United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SE1779NM**

This certificate, issued to **Precise Flight, Inc.**
63354 Powell Butte Road
Bend, OR 97701

*certifies that the change in the type design for the following product with the limitations and conditions thereof as specified hereon meets the airworthiness requirements of Part * of the * 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 Report 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 these models 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, Continuation Sheet, and FAA approved AML No. SE1779NM, dated 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.

(See Continuation Sheet Page 3)

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 of issuance: December 28, 1982

Date reissued:
Date amended: 12/30/83; 1/31/85; 7/25/90; 1/31/91; 4/21/00; 11/7/03

By direction of the Administrator

(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.

FAA Form 8110-2(10-68)

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number **SE1779NM**

Precise Flight, Inc.
Reissued:
Amended: 12/30/83; 1/31/85; 7/25/90; 1/31/91; 4/21/00; 11/4/03

Limitations and Conditions: [cont'd]

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:

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 the pilot.

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

APPROVED MODEL LIST NO. SE1779NM

PRECISE FLIGHT STANDBY VACUUM SYSTEM

LIST OF ACTIVE PAGES

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

FAA Approved: D. E. Riggin
for Assistant Manager, Seattle
Aircraft Certification Office

Amended: September 9, 1990

PRECISE FLIGHT

FAA APPROVED MODEL LIST (AML) NO. SE1779NM

FOR

INSTALLATION OF STANDBY VACUUM SYSTEM (SVS)

ISSUE DATE: OCTOBER 31, 1989

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWING/ DRAWING LIST		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					NUMBER	REVISION NO. AND DATE		
20	LYCOMING	TIO-540 LTIO-540	E14EA	CAR 13 and T.C. E14EA	LYC. SVS 00 10		12-28-82	
21		TIO-541	E10EA	CAR 13 and T.C. E10EA	LYC. SVS 00 10			
22		TIGO-541	E19EA	CAR 13 and T.C. E19EA	LYC. SVS 00 10			
23		GSO-580	E-256	CAR 13 and T.C. E-256	LYC. SVS 00 10			
24		SO-580	E-285	CAR 13 and T.C. E-285	LYC. SVS 00 10			
25		IO-720	IE15	CAR 13 and T.C. IE15	LYC. SVS 00 10			

PRECISE FLIGHT

FAA APPROVED MODEL LIST (AML) NO. SE1779NM

FOR

INSTALLATION OF STANDBY VACUUM SYSTEM (SVS)

ISSUE DATE: OCTOBER 31, 1989

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWING/ DRAWING LIST		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					NUMBER	REVISION NO. AND DATE		
11	LYCOMING	O-43E GO-435	E-228	CAR 13 and T.C. E-228	LYC. SVS 0010		12-28-82	
12		GSO-435	E-276	CAR 13 and T.C. E-276	LYC. SVS 0010			
13		GO-480, IGO-480, GSO-480 O-480	E-275	CAR 13 and T.C. E-275	LYC. SVS 0010			
14		IGSO-480	E-284	CAR 13 and T.C. E284	LYC. SVS 0010			
15		O-540	E-295	CAR 13 and T.C. E-295	LYC. SVS 0010			
16		IO-540	IE4	CAR 13 and T.C. IE4	LYC. SVS 0010			
17		IGO-540	IE11	CAR 13 and T.C. IE11	LYC. SVS 0010			
18		IGSO-540	IE7	CAR 13 and T.C. IE7	LYC. SVS 0010			
19		O-540-9	E304	CAR 13 and T.C. E-304	LYC. SVS 0010			

PRECISE FLIGHT

FAA APPROVED MODEL LIST (AML) NO. SE1779NM

FOR

INSTALLATION OF STANDBY VACUUM SYSTEM (SVS)

ISSUE DATE: OCTOBER 31, 1989

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA SEALED DRAWING/ DRAWING LIST		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					NUMBER	REVISION NO. AND DATE		
1	LYCOMING	O-235 Series	E-223	CAR 13 and T.C. E-223	LYC. SVS 00 10		12-28-82	4-11-83
2		O-290	E-229	CAR 13 and T.C. E-223	LYC. SVS 00 10			
3		O-320	E-274	CAR 13 and T.C. E-274	LYC. SVS 00 10			
4		IO-320	1E12	CAR 13 and T.C. 1E12	LYC. SVS 00 10			
5		O-340	E-277	CAR 13 and T.C. E-277	LYC. SVS 00 10			
6		O-350	227	CAR 13 and T.C. 227	LYC. SVS 00 10			
7		O-360 ,LO-360 IO-360 LIO-360	E-286 1E10	CAR 13 and T.C. E-286	LYC. SVS 00 10			5-10-85
8		AEIO-360	E1CE	CAR 13 and T.C. E1CE	LYC. SVS 00 10			8-22-90
9		TIO-360	E-16EA	CAR 13 and T.C. E-16EA	LYC. SVS 00 10			
10		TO-360 LTO-360	E26EA	CAR 13 and T.C. E-26EA	LYC. SVS 00 10			

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SA2162NM**

This certificate, issued to **Precise Flight, Inc.**
63354 Powell Butte Road
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 * of the * Regulations.*

Original Product—Type Certificate Number: *See attached FAA Approved Model List (AML)
Make: No. SA2162NM 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 AML No. SA2162NM, dated April 14, 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 December 28, 1982, 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 these models 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. SA2162NM, and the appropriate FAA approved Airplane Flight Manual Supplement (AFMS) listed on AML No. SA2162NM 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 reissued:
Date amended: 12/16/83; 12/7/84; 7/25/90; 4/14/00; 11/7/03

FEDERAL AVIATION ADMINISTRATION

By direction of the Administrator

(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.

FAA Form 8110-2(10-68)

FAA APPROVED MODEL LIST NO. SA2162NM
PRECISE FLIGHT STANDBY VACUUM SYSTEM
LIST OF ACTIVE PAGES

PAGE	AMENDMENT DATE
2	April 14, 2000
3	April 14, 2000
4	April 14, 2000
5	April 14, 2000
6	April 14, 2000
7	April 14, 2000
8	April 14, 2000
9	April 14, 2000
10	April 14, 2000
11	April 14, 2000

AMENDED DATE: April 14, 2000

FAA Approved: _____
Acting Manager, Seattle Aircraft
Certification Office

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	Cessna	120, 140	A768	CAR 4a	Supplemental Flight Manual for SA2162NM 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	4/14/2000
2	Cessna	120, 140	A768	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	4/14/2000
3	Cessna	140A	5A2	CAR 3, (CAR 4a)	Supplemental Flight Manual for SA2162NM 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	4/14/2000
4	Cessna	140A	5A2	CAR 3, (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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	Cessna	150, 150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, A150L, 150M, 152, A152, A150K, 150M	3A19	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
6	Cessna	150, 150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, A150L, 150M, 152, A152, A150K, 150M	3A19	CAR Part 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. 08074	Rev.-, dated 3/10/2000 Rev.-, dated 12/22/1999	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	Cessna	170, 170A, 170B	A799	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
8	Cessna	170,170A, 170B	A799	CAR Part 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	4/14/2000
9	Cessna	172, 172A, 172B, 172C, 172D, 172E, 172F, (USAF T-41A) 172I, K, L, M, N, P, 172Q	3A12	Part 23	Supplemental Flight Manual for SA2162NM 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	4/14/2000
10	Cessna	172, 172A, 172B, 172C, 172D, 172E, 172F, (USAF T-41A) 172I, K, L, M, N, P, 172Q	3A12	Part 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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	Cessna	175, 175A, 175B, 175C, P172D, R172E, (USAFT-41B, USAFT41-3,-41D) R172F, (USAFT-41D, -41C) R172G, (USAFT-41D), R172H, (USAFT-41D), R172J, R172K, 172RG	3A17	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
12	Cessna	175, 175A, 175B, 175C, P172D, R172E, (USAFT-41B, USAFT41-3,-41D) R172F, (USAFT-41D, -41C) R172G, (USAFT-41D), R172H, (USAFT-41D), R172J, R172K, 172RG	3A17	CAR Part 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	4/14/2000
13	Cessna	177,177A,177B 177RG	A13CE A20CE	FAR 23	Supplemental Flight Manual for SA2162NM 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	4/14/2000
14	Cessna	177, 177A, 177B 177RG	A13CE A20CE	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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	
15	Cessna	180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
16	Cessna	180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6	CAR Part 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	4/14/2000
17	Cessna	182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182RG, T182, T182RG, T182R	3A13	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
18	Cessna	182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182RG, T182, T182RG, T182R	3A13	CAR Part 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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	Cessna	185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	3A24	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
20	Cessna	185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	3A24	CAR Part 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	4/14/2000
21	Cessna	188, 188A, 188B, A188A, A188B, T188C	A9CE	FAR Part 21	Supplemental Flight Manual for SA2162NM 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	4/14/2000
22	Cessna	188, 188A, 188B, A188A, A188B, T188C	A9CE	FAR Part 21	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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	
23	Cessna	206, P206, -A, -B, -C, -D, -E, TP206A, -B, -C, -D, -E, U206-A, -B, -C, -D, -E, -F, -G, TU206A, -B, -C, -D, -E, -F	A4CE	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
24	Cessna	206, P206, -A, -B, -C, -D, -E, TP206A, -B, -C, -D, -E, U206-A, -B, -C, -D, -E, -F, -G, TU206A, -B, -C, -D, -E, -F	A4CE	CAR Part 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	4/14/2000
25	Cessna	207, 207A, T207, T207A	A16CE	Part 23	Supplemental Flight Manual for SA2162NM 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	4/14/2000
26	Cessna	207, 207A, T207, T207A	A16CE	Part 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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	
27	Cessna	210, 210A, 210B, 210C, 210D, 210E, 210F, 210-5 (205), -5A, (205A), T210F, 210G, T-210G, 210H, T-210H, 210J, 205P, T-210J, 210K, T210L, 210L, 210M, T210M, 210N, P210N, T210N, 205T, 210R	3A21	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
28	Cessna	210, 210A, 210B, 210C, 210D, 210E, 210F, 210-5 (205), -5A, (205A), T210F, 210G, T-210G, 210H, T-210H, 210J, 205P, T-210J, 210K, T210L, 210L, 210M, T210M, 210N, P210N, T210N, 205T, 210R	3A21	CAR Part 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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED MODEL LIST (AML) NO. SA2162NM
PRECISE FLIGHT, INC.
For
INSTALLATION OF PRECISE FLIGHT STANDBY VACUUM SYSTEM

Issue Date: May 23, 1988

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	
29	Cessna	P210R, 205U, T210R, 210-5, 210-5A	3A21	CAR Part 3	Supplemental Flight Manual for SA2162NM 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	4/14/2000
30	Cessna	P210R, 205U, T210R, 210-5, 210-5A	3A21	CAR Part 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	4/14/2000
31	Cessna	305A (USAF 0-1A) 305C(USAF 0-1E) 305D(USAF 0-1F) 305F	5A5	Part 23	Supplemental Flight Manual for SA2162NM 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	4/14/2000
32	Cessna	305A (USAF 0-1A) 305C(USAF 0-1E) 305D(USAF 0-1F) 305F	5A5	Part 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	4/14/2000

* or later FAA Approved Revision

FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT OR SUPPLEMENTAL FLIGHT MANUAL FOR

AIRCRAFT MODEL: _____

SERIAL NUMBER: _____

REGISTRATION NUMBER: _____

This supplement must be attached to the FAA approved Airplane Flight Manual, when the Precise Flight Standby Vacuum has been installed in accordance with STC(s).

SA2160NM, SA2161NM, SA2162NM, SA2164NM, SA2167NM, SA2168NM, SA2683NM - Aircraft

&

SE1779NM - Lycoming Engine

or

SE1780NM - Continental Engine

The information contained in this document supplements or supersedes the basic manual only in those areas listed. For Limitations, Procedures, and Performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: _____

Manager,
Special Certification Branch
Seattle Aircraft Certification Office

DATE OF APPROVAL: Feb. 4, 2000

ISSUED: February 4, 2000

SYSTEM DESCRIPTION

A Precise Flight Standby Vacuum System may be installed to provide a temporary vacuum system in the event of a primary vacuum failure. The Standby Vacuum System operates on the differential between the intake manifold and ambient air pressure and is directed through a shuttle valve system to drive your flight instruments.

CAUTION: The use of the Standby Vacuum System requires a degree of Pilot skill and proficiency that is best maintained through practice. It is recommended, upon recurrent IFR training, in VFR conditions, in the presence of a CFI, that the aircraft be flown at the RPM and or Manifold Pressure settings found on the required placard and entered in this AFMS. This procedure will familiarize the pilot with limitations of using engine manifold vacuum for instrument power and maintaining level flight.

I. OPERATING LIMITATIONS

A. INSTRUCTIONS

1. The Standby Vacuum System is for emergency or standby use only and not for dispatch purposes.
2. Vacuum powered and/or Vacuum gyro directed autopilot operation may be unreliable when the Standby Vacuum System is the sole source of vacuum. Vacuum powered or vacuum gyro directed autopilot should be OFF when operating with a failed primary vacuum system.
3. The Supplemental Vacuum System is not designed to operate pneumatic de-ice systems. DO NOT operate a pneumatic de-ice system when operating with a failed primary vacuum system.
4. Above 10,000 ft. pressure altitude, engine power settings may have to be significantly reduced to provide adequate vacuum power for proper gyro instrument operation.
5. The following placards are required to be in full view of pilot:

I. OPERATING LIMITATIONS (CONT.)

B. PLACARDS

Placard to be located on the push/pull control cable

Placard to be located around the LED for the pump inop warning light.

Placard to be placed in front and in full view of the pilot.

STANDBY VACUUM SYSTEM EQUIPPED. FOR OPERATING INSTRUCTIONS AND LIMITATIONS SEE SUPPLEMENT IN OWNERS MANUAL OR PILOTS OPERATING HANDBOOK

I. OPERATING LIMITATIONS (CONT.)

B. PLACARDS

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.

Approximate Standby Vacuum Available - Altitude - Power Chart for aircraft with Constant Speed Propeller - Maximum Continuous RPM.

PRESS ALT. (FT.)	RPM	MAN. PRESSURE	SVS VACUUM IN. HG MIN.
2000	Max. Cont.		
4000	Max. Cont.		
6000	Max. Cont.		
8000	Max. Cont.		
10,000	Max. Cont.		

Approximate Standby Vacuum Available - Altitude - Power Chart for aircraft with a Fixed Pitch Propeller

PRESS ALT. (FT.)	RPM	SVS VACUUM IN. HG MIN.
2000		
4000		
6000		
8000		
10,000		

II. OPERATING PROCEDURES

A. NORMAL PROCEDURES

1. GROUND CHECK

a. Cycle the Standby Vacuum Control Knob OUT - ON - , and return Control Knob IN - OFF - position.

2. BEFORE TAKEOFF

a. Idle Engine at low speed, momentarily pull the standby vacuum knob OUT - ON - and check vacuum gauge. Normally, the vacuum reading will be slightly higher. After checking system push Standby Vacuum System knob IN - OFF -. Check that vacuum gauge has returned to the previous reading.

3. ENROUTE

a. Regularly check vacuum gauge and monitor warning light for proper vacuum system operation.

B. EMERGENCY PROCEDURES

1. PRIMARY VACUUM FAILURE WARNING LIGHT ILLUMINATES

a. Pull the Standby Vacuum System knob OUT -ON- and adjust throttle setting as required to maintain adequate vacuum for the primary instruments - Suction Gauge Reading in the Green Arc - If necessary descend to a lower altitude to obtain a larger differential between manifold and ambient pressure. Vacuum power must be closely monitored by checking the vacuum gauge frequently.

b. The SVS is not designed for continued IFR flight. Immediate steps should be taken to return to VFR conditions or to land. If this is not possible, IFR flight should be continued only as long as necessary to return to VFR conditions or land the airplane.

WARNING: FAILURE OF THE VACUUM SYSTEM STILL CONSTITUTES AN EMERGENCY SITUATION REGARDLESS OF THE INSTALLATION OF THE SVS. IT MAY NOT BE POSSIBLE TO MAINTAIN A SAFE ALTITUDE AND MAKE USE OF THE SVS. IN SUCH A SITUATION THE AIRPLANE MUST BE FLOWN USING NON-VACUUM POWERED INSTRUMENTS.

B. EMERGENCY PROCEDURES (CONT.)

c. If descent is impractical:

- Periodically and temporarily reduce power as required to provide adequate vacuum to the aircraft primary instruments.
- Reapply power as required, while comparing vacuum driven gyros against the Turn and Bank Indicator, Turn Coordinator, VSI and/or other flight instruments.
- When an obvious discrepancy is noted between the vacuum driven instruments and other flight instrumentation. Periodically and temporarily reduce power as required to provide adequate vacuum to the aircraft primary instruments.

III. PERFORMANCE

NO CHANGE

- - END - -

US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in civil penalty not to exceed $1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make: Cessna	Model: 177
	Serial No.: 17700512	Nationality and Registration Mark: N3212T
2. Owner	Name *(As shown on registration certificate)*: Charles H Mount Jr.	Address *(As shown on registration certificate)*: 1621 Hampton Place, Orange Park Fl. 32003-7284

3. For FAA Use Only

4. Unit Identification / **5. Type**

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	*(As described in Item 1 above)*				X
POWERPLANT	Lycoming	O-320-E2D	L-20623-27A		X
PROPELLER					
APPLIANCE	Type / Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
Bryan M Wood Southeast Aero Services Inc. 385 Hawkeye View Lane St Augustine Fl. 32095	X U.S. Certificated Mechanic Foreign Certificated Mechanic Certificated Repair Station Manufacturer	254396757

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herin is true and correct to the best of my knowledge.

Date	Signature of Authorized Individual
2-23-07	

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☒ APPROVED ☐ REJECTED

BY							
		FAA Flt. Standards Inspector		Manufacturer	X	Inspection Authorization	Other *(Specify)*
		FAA Designee		Repair Station		Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
2-23-07	254396757	

FAA Form 337 (12-88) Electronic Version (Adobe)

Work completed for [ ] N3212T [ ] on 2-23-07

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

Installed Precise Flight Inc. STC#'s SA2162NM and SE1779NM SVS 5 Standby Vacuum System in accordance with manufacturers install document# 08072 STC. Approved Model List, Instructions for Continued Airworthiness and Weight & Balance Revision entered into Aircraft Perminent Records.

---------- END ----------

[ ] Additional Sheets Are Attached