

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	PAGE _____
CHECKED		
APPROVED		
REPORT VB-163		

AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

SERIAL NOS. 671 THRU 5600

FAA IDENTIFICATION NO. N8031W

SERIAL NO. 28-2097

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

DUPLICATE -

FAA APPROVED: Original signed by Walter R. Haldeman *

Walter R. Haldeman

Chief, Engineering & Manufacturing Branch

Southern Region - - - Atlanta, Georgia

DATE: August 3, 1962

FAA APPROVED: Gene Dearing For Retype Only.

Gene Dearing

Aerospace Engineer

DATE: August 12, 1964

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual
CHECKED		Model PA-28-180
APPROVED	REPORT VB-163	PAGE II

Log of Revisions

<u>REVISION NO.</u>	<u>PAGE</u>	<u>DESCRIPTION</u>	<u>APPROVED</u>	<u>DATE</u>
1	1	Deleted Propeller Pitch Information. Added Static R.P.M. Information	<i>H. E. Waterman</i> for H. E. Waterman Supervisor SO-EMDO-42	5/25/64
2	2	Placards Section: Added Placard No. 5	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	7/8/64
3	2	Added Placard No. 3 to read: "BAGGAGE, MAX. 200 LBS., SEE WEIGHT AND BALANCE DATA FOR BAGGAGE LOADINGS BETWEEN 150 LBS. AND 200 LBS."	<i>H. C. Faller</i> for H. C. Faller Supervisor SO-EMDO-43	8/5/64
	1	Added Sensenich M76EMMS		
4	3	Item 5 added to Procedures Section.	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	10/20/64
5	1	Limitations Section: Revised Oil Temperature and Fuel Pressure Range	<i>H. C. Faller</i> for H. C. Faller Supervisor, SO-EMDO-43	6/23/65
6	1	Limitation Section: Add note to Engine Limits	<i>H. C. Faller</i> H. C. Faller Supervisor, SO-EMDO-43	1/5/66
7	2	C. G. Range: 1975 lbs. 85.9 In. 95.9 In. 1650 lbs. 84.0 In. 95.9 In. Was 18.50 lbs. 85.1 In. 95.9 In.		
	4	Added Procedures Section And Item 6		
	2	Added Placard No. 6	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	5/20/66

FAA APPROVED 8/3/62

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual
CHECKED		Model PA-28-180
APPROVED		REPORT VB-163



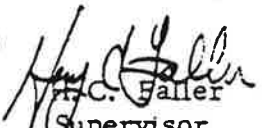
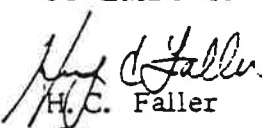
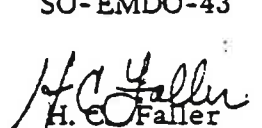
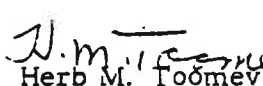
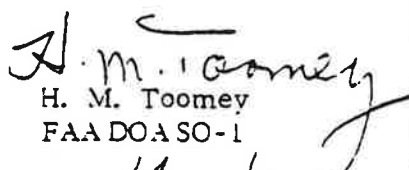
Log of Revisions

<u>Revision No.</u>	<u>Page</u>	<u>Description</u>	<u>Approved</u>	<u>Date</u>
8	1	Revised Oil Temperature, Oil Pressure and Fuel Pressure Limitations		
	2,3	Revised Placards No. 3 and No. 5		
	5	Added Page 5		
		Procedures Section - Added Item 7		
	6	Added Page 6	Henry C. Faller Supervisor SO-EMDO-43	7/15/66
9	1	Limitations Section Add "or O-360-A4A	Henry C. Faller Supervisor SO-EMDO-43	8-2-66
10	2,3	C.G. Range - Placard No. 1 and Placard No. 3 revised to include utility category operations. Added utility category max. wt. and approved maneuvers		
	4	Procedures Section - Added to Item 3 "For Normal Category Operation". Added Placard No. 7.		
	3	Placards Section - Added utility category operation to Item 4.		
	1	Added Utility Category		
	2	Added maximum positive load factor for Utility Category. Added Baggage Capacity.	Henry C. Faller Supervisor SO-EMDO-43	12-6-66

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PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual
CHECKED		Model PA-28-180
APPROVED		REPORT VB-163
		PAGE IV

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
11	3	Placards Section: Revised Placard No. 1 to read, "In Full View of the Pilot"	 H.C. Faller Supervisor SO-EMDO-43	5/12/67
12	2	Revised C. G. Range	 H.C. Faller Supervisor SO-EMDO-43	5/25/67
13	3, 4	Revised Placard No. 4 and No. 7 to read: "In full view of the pilot"	 H.C. Faller Supervisor SO-EMDO-43	4/2/68
14	1	Added Aircraft Serial Numbers 1571 and 1573 to Engine and Propeller Limitations	 H.C. Faller Supervisor SO-EMDO-43	6/3/68
15	1	Added Propeller Designations	 H.C. Faller Supervisor SO-EMDO-43	6/24/68
16	Title	Allocated Piper Report No. VB-163 to this Manual.	 H.M. Toomey FAA DOA SO-1	7/11/68
17	Title	Added Applicable Serial Nos. 1 Thru 4377		
	1	Added Supplement No. 1	 H. M. Toomey FAA DOA SO-1	4/22/69

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PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual
CHECKED		Model PA-28-180
APPROVED	REPORT VB-163	PAGE <u> V </u>

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
18	Title	Changed applicable Serial Nos. from 1 thru 4377 to 1 thru 5600.	<i>H. M. Toomey</i> H. M. Toomey FAA DOA SO-1	7/15/69
19	Title	Changed applicable Serial Nos. from 1 thru 5600 to 571 thru 5600.	<i>H. M. Toomey</i> H. M. Toomey FAA DOA SO-1	9/23/69
20	2	Added Forward Intermediate and Forward Gross Weight Points	<i>H. M. Toomey</i> H. M. Toomey FAA DOA SO-1	5/8/70
21	2	Deleted Forward Intermediate and Forward Gross Weight Points	<i>G. C. Stephen</i> G. C. Stephen FAA DOA SO-1	9/14/70
22	1	Changed oil pressure gauge markings	<i>Ward Evans</i> Ward Evans	7-25-75

FAA APPROVED 3/3/62

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED	REPORT VB-163	PAGE 1 of 6

Piper Model PA-28-180
Normal and Utility Categories

AIRPLANE FLIGHT MANUAL

1. Limitations Section

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

Engine Lycoming O-360-A3A or O-360-A4A

Engine Limits Maximum permissible RPM for takeoff, 2475. For all other operations, 2700 rpm, 180 hp, (A/C S/N 28-671 to 1760A).
For all operations, 2700 rpm, 180 hp, (A/C S/N 28-1571, 1573, 1761 and up).

Fuel 91/96 minimum octane aviation fuel.

Propeller Sensenich M76 EMM or 76EM8 (S/N 671 to 1760A)
Sensenich M76 EMMS or 76EM8S5 (S/N 1571, 1573, 1761 & up).
Maximum diameter 76 inches, minimum diameter 76 inches.
Static RPM at maximum permissible throttle setting. Not over 2450, not under 2275. No additional tolerance permitted.

Power Instruments

Oil temperature: GREEN arc (normal operating range) 120°F to 245°F; YELLOW arc (caution range) 60°F to 120°F; RED line (maximum) 245°F (S/N 671 to S/N 1760A)

Oil Temperature: GREEN arc (normal operating range) 75°F to 245°F; RED line (maximum) 245°F (S/N 1571, 1573, 1761 & up).

Oil Pressure: GREEN arc (normal operating range) 60 psi to 90 psi; YELLOW ARC (caution range) 25 psi to 60 psi; RED line (minimum) 25 psi when installed or 60 psi when installed; RED line (maximum) 90 psi.

Fuel Pressure: GREEN arc (normal operating range) .5 psi to 5 psi; RED line (minimum) .5 psi; RED line (maximum) 5 psi (S/N 671 to S/N 1760A)

Fuel Pressure: GREEN arc (normal operating range) .5 psi to 8 psi; RED line (minimum) .5 psi; RED line (maximum) 8 psi (S/N 1571, 1573, 1761 and up)

Tachometer: GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.

FAA APPROVED 8-3-62
REVISED 7-25-75

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual
CHECKED		Model PA-28-180
APPROVED	REPORT VB-163	PAGE 2 of 6

Airspeed Limits Never exceed 171 mph
 Maximum structural cruise 140
 Maneuvering 129
 Flaps extended 115
 Maximum positive load factor 3.8 Normal Category
 Maximum positive load factor 4.4 Utility Category
 Maximum negative load factor No inverted maneuvers
 approved.

Maximum Weight 2400 lbs - Normal Category; 150 lbs - Utility Category.

Baggage Capacity 200 lbs

C. G. Range The datum used is 78.4 inches ahead of wing leading edge at the intersection of the straight and tapered section.

→ 1. Normal Category

<u>Weight</u> <u>(Pounds)</u>	<u>Forward Limit</u> <u>(In. Aft of Datum)</u>	<u>Rearward Limit</u> <u>(In. Aft of Datum)</u>
2400	92.1	94.5
2200	89.2	95.9
1975	85.9	95.9
1650	84.0	95.9

2. Utility Category

<u>Weight</u> <u>(Pounds)</u>	<u>Forward Limit</u> <u>(In. Aft of Datum)</u>	<u>Rearward Limit</u> <u>(In. Aft of Datum)</u>
1950	85.8	86.5
1650	84.0	86.5

Straight line variation between points given.

NOTE: It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded. See weight and section for proper loading instructions.

- Maneuvers
1. Normal Category - All acrobatic maneuvers including spins prohibited.
 2. Utility Category - Approved maneuvers for Utility Category only.

	<u>Entry Speed</u>
Spins (Flaps Up)	Stall
Steep Turns	129 mph
Lazy Eights	129
Chandelles	129

FAA APPROVED 8/3/62

REVISED 9/14/70 Rev. No. 21

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED	REPORT VB-163	PAGE 3 of 6

Placards

1. In full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATIONS, REFER TO THE AIRPLANE FLIGHT MANUAL.

FOR SPIN RECOVERY, USE FULL RUDDER AGAINST SPIN, FOLLOWED IMMEDIATELY BY FORWARD WHEEL.

NO ACROBATIC MANEUVERS (INCLUDING SPINS) ARE APPROVED FOR NORMAL CATEGORY OPERATIONS."

2. Adjacent to upper door latch:

"ENGAGE LATCH BEFORE FLIGHT."

3. On the inside of the baggage compartment door:

"MAXIMUM BAGGAGE 125 LBS." (S/N 671 to 1760A)
(MAXIMUM BAGGAGE MAY BE INCREASED TO 200 LBS. IN ACCORDANCE WITH PIPER SERVICE SPARES LETTER NO. 242)

UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE AIRPLANE FLIGHT MANUAL WEIGHT AND BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS.

4. In full view of the pilot:

"ROUGH AIR OR MANEUVERING SPEED 129 MPH."

"UTILITY CATEGORY OPERATION - NO AFT PASSENGERS ALLOWED."

5. On the instrument panel in full view of the pilot when the oil cooler winterization kit is installed:

"OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50° F."

6. On the instrument panel in full view of the pilot when the autoflite is installed:

"FOR HEADING CHANGES: PRESS DISENGAGE SWITCH ON CONTROL WHEEL. CHANGE HEADING, RELEASE DISENGAGE SWITCH.

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REVISED 4/2/68 Rev. No. 13

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CHECKED		
APPROVED		REPORT VB-163

Placards (Cont'd) 7. In full view of the pilot: "UTILITY CATEGORY ONLY."
Acrobatic maneuvers are limited to the following:

		Entry Speed
Airspeed Instrument Markings	Spins (Flaps Up).....	Stall
	Steep Turns.....	129 mph
	Lazy Eights.....	129
	Chandelles.....	129
	RED radial line	Never exceed 171 mph (148 knots)
	YELLOW arc	Caution Range (Smooth Air Only) 140 to 171 mph (121 to 148 knots)
	GREEN arc	Normal Operating Range 67 to 140 mph (58 to 121 knots)
	WHITE arc	Flap Down Range 57 to 115 mph (50 to 100 knots)

2. Procedures
Section
- The stall-warning system is inoperative with the master switch off.
 - Electric fuel pump must be on for both landing and takeoff.
 - The PA-28-180 airplane is approved under FAA Regulation CAR 3 which prohibits intentional spins for normal category operation. The following information is noteworthy:
 - The stall characteristics of the PA-28-180 are normal with the nose pitching down moderately following the stall, occasionally with a moderate roll which can be corrected by normal use of ailerons and rudder against the roll.
 - Prolonged use of full rudder during stall practice may result in a rapid roll followed by a spin and should be avoided. Recovery from an incipient spin may be effected in less than one additional turn by use of opposite rudder followed by full forward control wheel.
 - In the event that a fully developed spin is inadvertently experienced, recovery is best made by using full opposite rudder followed by full forward wheel and full opposite aileron. The control positions against the spin should be maintained during the entire recovery, which may require several turns and a substantial loss of altitude if the airplane is loaded heavily with a rearward center of gravity.
 - Except as noted above, all operating procedures for this airplane are normal.

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REVISED 4/2/68 Rev. No. 13

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA 28-180
CHECKED		
APPROVED		REPORT VB-163 PAGE 5 of 6

Procedures Section
(Cont'd.)

5. (Electric Pitch Trim Installation Only)

The following emergency information applies in case of electric pitch trim malfunction:

- a. In case of malfunction, disengage electric pitch trim by pulling out circuit breaker on instrument panel.
- b. In emergency, electric pitch trim may be overpowered using manual pitch trim.
- c. In cruise configuration, malfunction results in 10° pitch change and 30 Ft. altitude variation.

6. (Autoflite Installation Only)

The following emergency information applies in case of autoflite malfunction:

- a. In case of malfunction PRESS disconnect switch on pilot's control wheel.
- b. Rocker switch on instrument panel - OFF.
- c. Unit may be overpowered manually.
- d. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100 Ft. altitude loss.
- e. In approach configuration malfunction, 1 second delay results in 10° bank and 0 Ft. altitude loss.

7. (AutoControl III Installation Only)

I. Limitations:

Pilot off during take off and landing.

II. Procedures:

- a. Normal Operation
Refers to Manufacturer's Operation Manual.
- b. Emergency
 1. In case of malfunction, disengage manual controls.
 2. In emergency, pilot may be overpowered manually.
 3. In cruise configuration malfunction, 3 seconds delay results in 60° bank and 100 Ft. altitude loss.
 4. In approach configuration malfunction, 1 second delay results in 10° bank and 0 Ft. altitude loss.

FAA APPROVED 8/3/62
REVISED 7/15/66 Rev. No. 8

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED	REPORT VB-163	PAGE 6 of 6

3. Performance Section

The following performance figures were obtained during FAA Type tests and may be realized under conditions indicated with the airplane and engine in good condition and with average piloting technique. All performance is given for 2400 pounds.

Loss of altitude during stalls varied from 125 to 200 feet, depending on configuration and power.

Stalling speeds, in mph, power off, versus angle of bank (Calibrated Airspeed):

Angle of bank	0	20	40	50	60
Flaps Up	67	69	76	83	94
Flaps Down	57	--	--	--	--

FAA APPROVED 8/3/62
REVISED 7/15/66 Rev. No. 8

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28
CHECKED		
APPROVED	REPORT VB-163	Supplement No. 1 PAGE 1

SUPPLEMENT NO. 1 TO PIPER MODEL PA-28 FLIGHT MANUAL

MODELS AFFECTED: Piper PA-28 models equipped with
Lycoming O-360-A3A engine and
Sensenich M76EMM-0, M76EMMS-0,
76EM8S5-0 or 76EM8-0 propeller.

PROPELLER LIMITS

Avoid continuous operation between 2150 and 2350 RPM.

The aircraft tachometer must be placarded to show a red
arc between 2150 and 2350 RPM in accordance with Piper
Service Letter No. 526.

NOTE: This document must be attached to the Airplane
Flight Manual.

FAA DOA SO-1
APPROVED

H. M. Toomey
H. M. Toomey

DATE

4/22/69

Weight and Balance Information

N8031W

N8031W TCDS INFORMATION

PA-28-180 S/N 28-2097

Model PA-28-180 (Cherokee) **4PLCM (Normal Category) approved August 3, 1962;**
2PLCM (Utility Category) approved December 6, 1966.
For S/N 28-03; 28-671 through 28-5859; and 28-7105001 through 28-7205318

Engine Lycoming O-360-A3A or O-360-A4A with carburetor setting 10-3878 or 10-4164-1
Fuel 91/96 minimum grade aviation gasoline
Engine Limits For all operations: 2700 RPM (180 HP)
Propeller & Limits Sensenich M76EMMS or 76EM8S5

Static RPM: 2275 – 2450 RPM. No additional tolerance permitted.

Diameter: Not over or under 76"

Spinner Piper P/N 63760-04 or 65805-00

Note 10:

With Lycoming O-360-A3A engine installed avoid continuous operation between 2150 and 2350 RPM in accordance with Piper SL 526.

Note 11:

Aircraft may be operated with the spinner dome removed, or with the spinner dome and rear bulkhead removed.

<u>Airspeed Limits</u>	Never Exceed	171mph (148 knots)	CAS
	Maximum Structural Cruising	140mph (121 knots)	CAS
	Maneuvering	129mph (112 knots)	CAS
	Flaps Extended	115mph (100 knots)	CAS

Fuel Capacity 50 Gallons
Oil Capacity 8 Quarts (6 quarts usable)

Control Surface Movements

Wing Flaps:	(±2°)	Up 0°	Down 40°
Ailerons:	(±2°)	Up 30°	Down 15°
Stabilator:	(±1°)	Up 18°	Down 2°
Stabilator Tab:	(±1°)	Up 3°	Down 12°
Rudder:	(±2°)	Left 27°	Right 27°

Nose Wheel Travel **Nose Wheel:** (±2°) Left 30° Right 30°

DATA ABOVE IS TAKEN FROM TCDS 2A13, JUNE 24 2010
REFER TO FULL TCDS FOR CG ENVELOPE AND W&B LIMITS

United States Of America
Department of Transportation - Federal Aviation Administration
Supplemental Type Certificate

Number SA01941LA

This Certificate issued to James A. Gillen
2509 W. Pampa
Mesa, AZ 85202

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. *Certification basis is set forth in Type Certificate Data Sheet.*

Original Product Type Certificate Number:

Makes: See Attached Approved Model List

Model: No. SA01941LA

Description of Type Design Change: Installation of stabilizer trim handle and cabin door handle in accordance with FAA approved model list Number SA01941LA on page 3 of this STC.

Limitations and Conditions: This installation should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previously approved configuration will not introduce any adverse effect upon the airworthiness of the 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: May 15, 2004

Date reissued:

Date amended:

Date of issuance: December 1, 2006

By direction of the Administrator



(Signature)

Alan Shanski
Manager, Cabin Safety/Mechanical and
Environmental Systems,
Los Angeles 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.

FEDERAL AVIATION ADMINISTRATION - PARTS MANUFACTURER APPROVAL

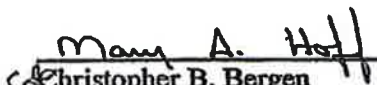
gillen-phx, llc
2509 W. Pampa Ave.
Mesa, AZ 85202

PMA NO: PQ2436NM
SUPPLEMENT NO: 1
DATE: 4/23/07

Part Name	Part Number	Approved Replacement for Part Number	Approval Basis and Approved Design Data	Make Eligibility	Model Eligibility
Trim Handle	TR-001	Modification Part	STC SA01941LA DWG No: gillen-phx MDL g-p DR/TR IR Rev: B Date 10/10/06 or later FAA Approved Revisions	Piper	PA-24-250 PA-24-260 PA-24-400 PA-28-140 PA-28-150 PA-28-160 PA-28-180 PA-28-235 PA-32-260 PA-32-300
Door Handle	DR-001	Modification Part	STC SA01941LA DWG No: gillen-phx MDL g-p DR/TR IR Rev: B Date 10/10/06 or later FAA Approved Revisions	Piper	PA-24-250 PA-24-260 PA-24-400 PA-28-140 PA-28-150 PA-28-160 PA-28-180 PA-28-235 PA-32-260 PA-32-300

-----END-----

NOTE: The procedures that are acceptable to the type certificate or TSO authorization holder and their cognizant FAA Aircraft Certification Office, for minor changes to original parts used on type certificated products, are also acceptable for incorporating the same minor changes on identical FAA PMA replacement parts. The FAA-PMA holder must show traceability to the TC, STC, or TSO authorization holder on all minor changes incorporated by this procedure. When these procedures are no longer applicable because of completion of the production contract, or termination of the licensing agreement or business relationship, submit all subsequent minor design changes to the PMA parts in a manner determined by the ACO. TC, STC, or TSO authorization holder controls all major design changes to drawings and specifications.


Christopher B. Bergen
Manager, Phoenix Manufacturing
Inspection District Office

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA01147WI

This certificate issued to

CONCORDE BATTERY CORPORATION
1632 South West Street
Suite 4
Wichita, KS 67213

certifies that the change in the type design for the following product with the limitations and conditions therefore as specified herein meets the airworthiness requirements of Part 3 of the Civil Air Regulations.

Original Product - Type Certificate Number:

* See attached FAA Approved Model List (AML) No. SA01147WI for list of approved models and applicable airworthiness regulations

Make:

Model:

Description of Type Design Change:

Installation of Concorde FLA or VRSLA series batteries in the Piper Light Airplanes listed on the attached FAA Approved Model List (AML) No. SA01147WI, dated February 25, 2003, in accordance with Concorde Battery Corporation, Master Drawing List Dwg. No. 5-0157, revision A, dated 12/09/02, or later FAA Approved revision.

Limitations and Conditions:

Compatibility of this design with previously approved modifications must be determined by the installer.

If the holder of this STC 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: November 15, 2002

Date received:

Date of issuance: February 25, 2003

Date amended:



By direction of the Administrator

Harvey E. Nero
(Signature)

Harvey E. Nero
Program Manager
Wichita 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.

... the heart of your system®

CONCORDE

CONCORDE BATTERY CORPORATION

Established In 1977

Permission for use of Supplemental Type Certificate

To Whom It May Concern:

Pursuant to Title 49 of United States Code § 44704 (b)(3) (Effective October 19, 1996), this signature constitutes the agreement and permission of CONCORDE BATTERY CORPORATION allowing the registered owner of N8031W a Piper PA-28-180, Serial Number 28-2097 to alter that airframe, and only that airframe, by applicable STC No. SA01147WI, for the purpose of replacing the lead-acid battery with a Concorde VRLA Battery or (Vented) battery, as designated for this aircraft, in accordance with Concorde Battery Corporation Master Drawing List No. 5-0157, Revision A, dated December 9, 2002, or later FAA Approved revision.

CONCORDE BATTERY CORPORATION



Name: Bill Carter

Title: Product Support Manager

August 3, 2005

Date

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate*Number* SA4008NM*This certificate, issued to***Bogert Aviation
308 S. Perry Place
Kennewick, WA 99336**

*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:

Number SA4008NM for list of approved airplane

Model:

models and applicable airworthiness regulations.

Description of the Type Design Change: Installation of removable panels on the battery box sides in accordance with applicable Bogert Aviation Drawing listed on FAA approved AML SA4008NM, dated April 12, 2004, or later FAA approved revision. This installation does not require specific continued airworthiness instructions. Federal Aviation Regulations Part 43 and applicable Owner's Manual are adequate to ensure Continued Airworthiness of this modification.

Note: This is compatible with STC SA3531NM.

Limitations and Conditions: Approval of this change in type design applies to the airplane models listed on the AML 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 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, FAA Approved Model List (AML) No. SA4008NM, dated April 12, 2004, 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: May 23, 1986*Date reissued:**Date of issuance:* August 17, 1987*Date amended:* April 12, 2004*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.

Supplemental Type Certificate

Number SA3531NM

This certificate, issued to

Bogert Aviation
308 S. Perry Place
Kennewick, WA 99336

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 Approved Model List (AML)

Make:

No. SA3531NM for a list of approved aircraft

Model:

models and applicable airworthiness regulations.

Description of the Type Design Change: Installation of copper electrical cables in accordance with Bogert Aviation Installation Instructions as listed on AML No. SA3531NM, amended April 1, 1999, or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to aircraft models listed on the AML 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 and AML No. SA3531NM 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: May 27, 1986

Date reissued:

Date of issuance: July 15, 1986

Date amended: April 10, 1989; April 1, 1999



By direction of the Administrator

Adrian P. ...
(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

Number SA00178AT

This certificate issued to

TCB Composite Company
3811 South Airport Road
Ogden, UT 84405

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 3 of the Civil Air Regulations.

Original Product--Type Certificate Number:

2A13

Make:

Piper

Model:

PA-28-151, -161, -180, -181,

PA-28 -140, -150, -160 (Please see note on Sheet 2)

Description of Type Design Change: Installation of Composite Spinner and/ or Spinner bulkheads in accordance with TCB Composite Company Report ST0086AT-A, Rev. 2, dated February 22, 1993; or later FAA approved revision.

Limitations and Conditions: 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 interrelationship between this change and any of those previously approved modifications will produce no adverse effect upon the airworthiness of that aircraft.

(See continuation sheet 2 of 2)

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: July 14, 1992

Date of issuance: April 05, 1993

Date reissued:

Date amended: October 14, 1993; August 19, 1994;
January 7, 1997; February 21, 1997; April 25,
1997; October 13, 2000



By direction of the Administrator

Paul C. Sconyers
(Signature)

Paul C. Sconyers
Associate Manager
Atlanta Aircraft Certification Office

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 SA00178AT

Type Certificate Data Sheet: 2A13

Model and Serial Number Eligibility:

PA28-180/-181	Spinner P/N TCB65805-00	S/N 28-1724 and up
PA28-151/-161	Spinner P/N TCB35323-010 Aft Bulkhead P/N TCB35323-011 Fwd Bulkhead P/N TCB35323-012	PA28-151: S/N 28-7415001 thru 28-7715314; PA28-161: S/N 28-7716001 thru 28-7816695.
PA28-161	Spinner P/N TCB36850-08 Aft Bulkhead P/N TCB36757-003 Fwd Bulkhead P/N TCB87325-05	S/N 28-7916001 and up.
PA28-140/-150/-160	Spinner P/N TCB35323-010 Aft Bulkhead P/N TCB35323-011 Fwd Bulkhead P/N TCB35323-012	All Serial Numbers

NOTE: For Piper PA28-140, -150, and -160, the Composite Spinner and the Spinner Bulkhead assemblies must be installed as a kit.

Date of Issuance: April 5, 1993

Date of Amendments: October 14, 1994; August 19, 1994; January 7, 1997; February 21, 1997; April 25, 1997, October 13, 2000.

-----END-----

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate

Number SA01786SE

This certificate, issued to:

RMD Aircraft Lighting Inc.
P.O. Box 238
32845 N.W. Beach Road
North Plains, OR 97133

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

Original Product —Type Certificate Number:

2A13 and A7SO

Make:

Piper Aircraft, Inc.

Model:

see Approved Model List

Description of the Type Design Change: Fabrication and installation of wing tips in accordance with RMD Aircraft Lighting, Inc. FAA approved Master Drawing List, document number RD-5010-0, Revision IR, dated August 1, 2007 or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to only the aircraft shown on the Approved Model List. 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 must be maintained as part of the permanent records of 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: August 1, 2007

Date reissued:

S/N 100

Date of issuance: September 7, 2007

Date amended:



By direction of the Administrator

Kenner Hankins
(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 APPROVED MODEL LIST (AML) SA01786SE

FOR

INSTALLATION OF RMD Aircraft Lighting Inc. Wing Tips

ISSUE DATE: September 7, 2007

ITEM	AIRPLANE MAKE	AIRPLANE MODEL	TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED DRAWING LIST		AML AMENDED DATE
					NUMBER	REVISION NO. AND DATE	
1.	Piper	PA-28-140, PA-28-150, PA-28-160, PA-28-180, PA-28R-180, PA-28R-200, PA-28S-160, PA-28S-180,	2A13	CAR 3	RD-5010-0	Revision IR 8/1/2007	
2.	Piper	PA-34-200, PA-34-200T, PA-34-220T	A7SO	FAR 23	RD-5010-0	Revision IR 8/1/2007	

FAA APPROVED:


Acting Manager, Seattle Aircraft
Certification Office

REISSUED:
AMENDED:

United States of America
Department of Transportation -- Federal Aviation Administration
Supplemental Type Certificate

Number SA02015CH

This certificate issued to Alpha Aviation Inc.
1505 Chateaulin Lane
Burnsville, MN 55337

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

*Original Product- Type Certificate Number .** *(see attached FAA Approved Model
*Make .** List (AML) No. SA02015CH for list of
*Model .** Approved models and applicable airworthiness regulations)

Description of Type Design Change:

Installation of a Three Point Torso Restraint System in accordance with Alpha Aviation Inc. Installation and Maintenance Manual as listed on AML SA02015CH, issued October 5, 2005, or later FAA approved revisions.

Limitations and Conditions:

1. Compatibility of this design change with previously approved modifications must be determined by the installer. 2. A copy of this Certificate and FAA Approved Model List (AML) SA02015CH, issued October 5, 2005, or later FAA approved revisions, must be maintained as part of the permanent records for the modified aircraft. 3. The Three Point Torso Restraint System installation is to be inspected and maintained in accordance with Alpha Aviation Inc. Installation and Maintenance Manual Number PA285001, Revision B, dated May 14, 2004, or later FAA approved revisions. 4. 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 . May 01, 2004

Date reissued .

Date of issuance . July 30, 2004

Date amended . October 05, 2005



By direction of the Administrator

[Signature]

(Signature)

Gregory J. Michalik, Senior Aerospace Engineer
Airframe & Administrative Branch
Chicago Aircraft Certification Office

(Title)

**FAA APPROVED MODEL LIST (AML) NO. SA02015CH
ALPHA AVIATION INC.**

**FOR
INSTALLING THREE POINT TORSO RESTRAINT SYSTEM**

ISSUE DATE: 10/5/05

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					NUMBER	REVISION NO. & DATE		
1	Piper	PA-28-140, PA-28-150, PA-28-160, PA-28-180, PA-28-235, PA-28R-180, PA-28R-200, PA-28S-160, PA-28S-180	2A13	CAR 3	Installation and Maintenance Manual No. PA285001	Revision B, dated 5/14/04*	N/A	--
2	Piper	PA-32-260, PA-32-300, PA-32S-300	A3SO	CAR 3	Installation and Maintenance Manual No. PA285001	Revision D, dated 9/1/05*	N/A	--

* or latter FAA Approved Revisions.

FAA APPROVED:



Gregory J. Michalik, Senior Aerospace Engineer
Airframe & Administrative Branch
Chicago Aircraft Certification Office

Issued: 10/5/05

United States Of America
Department of Transportation - Federal Aviation Administration
Supplemental Type Certificate

Number SA615EA

This Certificate issued to Whelen Engineering Company, Inc.
51 Winthrop Road
Chester, Connecticut 06412-0684

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 3, 6, 23, 27 of the Civil Air/Federal Aviation Regulations.

Original Product Type Certificate Number: See Attached Eligibility List dated May 5, 2010

Make:

Model:

Description of Type Design Change:

Installation of Whelen Anti-Collision Strobe Light Systems, Part Number 01-0770006-(), 01-0770028-(), 01-0770029-(), 01-0770062-(), 01-0770900-(), 01-0771055-(), 01-0771080-(), and 01-0790520-() as replacement for originally installed anti-collision lights, when installed in accordance with Whelen Anti-Collision Light Systems Installation and Service Manual, Document No. 05131, Rev B, dated June 2010, or later FAA-approved revision.

Limitations and Conditions:

(See continuation sheet 3 of 7)

The STC holder will provide each person it permits to use this certificate to alter the product written evidence of the agreement in a form acceptable to the Administrator.

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: February 19, 1968

Date reissued: July 6, 2010

Date of issuance: May 14, 1968

Date amended: May 5, 2010

See page 3 for amendment history.



By direction of the Administrator

Robert G. Mann
Manager, Boston Aircraft Certification Office

(Title)

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

Number SA615EA

Date Amended: May 5, 2010

Date Reissued: July 6, 2010

Limitations and Conditions (Continued):

1. These lights comply with the anti-collision light standards of the FARs as follows:
 - a. With the red or combined red/white lens; those effective on or prior to August 10, 1971.
 - b. With the white lens; those effective on August 11, 1971.
2. Install the following placard Whelen Part No. A421, or other FAA approved equivalent:

WARNING

TO AVOID OPTICAL ILLUSION AND SEVERE VERTIGO, TURN
ANTI-COLLISION LIGHTS OFF UPON ENTERING CLOUDS, FOG OR HAZE

3. The aircraft listed on the Eligibility List are those which have had both the physical installation of the lights substantiated and the field of coverage checked including the 20° mask. Aircraft not included in the list can use these lights when the physical installation and field of coverage is substantiated as indicated in the Whelen Anti-Collision Light Systems Installation and Service Manual, June 2010, Document No. 05131, Rev B, or later FAA-approved revision, section titled "Aircraft Not Specifically Mentioned on the Eligibility List".
4. The approval of this change in type design applies basically to aircraft listed on the attached eligibility list. 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 interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of the aircraft. This determination should include a night flight check as specified in AC 43.13-2, Chapter 4, Paragraph 42a.

NOTE: Aircraft whose application for type certificate was made before April 1, 1957, may, but need not, comply with the field of coverage requirements of FAR 23(27).1401(b). Compliance with FAR 91.33(c) may be shown provided the light installation is in accordance with data approved prior to August 11, 1971, and the applicable criteria of Advisory Circular 43.13-2 are met.

AMENDMENT HISTORY:

This STC has been previously amended on the following dates:

7/15/68, 7/19/68, 11/25/68; 1/17/69, 2/18/69, 4/18/69; 3/3/70, 12/10/70; 4/21/71, 9/14/71; 5/18/72, 9/22/72, 11/7/72; 7/21/76; 10/4/78; 3/26/81, 8/5/81, 8/25/81; 5/21/82; 7/16/91; 6/7/99; 6/18/99; 6/17/05, 2/22/07.

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

Number SA615EA

Date Amended: May 5, 2010

Date Reissued: July 6, 2010

ELIGIBILITY LIST May 5, 2010

AIRCRAFT MANUFACTURER	MODEL	TYPE CERTIFICATE
Aero Commander	*100, 100-180	1A21
	111	A11SO
	112	A12SO
	500, 500-A, 500-B, 500-S, 500-U, 520, 560, 560A, 560E	6A1
	560F, 680, 680E, -F, 720 680FL, 680FL(P), 680T, V, W, 681, 690, 685	2A4
American Aviation	*AA-1, *AA-1A	A11EA
	AA-5	A16EA
Beech	23, A23, A23A, A23-19, -24, -19A, B19, M19A, B23, C23, A24, A24R	A1CE
	35, A35, B35, C35, D35, E35, F35 G35, 35R	A-777
	H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 35-33, 35-A33, 35-B33, 35-C33, 35-C33A, 36, A36, A36TC, B36TC, G36, E33, E33A, E33C, F33, F33A, F33C	3A15
	50(L-23A), B50(L-23B), C50, D50(L-23E), D50A, D50B, D50C, D50E, E50(L-23D, RL-23D), F50, G50, H50, J50	5A4
	95-55, 95-A55, 95-B55, 95-B55B(T-42A) 95-B55D, 95C55, 95, B95, B95A, D95A, E95, D55, D55A, E55, E55A, 56TC, A56TC, 58	3A16
	65(L23F), A65, A65-8200, 65-8200, 65-80 65-A80-8800, 65-B80, 65-88, B90, C90, 65-90, 65-A90, 65-A90-1, (U-21A, RU-21A, RU-21D), 65-A90-2, (RU-21B), 65-A90-3 (RU-21C), 70	3A20

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 SA615EA

Date Amended: May 5, 2010

Date Reissued: July 6, 2010

ELIGIBILITY LIST May 5, 2010

AIRCRAFT MANUFACTURER	MODEL	TYPE CERTIFICATE
Beech (Cont'd)	60, A60	A12CE
	99, 99A, 100	A14CE
Bellanca	14-19-3A, 17-30, 17-30A, 17-31A 17-31ATC	1A3
	7EC, 7ECA, 7FC, 7GC, 7GCA, 7GCAA, 7GCB, 7GCBA, 7GCBC, 7HC, 7JC, 7KCAB	A-759
Bell	206A, 206B	H2SW
	206L, 206L-1, 206L-3, 206L-4, 407	
	47B, B3, D, D1, E, G, G-2, H-1	H-1
	47G-2A, -2A-1, -3, -3B, -3B-1, -3B-27 4, -4A, -5, -5A	2H3
	47J, K, J-2, J-2A	2H1
Britten Norman	BN-2, -2A, -2A-2, -2A-6, -2A-8	A17EU
	BN-2A, MK.III	A29EU
Cessna	150, 150A, B, C, D, E, F, G, H, J, K, L, M, A150K, A150L, A150M, 152, A152	3A19
	172, 172A, B, C, D, E, F, G, H, I, K, L, M, N, P	3A12
	175, 175A, B, D, P172D, 172RG	3A17
	177, 177A, B	A13CE
	177RG	A20CE
	180, 180A, B, C, D, E, F, G, H, J, K	5A6
	182, 182A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, T182, R182, TR182	3A13
	185, 185A, B, C, D, E, A185E, A185F	3A24
	188, 188A, B, A188, A188A, A188B, T188C	A9CE

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 SA615EA

Date Amended: May 5, 2010

Date Reissued: July 6, 2010

ELIGIBILITY LIST May 5, 2010

AIRCRAFT MANUFACTURER	MODEL	TYPE CERTIFICATE
Cessna (Cont'd)	206, P206, P206A, B, C, D, E, TU206A, B, C, D, E, F, G, TP206A, B, C, D, E, U206, U206A, B, C, D, E, F, G	A4CE
	207, 207A, T207, T207A	A16CE
	210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K, 210-5(205), 210-5A(205A), T201K, 210L T210L, T210M, T210N, 210N, P210N	3A21
	310, 310A, B, C, D, E, F, G, H, I, J, 310J-1, E310J, 310K, L, N, P, T310P, 310Q, T310Q	3A10
	*320, A, B, C, D, E, F, 320-1, 340, 340A	3A25
	*336	A2CE
	337, 337A, B, C, D, E, F, T337D, E F, G	A6CE
	*401, 401A, B, 402, 402A, B, 411, 411A 421, 421A, 414, 421B	A7CE
DeHavilland of Canada	DHC-2, MK. I, MK. II, MK. III	A-806
	DHC-3	A-815
	DHC-6, Models 1, 100, 110, 200, 210, 300	A9EA
Fairchild Hiller	FH-1100	H2WE
Helio	H-250, H-295, H-391, H-391B, H-395 H-395A	1A8
Hughes	269A, 269A-1, 269B, 269C	4H12
	369, A, H, HM, HS, HE 369D, 369E, 369F, 369FF, 500N, 600N	H3WE

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 SA615EA

Date Amended: May 5, 2010

Date Reissued: July 6, 2010

ELIGIBILITY LIST May 5, 2010

AIRCRAFT MANUFACTURER	MODEL	TYPE CERTIFICATE
Piper	**PA-11	A-691
	**PA-12	A-780
	**PA-14	A-797
	**PA-15	A-800
	**PA-16	1A1
	**PA-17	A-805
	**PA-18 Series, PA-19	1A2
	**PA-20	1A4
	**PA-22 Series	1A6
	**PA-25 Series	2A8
	PA-23, PA-23-160, *PA-23-235 *PA-23-250, *PA-E23-250	1A10
	PA-24, -24-250, -24-260, -24-400	1A15
	PA-28-140, -28-150, -28-151, -28-160, -28-161, -28-180, -28-235, -28S-160, -28R-180, -28S-180, -28-181, -28R-200, -28R-201, -28R-201T, -28RT-201, -28RT-201T, -28-201T, -28-236	2A13
	PA-30, PA-39	A1EA
	PA-31P	A8EA
	PA-31, PA-31-300, 325, 350	A20SO
	PA-32-260, -300, -32S-300	A3SO

NOTES TO ELIGIBILITY LIST:

*1. Aircraft as marked require specific attention to proper balancing of the rudder. Refer to the Manufacturer's Service Manual for balancing instructions.

**2. Installations on these aircraft require prior or concurrent installation of STC SA4-977.

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA1216GL

This certificate, issued to Knots 2U, Ltd.
3106 Bieneman Road
Burlington, WI 53105

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 3 of the Civil Air

Regulations. (See Type Certificate Data Sheet No. 2A13 for complete certification basis)

Original Product — Type Certificate Number: 2A13

Make: Piper Aircraft Corporation

Model: PA-28-140, PA-28-150, PA-28-151, PA-28-160,
PA-28-161, PA-28-180, PA-28-181, PA-28-235,
PA-28-236, PA-28-201T, PA-28R-180,
PA-28R-200, PA-28R-201, PA-28R-201T,
PA-28RT-201, PA-28RT-201T

Description of Type Design Change:

Install Wing Root Fairings in accordance with Knots 2U, Ltd. Wing Root Fairing Installation Manual, Revision B, dated June 1, 1997, or later FAA approved revisions.

Limitations and Conditions:

Compatibility of this design change with previously approved modifications must be determined by the installer.

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: July 20, 1987

Date issued: May 7, 1997

Date of issuance: August 5, 1987

Date amended: July 15, 1997



By direction of the Administrator

Gregory J. Michalik
Gregory J. Michalik, Senior Aerospace Engineer
Airframe & Administrative Branch
Chicago 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

Number SA603GL

This certificate, issued to Knots 2U, Ltd.
3106 Bieneman Road
Burlington, WI 53105

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 3 of the Civil Air Regulations. (See Type Certificate Data Sheet No. 2A13 for complete certification basis)

Original Product — Type Certificate Number: 2A13

Make: Piper Aircraft Corporation

Model: PA-28-140, PA-28-150, PA-28-160, PA-28-180,
PA-28-235, PA-28R-180, PA-28R-200

Description of Type Design Change:

Installation of Aileron, Flap, and Stabilator Gap Seals in accordance with the Knots 2U, Ltd. PA-28 Straight Wing Models Gap Seals Installation Manual, Revision B, dated June 1, 1997, or later FAA approved revisions.

Limitations and Conditions:

1. Any or all combinations of the above items are approved.
2. Compatibility of this design change with previously approved modifications must be determined by the installer.

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: February 24, 1982

Date issued: July 21, 1982; May 7, 1997

Date of issuance: April 12, 1982

Date amended: August 31, 1982; November 26, 1984;
October 11, 1990; July 15, 1997

By direction of the Administrator


Gregory J. Michals, Senior Aerospace Engineer
Airframe & Administrative Branch
Chicago 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

Number SA559CH

This Certificate issued to Aerotech Components, Inc.
3225 McLeod Dr. #100
Las Vegas, NV 89121

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 3 of the Civil Air Regulations and Part 23* of the Federal Aviation Regulations. *See applicable Type Certificate Data Sheet for complete certification basis.*

Original Product Type Certificate Number: * See attached FAA Approved Model List (AML)

Make No. SA559CH for a list of approved airplane models

Model and applicable airworthiness regulations.

Description of Type Design Change: Installation of Inline Air Filter Kit, P/N CV1J4-P, in accordance with Aerotech Components, Inc. Installation Instructions listed on AML No. SA559CH, or later FAA approved revision.

Limitations and Conditions: Compatibility of this design change with previously approved modifications must be determined by the installer. The approval of this change in type design applies to the basic aircraft of the specified models that are otherwise unmodified. 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 interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that aircraft.

A copy of this STC must be included in the permanent records of 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: May 6, 1996

Date reissued: March 15, 2007, November 30, 2012,
January 15, 2013

Date of issuance: October 21, 1996

Date amended:

By direction of the Administrator



(Signature)

Manager, Cabin Safety, Mechanical &
Environmental Systems Branch
Los Angeles Aircraft Certification Office

(Title)

FAA APPROVED MODEL LIST (AML) NO. SA559CH

AEROTECH COMPONENTS, INC.

INSTALLATION OF INLINE AIR FILTER KIT

Issue Date: October 21, 1996

Item	Aircraft Make	Aircraft Model	Original Type Certificate Number	Certification Basis for Alteration	Installation Instructions		AFM Supplement Number/Date	AML Amendment Date
					Number	Revision No. & Date		
1	Piper Aircraft, Inc.	PA-28-140, -150, -151, -160, -161, -180, -181 PA-28R-180, -200, -201, -201T PA-28RT-201, -201T	2A13	CAR 3 & Amendments Listed in TCDS 2A13	96001-1	Rev. 1 March 8, 1997*	N/A	
2	Piper Aircraft, Inc.	PA-38-112	A18SO	14 CFR part 23 & Amendments Listed in TCDS A18SO	96001-1	Rev. – May 1, 1996*	N/A	

* Denotes "or later FAA approved revision"

FAA Approved:

Manager, Cabin Safety, Mechanical & Environmental Systems Branch
Los Angeles Aircraft Certification Office

Amended:

January 6, 1998, March 15, 2007

Reissued:

November 30, 2012