must be modified in accordance with Precise Flight, Inc. STC No. SE1779NM or SE1780NM, dated April 21, 2000, or later FAA approved revision. Also, modified aircraft must be equipped with a vacuum indicator.

Limitations and Conditions: Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this certificate, AML No. SA2167NM and the appropriate FAA Approved Flight Manual Supplement (AFMS) listed on AML No. SA2167NM must be maintained as part of the permanent records for the modified aircraft.

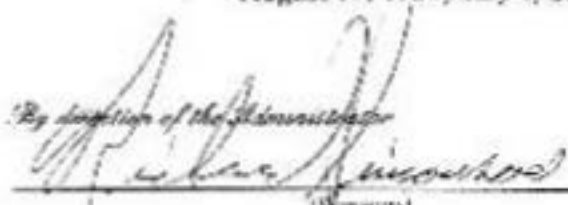
If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

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.

Date of application: October 31, 1983
 Date of issuance: November 7, 1983

Date received: December 16, 1983; December 7, 1984;
 Date amended: August 17, 1989; May 4, 2000



By signature of the Administrator


 Acting Manager, Seattle Aircraft Certification Office
 (Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SA2167NM

CONDITIONS AND LIMITATIONS: (continued)

The conditions and limitations of the original Type Certificates apply except as follows:

This Continuation Sheet, which is part of STC No. SA2167NM, prescribes the conditions and limitations under which the STC was issued meets the airworthiness requirements of the appropriate regulations.

SUPPLEMENTAL TYPE CERTIFICATE HOLDER: Precise Flight, Inc.

1. Piper Model (as listed on AML) as modified by STC No. SA2167NM

Equipment: The Airplane Flight Manual or Pilot's Operating Handbook Supplement must be maintained in the airplane at all times.

NOTE 1: Current weight and balance report including list of equipment in the certified empty weight must be in the aircraft.

NOTE 2: In addition to the Placards and Markings required by TCDS, Note 2, apply the following:

a) To be located on the push/pull control cable knob:



b) To be located around the LED bulb for the pump inoperative warning light:



Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

United States of America
 Department of Transportation -- Federal Aviation Administration
Supplemental Type Certificate
 (Continuation Sheet)

Number S42167181

CONDITIONS AND LIMITATIONS: (continued)

- c) Place in front of and in full view of the pilot:

**STANDBY VACUUM SYSTEM:
 FOR OPERATING INSTRUCTIONS AND LIMITATIONS SEE SUPPLEMENT
 IN OWNER'S MANUAL OR PILOT'S OPERATING HANDBOOK**

- d) One of the following placards must be placed in full view of the pilot near the instrument vacuum indicator after appropriate entries have been made:

Approx. Standby Vacuum Available - Airside
 -Power Check
 For Aircraft With C.S. Pmp. Max. Cont. RPM

Press. Alt.	RPM	Max. Press.	SYS Vacuum In. Hg. Min.
2000	Max cont.		
4000	Max cont.		
6000	Max cont.		
8000	Max cont.		
10000	Max cont.		

S75-10

OR

Approx. Standby Vacuum Available - Airside
 -Power Check
 For Aircraft With Fixed Pitch Pmp

Press. Alt.	RPM	SYS Vacuum In. Hg. Min.
2000		
4000		
6000		
8000		
10000		

S75-10

-END-

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

FAA APPROVED MODEL LIST (AML) NO. SA2167NM
PRECISE FLIGHT, INC.

For

INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: December 7, 1984

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
1	Piper Aircraft Corp.	L-14	760	CAR 4a	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
2	Piper Aircraft Corp.	L-14	760	CAR 4a	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
3	Piper Aircraft Corp.	PA-12, -12S	780	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
		PA-14	797	CAR 3				
		PA-15	800	CAR 3				
		PA-16, -16S	1A1	CAR 3				
		PA-17	805	CAR 3				
4	Piper Aircraft Corp.	PA-12, -12S	780	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
		PA-14	797	CAR 3				
		PA-15	800	CAR 3				
		PA-16, -16S	1A1	CAR 3				
		PA-17	805	CAR 3				

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2167NM
PRECISE FLIGHT, INC.

For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: December 7, 1984

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
5	Piper Aircraft Corp.	PA-18, -18A, -18S, -18-105 (SPECIAL), -18S-105 (SP), -18-125 (ARMY L-21A), -18AS-125, -18S-125, -18-135, -18A-135, -18AS-135, -18-150, -18A-150, -18AS-150, -18S-150, -19 (ARMY L-18C), -19S	1A2	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev. , dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
6	Piper Aircraft Corp.	PA-18, -18A, -18S, -18-105 (SPECIAL), -18S-105 (SP), -18-125 (ARMY L-21A), -18AS-125, -18S-125, -18-135, -18A-135, -18AS-135, -18-150, -18A-150, -18AS-150, -18S-150, -19 (ARMY L-18C), -19S	1A2	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev. , dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000

* or later FAA Approved Revision

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PRECISE FLIGHT, INC.

For

INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

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Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
7	Piper Aircraft Corp.	PA-20, -20S, -20-115, -20S-115, -20-135	1A4	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
8	Piper Aircraft Corp.	PA-20, -20S, -20-115, -20S-115, -20-135	1A4	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
9	Piper Aircraft Corp.	PA-22, -22-108, -22-135, -22S-135, -22-150, -22S-150, -22-160, -22S-160	1A6	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
10	Piper Aircraft Corp.	PA-22, -22-108, -22-135, -22S-135, -22-150, -22S-150, -22-160, -22S-160	1A6	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000

* or later FAA Approved Revision

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PRECISE FLIGHT, INC.

For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: December 7, 1984

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
11	Piper Aircraft Corp.	PA-24, -24-250, -24-260, -24-400	1A15	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
12	Piper Aircraft Corp.	PA-24, -24-250, -24-260, -24-400	1A15	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
13	Piper Aircraft Corp.	PA-25, -25-235, -25-260	2A8	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
14	Piper Aircraft Corp.	PA-25, -25-235, -25-260	2A8	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000

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						Number	REV	
15	Piper Aircraft Corp.	PA-32-260, -32RT-300, -32RT-301T, -32-300, -32RT-300T, -32-301, -32S-300, -32R-301, -32-301T, -32R-300, -32R-301T	A3SO	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
16	Piper Aircraft Corp.	PA-32-260, -32RT-300, -32RT-301T, -32-300, -32RT-300T, -32-301, -32S-300, -32R-301, -32-301T, -32R-300, -32R-301T	A3SO	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2167NM
PRECISE FLIGHT, INC.

For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: December 7, 1984

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
17	Piper Aircraft Corp.	PA-28-140, -28-141, -28-150, -28-151, -28-160, -28-180, -28R-180, -28S-180, -28-235, -28-181, -28-161, -28R-200, -28R-201, -28R-201T, -28-236, -28RT-201, -28RT-201T, -28-201T	2A13-38	CAR 3	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev. , dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
18	Piper Aircraft Corp.	PA-28-140, -28-141, -28-150, -28-151, -28-160, -28-180, -28R-180, -28S-180, -28-235, -28-181, -28-161, -28R-200, -28R-201, -28R-201T, -28-236, -28RT-201, -28RT-201T, -28-201T	2A13-38	CAR 3	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev. , dated 3/10/2000 Rev. A, dated 12/22/1999	5/4/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2167NM
PRECISE FLIGHT, INC.

For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: December 7, 1984

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	FAA Approved Airplane Flight Manual Supplement*	FAA Approved Drawing*		AML Amdt. Date
						Number	REV	
19	Piper Aircraft Corp.	PA-36-285, -36-300, -36-375	A9SO	FAR 23	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
20	Piper Aircraft Corp.	PA-36-285, -36-300, -36-375	A9SO	FAR 23	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
21	Piper Aircraft Corp.	PA-38-112	A18SO	FAR 23	Supplemental Flight Manual for SA2167NM dated 8/11/99. (SVS III)	SVS III Engineering Drawing 000V0000 And Installation Report No. 50050	Rev.-, dated 3/10/2000 Rev. 25, dated 8/26/99	5/4/2000
		PA-46-310P	A25SO	FAR 23				
22	Piper Aircraft Corp.	PA-38-112	A18SO	FAR 23	Supplemental Flight Manual for Push Operated Cable Valve dated 2/4/2000. (SVS V) OR Supplemental Flight Manual for Pull Operated Cable Valve dated 2/4/2000. (SVS V)	SVS V Engineering Drawing 000V0000 And Installation Report No. 08072	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	5/4/2000
		PA-46-310P	A25SO	FAR 23				

* or later FAA Approved Revision

FAA Approved: 
 Acting Manager, Seattle Aircraft
 Certification Office
 Amended: May 4, 2000