



US Department of Transportation  
Federal Aviation Administration

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

OMB No. 2120-0020  
Exp. 8/31/2014

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 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. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark <b>United States N531A</b>	Serial No. <b>32-57160</b>
	Make <b>PIPER</b>	Model <b>PA-32R-301T</b> Series
2. Owner	Name (As shown on registration certificate) <b>THREE MILE HARBOR HOLDINGS LLC</b>	Address (As shown on registration certificate) Address <b>94 SOUTHVIEW TER N</b>
		City <b>MIDDLETOWN</b> State <b>NEW JERSEY</b>
		Zip <b>07748-2413</b> Country <b>United States</b>

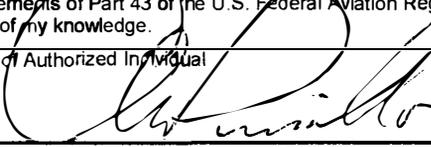
3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency		C. Certificate No. <b>2769252</b>
Name	<b>ALEX PUCCIARIELLO</b>	<input checked="" type="checkbox"/>	U. S. Certificated Mechanic	
Address	<b>103 BERGEN AVE</b>	<input type="checkbox"/>	Foreign Certificated Mechanic	
City	<b>HASKELL</b> State <b>NEW JERSEY</b>	<input type="checkbox"/>	Certificated Repair Station	
Zip	<b>07420</b> Country <b>United States</b>	<input type="checkbox"/>	Certificated Maintenance Organization	

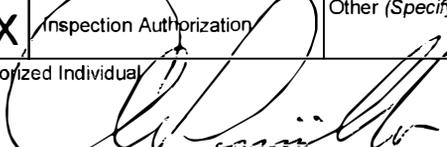
D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual  <b>02-20-2019</b>
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7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  Approved  Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)

Certificate or Designation No. <b>2769252</b>	Signature/Date of Authorized Individual  <b>02-20-2019</b>
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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

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Piper PA-32R-301T S# 32-57160 Tach Time: 1863.7

United States N531A

February 20, 2019

Nationality and Registration Mark

Date

Total Time: 1863.7

1. Removed original hubcaps and installed LoPresti Speed Merchants hubcaps.
2. This installation is approved for installation in accordance with STC# SA01224AT.
3. STC# SA01224AT was issued to LoPresti Speed Merchants on December 10, 1996 and last amended April 17, 1998.
4. Installation in accordance with LoPresti Speed Merchants hubcap Installation part number LSM-200-701 revision B dated April 2, 1997.
5. A copy of this STC has been added to the permanent records of this aircraft.
6. Aircraft equipment list has been revised due to this alteration.
7. This alteration has no change to the aircraft weight and balance.
8. These hubcaps may be removed or replaced with LoPresti or original Piper hubcaps as required.
9. Logbook entries were made reflecting this installation.
10. Instructions for continued airworthiness will be found in the installed equipment manufacturer's maintenance manual and incorporated into the current aircraft inspection program. Otherwise, the scope and detail of FAR 43, Appendix D, will apply.

-----END-----

Additional Sheets Are Attached

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

*Number* SA01224AT

*This certificate issued to:* LePresti Speed Merchants  
2620 North Airport Drive  
Vero Beach, FL 32960

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

*Original Product Type Certificate Number:* 2A13

*Make:* Piper\*  
*Model:* PA-28\* Series\*

*Description of Type Design Change:*

Installation of wheel hub caps with valve stem access door in accordance with LePresti Speed Merchants Master Drawing List, Report No. 36, Revision "B", dated April 02, 1997, 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 other previously approved modifications will produce no adverse effect upon the airworthiness of that aircraft. This determination should include consideration of significant changes in weight distribution such as an increase in the  
(See continuation sheet 3 of 4)

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

*Date of application:* September 13, 1996

*Date received:*

*Date of issuance:* December 10, 1996

*Date amended:* October 21, 1997, April 17, 1998



*By direction of the Administrator*

*Paul C. Seanyers*  
Paul C. Seanyers  
Associate Manager  
Atlanta Aircraft Certification Office

As required by 14 CFR 21.101, this certificate is issued on the basis of the information provided by the applicant and is not intended to be used as a basis for any other action. The FAA is not responsible for the accuracy or completeness of the information provided by the applicant. The FAA is not responsible for the accuracy or completeness of the information provided by the applicant.

International AeroTech Academy For Training Purposes Only



United States of America  
 Department of Transportation - Federal Aviation Administration

# Supplemental Type Certificate

## (Continuation Sheet)

*Number* SA91224AT

Date of Issuance December 10, 1996

Date Amended April 17, 1998

*Quantities and Conditions* (Continued)

footage. "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." \*Additional Type Certificate Numbers, Makes, and Models are shown on the Continuation Sheet, Page 21, as follows:

Make	Model	T.C.D.S. No.	Cert. Basis
Aerostar	1-200 Series	A1-411	CAR 3/FAR 23
Beech	1 Series	A103	CAR 3
Beech	23 Series	A104	CAR 3
Beech	24 Series	A102	CAR 3
Beech	Bonanza 33 Series	3A15	CAR 3
Beech	Bonanza 35 Series	A-777	CAR 3
Beech	Bonanza 36 Series	3A15	CAR 3
Cessna	150 Series	3A19	CAR 3
Cessna	152 Series	3A19	CAR 3
Cessna	172 Series	3A12	CAR 3
Cessna	177 Series	A110L	CAR 3
Cessna	180 Series	5A0	CAR 3
Cessna	182 Series	3A11	CAR 3
Cessna	185 Series	3A23	CAR 3
Cessna	200 Series	A101	CAR 3
Cessna	210 Series	3A21	CAR 3
Cessna/Cessna Aircraft	44 Series	31150	FAR 23
Cessna/Cessna Aircraft	44 Series	31280	FAR 23
Cole	CA-4 Series	1A13	CAR 3
Cole	250 Series	1A13	CAR 3
Maule	M-1 Series	3A23	CAR 3
Maule	M-3 Series	3A23	CAR 3/FAR 23
Maule	M-6 Series	3A23	CAR 3
Maule	M-7 Series	3A23	CAR 3/FAR 23
Maule	M-8 Series	3A23	CAR 3/FAR 23
Mitsubishi	M-2 Series	213	CAR 3
Piper	PA-15 Series	1A1	CAR 3
Piper	PA-7	A801	CAR 3
Piper	PA-18 Series	1A1	CAR 3
Piper	PA-20 Series	1A1	CAR 3
Piper	PA-21 Series	1A1	CAR 3
Piper	PA-22 Series	1A6	CAR 3
Piper	PA-23 Series	1A15	CAR 3
Piper	PA-28 Series	2A13	CAR 3
Piper	PA-30 Series	A10A	CAR 3
Piper	PA-31 Series	A390	CAR 3
Piper	PA-31 Series	A780	FAR 23
Piper	PA-37 Series	A11A	CAR 3
Piper	PA-40 Series	A1900	FAR 23

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United States of America  
Department of Transportation - Federal Aviation Administration

# Supplemental Type Certificate

(Continuation Sheet)

*Number* SA01224AT

Date of Issuance: December 10, 1996

Date Amended: April 17, 1998

*Restrictions and Conditions (Continued):*

Epner	FA-25 Series	A2250	FAR 23
Swift	GC-1A Series	A 760	CAR 4a
Swift	GC-1B Series	A 760	CAR 4a
Sukhoi (Aerospat-40)	T4 Series	AMTU	FAR 21.29

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## Installation Drawings



Dwg. No.	Rev	Nomenclature	Models	EO's
			Bonanza 33 Series Bonanza 35 Series Bonanza 36 Series Beech 23 Series Beech 24 Series Beech 19 Series C-150 Series C-152 Series C-172 Series C-177 Series C-180 Series C-182 Series C 185 Series C-206 Series C-210 Series Commander 112 Series Commander 114 Series Swift GC-1A Series Swift GC-1B Series F-260 Series Lake LA 4 Series Lake 250 Series Maule M-4 Series Maule M-5 Series Maule M-6 Series Maule M-7 Series Maule M-8 Series M20 Series PA16 Series PA17 Series PA18 Series PA20 Series PA22 Series PA24 Series PA28 Series PA30 Series PA32 Series PA34 Series PA39 Series PA44 Series PA46 Series TB9 Series TB10 Series TB20 Series TB21 Series TB200 Series	
LSM-200-701	C	Hub Cap Installation		



# Master Drawing List

Report No. 36

Hub Cap

Bonanza 33 Series  
Bonanza 35 Series  
Bonanza 36 Series  
Beech 23 Series  
Beech 24 Series  
Beech 19 Series  
C-150 Series  
C-152 Series  
C-172 Series  
C-177 Series  
C-180 Series  
C-182 Series  
C185 Series  
C-206 Series  
C-210 Series  
Commander 112 Series  
Commander 114 Series  
Swift GC-1A Series  
Swift GC-1B Series  
F-260 Series  
Lake LA 4 Series  
Lake 250 Series  
Maule M-4 Series

Maule M-5 Series  
Maule M-6 Series  
Maule M-7 Series  
Maule M-8 Series  
M20 Series  
PA16 Series  
PA17 Series  
PA18 Series  
PA20 Series  
PA22 Series  
PA24 Series  
PA28 Series  
PA30 Series  
PA32 Series  
PA34 Series  
PA39 Series  
PA44 Series  
PA46 Series  
TB9 Series  
TB10 Series  
TB20 Series  
TB21 Series  
TB200 Series

Number of Pages 1 through 6 inclusive

Rev. E  
03-26-07

Prepared By: \_\_\_\_\_



Curt LoPresti

Approved By: \_\_\_\_\_



Jim LoPresti



# Manufacturing Drawing

Dwg. No	Rev	Description	Models	EO's
			Bonanza 33 Series Bonanza 35 Series Bonanza 36 Series Beech 23 Series Beech 24 Series Beech 19 Series C-150 Series C-152 Series C-172 Series C-177 Series C-180 Series C-182 Series C-185 Series C-206 Series C-210 Series Commander 112 Series Commander 114 Series Swift GC-1A Series Swift GC-1B Series F-260 Series Lake LA 4 Series Lake 250 Series Maule M-4 Series Maule M-5 Series Maule M-6 Series Maule M-7 Series Maule M-8 Series M20 Series PA16 Series PA17 Series PA18 Series PA20 Series PA22 Series PA24 Series PA28 Series PA30 Series PA32 Series PA34 Series PA39 Series PA44 Series PA46 Series TB9 Series TB10 Series TB20 Series TB21 Series TB200 Series	
ISM-200-700	E	Hub Cap		

## Revision Control

Dwg. No.	Rev.	Date	Nomenclature	Models	F
				C-180 Series C-182 Series C-185 Series C-206 Series C-210 Series Commander 112 Series Commander 114 Series Swift GC-1A Series Swift GC-1B Series F-260 Series Lake LA 4 Series Lake 250 Series Maule M-4 Series Maule M-5 Series Maule M-6 Series Maule M-7 Series Maule M-8 Series M20 Series PA16 Series PA17 Series PA18 Series PA20 Series PA22 Series PA24 Series PA28 Series PA30 Series PA32 Series PA34 Series PA39 Series PA44 Series PA46 Series TB9 Series TB10 Series TB20 Series TB21 Series TB200 Series	
MDL	E	04-16-98	Master Drawing List	ALL	
LSM-200-700	E	01-18-07	Hub Cap	ALL	
LSM-200-701	F	03-26-07	Hub Cap Installation	ALL	

*Life is Short ... Fly **FAST!***

*LoPresti*   
*Speed Merchants*

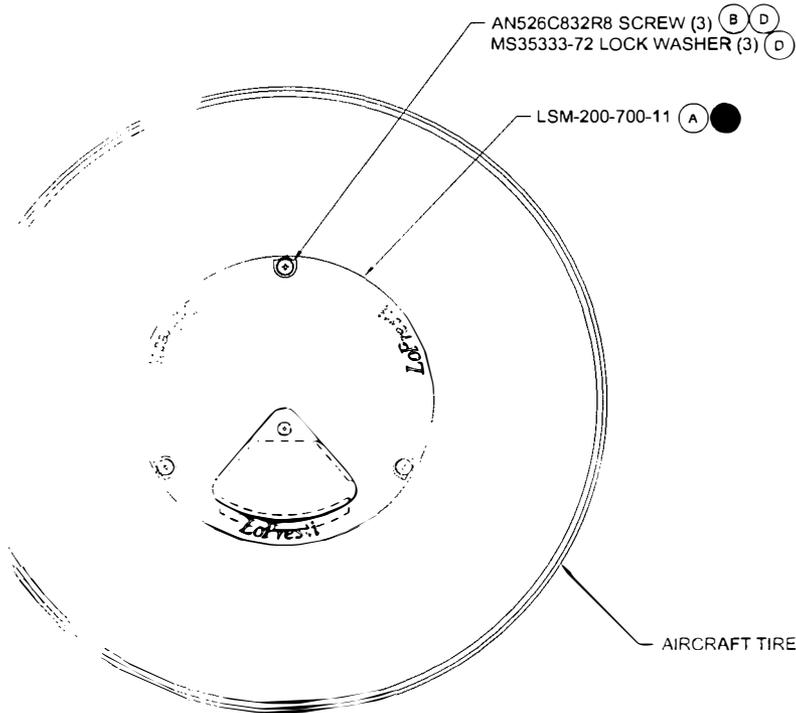
Continuing Air Worthiness

For STC SA01224AT

1. Check fasteners attaching hub cap to wheel for tightness.
2. Worn or loose hardware must be replaced.
3. Cracked parts must be replaced.

2670 Airport North Drive, Vero Beach, FL 32960  
772-562-4757 • 772-563-0446 fax • [www.SpeedMods.com](http://www.SpeedMods.com)





**-1 / -3 HUB CAP INSTL  
MAIN LANDING GEAR**

REVISION BLOCK			
REV	DESCRIPTION OF CHANGE	DATE/APP STRESS	DATE/APP PROJECT
A	ADDED LSM-200-700-11 AS AN ALTERNATE FOR LSM-200-700-1		2/28/97 C.L.
B	AN507C832R7 WAS AN507C832R5 6 PLCS.		4/2/97 C.L.
C	DELETED LSM-200-700-1; REVISED LSM-200-700-11 DESIGN		3/27/07 C.L.
D	ADDED MS35333-72 LOCK WASHER AN526C832R8 WAS AN526C832R7		4/28/08 C.L.
E	ADDED -3 SPARE HUBCAP INSTALLATION		8/17/11 W.

**NOTES**

- 1 POSITION LSM-200-700-11 HUB CAP ON WHEEL PLACING THE VALVE STEM ACCESS DOOR OVER THE VALVE STEM. INSTALL THREE AN526C832R8 SCREWS AND MS35333-72 LOCK WASHERS THRU HUB CAP INTO EXISTING TAPPED HOLES IN WHEEL, TYP BOTH SIDES.
- 2 OPEN ACCESS DOOR TO CHECK AND SERVICE TIRE PRESSURE.

REV	QTY	UNIT	PART NO.	DESCRIPTION	MATERIAL	STOCK SIZE	FINISH	WC
D			3 6	MS35333-72	LOCK WASHER			
B			3 6	AN526C832R8	SCREW			
A			1 2	LSM-200-700-11	HUB CAP ASSY			
			-3		HUB CAP INSTALLATION, SPARE			
			-1		HUB CAP INSTALLATION			

QTY REQ FOR ASSY

NAS525 FASTENER CODE

LOPRESTI SPEED MERCHANTS  
2620 AIRPORT NORTH DRIVE VERO BEACH FL 32960

HUB CAP  
INSTALLATION

LSM-200-701

BASIC CODES

DECIMALS

SCALE: SHEET 1 OF 1

International AeroTech Academy For Training Purposes Only



*Life is short ... Fly FAST!*

*Speed Merchants*  
by  
*LoPresti*

# CAUTION!

Before installing the hubcaps, make sure that the three tapped holes in the wheel hub are not stripped and are in good shape. If the holes are not in good shape, either replace the hub or repair the holes. Failure to do so could result in the hubcap departing the aircraft. Do NOT use Loctite to secure the mount screws as this can result in damage to the hubcaps. Use a hand driver to install the mounting screws.

Use of a power driver may result in damage to the hubcap.





US Department of Transportation  
Federal Aviation Administration

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

Form Approved  
OMB No. 2120-0020  
2/28/2011

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 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. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

<b>1. Aircraft</b>	Nationality and Registration Mark <b>N531A</b>	Serial No. <b>32-57160</b>	
	Make <b>Piper</b>	Model <b>PA-32R-301T</b>	Series <b>PA-32</b>
<b>2. Owner</b>	Name (As shown on registration certificate) <b>Three Mile Harbor Holdings LLC</b>		Address (As shown on registration certificate) Address <b>94 South View Ter N</b>
			City <b>Middletown</b> State <b>NJ</b> Zip <b>07748-2413</b> Country <b>USA</b>

**3. For FAA Use Only**

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

**6. Conformity Statement**

A. Agency's Name and Address		B. Kind of Agency	
Name <b>Eric Lacko</b>		<input checked="" type="checkbox"/> U. S. Certificated Mechanic	Manufacturer
Address <b>4954 Clauss Rd</b>		<input type="checkbox"/> Foreign Certificated Mechanic	C. Certificate No.
City <b>Schnecksville</b> State <b>PA</b>		<input type="checkbox"/> Certificated Repair Station	<b>3017923</b>
Zip <b>18078</b> Country <b>USA</b>		<input type="checkbox"/> Certificated Maintenance Organization	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 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 herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <b>1/17/2019</b>
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**7. Approval for Return to Service**

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  Approved  Rejected

<b>BY</b>	FAA Flt. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)

Certificate or Designation No. <b>2167421</b>	Signature/Date of Authorized Individual <b>Jay Sarver</b> <b>17 JAN 19</b>
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**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**

*(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

N531A	01/17/2019
Nationality and Registration Mark	Date

Installed and tested Garmin's GDL 82 ADS-B Out Transmitter in accordance with Garmin's Installation Manual, Document No. 190-01810-00 Revision 5 dated February, 28 2018 and FAA Policy Notice No. N8900.362.

This installation is a follow on to STC No. SA02573SE. The installed ADS-B OUT system was shown to meet the equipment performance requirements of 14 CFR part 91.227.

Weight and Balance Data, Equipment list and Airframe logs updated to reflect this change this date. Performed electrical load analysis and found total load does not exceed 80% of rated capacity.

Inserted FAA Approved Airplane Flight Manual Supplement, Garmin Document No. 190-01810-12, Revision 1 dated December 14, 2017 in the Pilot's Operating Handbook.

Reference Instructions for Continued Airworthiness, Garmin Document No. 190-10810-11 Revision 1, dated December 2017.

-----END-----

Additional Sheets Are Attached



US Department of Transportation  
Federal Aviation Administration

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

OMB No. 2120-0020  
Exp: 8/31/2014

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 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. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

<b>1. Aircraft</b>	Nationality and Registration Mark <b>USA N531A</b>	Serial No. <b>32-57160</b>	
	Make <b>PIPER</b>	Model <b>PA-32R-301T</b>	Series
<b>2. Owner</b>	Name (As shown on registration certificate) <b>FRIEDMAN TERRY L</b>		
	Address (As shown on registration certificate) Address <b>6 APPALOOSA DR</b>		
	City <b>MANALAPAN</b>	State <b>NJ</b>	
	Zip <b>07726-8865</b>	Country <b>USA</b>	

### 3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

### 6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency	
Name <b>MARK PFUNKE</b>	<input checked="" type="checkbox"/>	U. S. Certificated Mechanic	Manufacturer
Address <b>6 SCHOOLHOUSE LN</b>		Foreign Certificated Mechanic	C. Certificate No.
City <b>CHESTER</b> State <b>NJ</b>		Certificated Repair Station	<b>129529515</b>
Zip <b>07930</b> Country <b>USA</b>		Certificated Maintenance Organization	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 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 herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <b>9/20/16</b>
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### 7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  Approved  Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	<input checked="" type="checkbox"/>	Inspection Authorization

Certificate or Designation No. <b>129529515</b>	Signature/Date of Authorized Individual <b>9/20/16</b>
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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

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

PIPER PA-32R-301T S# 32-57160 TOTAL TIME: 1555.6

USA N531A April 26, 2016

Nationality and Registration Mark Date

Tach Time: 1555.6

1. Installed a RG24-15M Concord Battery Corporation battery as a replacement for the originally installed battery.
2. This installation is approved in accordance with STC# SA01147WI.
3. STC# SA01147WI was issued to Concord Battery Corporation on February 25, 2003 and reissued July 30, 2012.
4. Installation in accordance with Concord Battery Corporation Piper Installation Instructions DWG No. 5-0158 Issued 11/15/02.
5. This battery may be removed and replaced with the original battery returning it to its preexisting approved condition.
6. This battery has no obvious effects on any other aircraft system.
7. A copy of this STC and AML has been added to the permanent records of this aircraft.
8. Aircraft weight and balance is unchanged.
9. Logbook entries were made reflecting this installation.
10. Instructions for continued airworthiness will be found in the installed equipment manufacturer's maintenance manual and incorporated into the current aircraft inspection program. Otherwise, the scope and detail of FAR 43, Appendix D will apply.

-----END-----

Additional Sheets Are Attached



Concorde Battery Corporation  
 2009 San Bernardino Road  
 West Covina, CA 91790 USA  
 Phone 626-813-1234 | FAX 626-813-1235  
 www.concordebattery.com

License 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), CONCORDE BATTERY CORPORATION hereby licenses the holder to use the following listed STC in the noted aircraft

Aircraft Registration No:	N531A
Registered Owner:	TERRY L FRIEDMAN
	6 APPALOOSA DR.
	MANALAPAN, NJ 07726
Aircraft Manufacturer and Model No.:	PIPER PA-32R-301T
Aircraft Serial No.:	32-57160
STC No.:	SA01147WI

Authorizing signature:

  
 \_\_\_\_\_

Roxane Montoya  
 Customer Service  
 CONCORDE BATTERY CORPORATION

4-19-16  
 Date



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

*Number* SA01147WI

*This certificate issued to:*

Concorde Battery Corporation  
3830 West Bounous  
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)  
*Make:* No. SA01147WI for list of approved models and applicable  
*Model:* airworthiness regulations

*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 reissued:* July 30, 2012

*Date of issuance:* February 25, 2003

*Date amended:*



*By direction of the Administrator*

  
(Signature)

Raymond N. Johnston  
Program Manager  
Wichita 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.



## Master Drawing List

Drawing No.	Rev. <sup>1</sup>	Date	Title
5-0156	B	02/07/12	APPLICABILITY LIST, PIPER, LIGHT AIRCRAFT, MULTIPLE MODELS
5-0158	NC	11/15/02	INSTALLATION INSTRUCTIONS, PIPER, LIGHT AIRCRAFT, MULTIPLE MODELS
5-0161	NC	11/8/02	INSTALLATION KIT, PIPER AEROSTAR
CB-25	B	1/15/02	BATTERY, LEAD ACID, 12 VOLT
CB-25XC	NC	1/15/02	BATTERY, LEAD ACID, 12 VOLT, PLATINUM SERIES
CB-35A	B	1/15/02	BATTERY, LEAD ACID, 12 Volt
CB-35AXC	NC	1/15/02	BATTERY, LEAD ACID, 12 VOLT, PLATINUM SERIES
CB24-11	B	2/5/02	BATTERY, LEAD ACID, 24 VOLT
CB24-11XC	NC	2/5/02	BATTERY, LEAD ACID, 24 VOLT, PLATINUM SERIES
CB24-11M	B	2/5/02	BATTERY, LEAD ACID, 24 VOLT
CB24-11MXC	NC	2/5/02	BATTERY, LEAD ACID, 24 VOLT, PLATINUM SERIES
RG-25	K	2/18/10	BATTERY, VRSLA, 12 VOLT, RG-25 SERIES
RG-35A	C	2/18/10	BATTERY, VRSLA, 12 VOLT, RG-35A SERIES
RG24-11	C	2/18/10	BATTERY, VRSLA, 24 VOLT
RG24-16	B	10/6/10	BATTERY, VRSLA, 24 VOLT
RG24-11M	C	3/25/11	BATTERY, VRSLA, 24 VOLT
RG24-15	F	2/18/10	BATTERY, VRSLA, 24 VOLT
RG24-15M	E	3/25/11	BATTERY, VRSLA, 24 VOLT
RG24-20	C	2/18/10	BATTERY, VRSLA, 24 VOLT
5-0456	NC	02/07/12	INSTRUCTIONS FOR CONTINUED AIRWORTHINESS, PIPER, LIGHT AIRCRAFT, MULTIPLE MODELS.

**Notes:**

1. Or later FAA approved revision

<b>F.A.A.</b> <b>APPROVED</b> Wichita Aircraft Certification Office, ACE - 115W Central Region
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Revisions		Date	Approved
Rev.	Description		
A	Add drawing 5-0161	12/9/02	JBT
B	Add RG24-16, update drawing rev's RG24-11, RG24-15, ICA's	3/27/06	JBT
C	Updated Drawing Rev's RG-25, RG-35A, RG24-11, RG24-16, RG24-11M, RG24-15, RG24-15M, RG24-20, 5-0144. Replaced 5-0142 and 5-0144 with 5-0456. Added Note 1.	02/07/12	JBT

CONCORDE BATTERY CORPORATION, 2009 San Bernardino Road, West Covina, CA 91790

TITLE: Master Drawing List, Piper, Light Aircraft, Multiple Models		DWG NO. 5-0157		REV. C	
CAGE CODE: 63017	DRAWN: JBT 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12	SHEET: 1 OF 1



## Applicability List

Type Certificate	Certification Basis	Model No.	Serial No.
TC A-780	CAR 3	PA-12	Refer to Aircraft Illustrated Parts Catalog (IPC) and Type Certificate (TC) for Serial Number eligibility
		PA-12S	
TC 1A2	CAR 3	PA 18	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-19 (Army L-18C)	
		PA-18 "125" (Army L-21B)	
		PA-18 "135" (Army L-21B)	
		PA-18A	
		PA-18A "135"	
		PA-18 "105" (Special)	
		PA-18S	
		PA-19S	
		PA-18S "125"	
		PA-18S "135"	
		PA-18AS "125"	
		PA-18AS "135" PA-18S "105"	
		PA-18 "150"	
		PA-18A "150"	
PA-18S "150"			
TC AR-7	CAR 8.10(b)	PA-18A	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-18A "135"	
		PA-18A "150"	
TC 1A4	CAR 3	PA-20	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-20 "115"	
		PA-20S	
		PA-20S "115"	
		PA-20S "135"	
		PA-20 "135"	
TC 1A6	CAR 3	PA-22	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-22-135	
		PA-22S-135	
		PA-22-150	
		PA-22S-150	
		PA-22-160	
		PA-22S-160	

TITLE: ApplicabilityList, Piper, Light Aircraft, Multiple Models				DWG. NO. 5-0156	REV. B
CAGE CODE: 63017	DRAWN: DGG 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12	SHEET: 1 OF 5



Type Certificate	Certification Basis	Model No.	Serial No.
		PA-22-108	
TC 1A10	CAR 3I	PA-23 APACHE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-23-160	
		PA-23-250 (Navy UO-1)	
		PA-23-235	
		PA-E23-250 AZTEC	
		PA-23-250	
TC 1A15	CAR 3	PA-24 COMANCHE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-24-250	
		PA-400	
		PA-24-260	
TC 2A8	CAR 3	PA-25 PAWNEE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-25-235	
		PA-25-260	
TC 2A10	CAR 8.10(b)	PA-25 PAWNEE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-25-235	
		PA-25-260	
TC 2A13	CAR 3	PA-28-160	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-28-150	
		PA-28-180	
		PA-28S-160	
		PA-28-180	
		PA-28-235	
		PA-28-140	
		PA-28R-180	
		PA -28R-200	
		PA-28R-200	
		PA-28-180	
		PA-28-235	
		PA-28-151	
		PA-28-181	
		PA-28-181	
		PA-28-161	
		PA-28-161	
PA-28-161			
PA-28R-201			

TITLE: Applicability List, Piper, Light Aircraft, Multiple Models			DWG. NO. 5-0156		REV. B
CAGE CODE: 63017	DRAWN: DGG 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12	SHEET: 2 OF 5



Type Certificate	Certification Basis	Model No.	Serial No.
		PA-28R-201T	
		PA-28-236	
		PA-28RT-201	
		PA-28RT-201	
		PA-28RT-201T	
		PA-28-201T	
TC A20SO	CAR 3 FAR 23	PA-31 NAVAJO	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-31-300 NAVAJO	
		PA-31-350 CHIEFTAIN & T-1020	
		PA-31-325 NAVAJO C/R	
TC A3SO	CAR 3	PA-32-260	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-32-300	
		PA-32S-300	
		PA-32R-300	
		PA-32RT-300	
		PA-32RT-300T	
		PA32R-301	
		PA-32R-301	
		PA -32R-301T	
		PA-32-301	
		PA-32-301T	
		PA-32R-301T	
TC A9SO	FAR 23	PA-36-285	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-36-300	
		PA-36-375	
TC A10SO	FAR 23	PA-36-285	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-36-300	
		PA-36-375	
TC A18SO	FAR 23	PA-38-112 TOMAHAWK	Refer to Aircraft IPC and TC for Serial Number eligibility
TC A19SO	FAR 23	PA-44-180 SEMINOLE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-44-180 SEMINOLE	
		PA-44-180T TURBO SEMINOLE	
TC A25SO	FAR 23	PA-46-310P MALIBU	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-46-350P MALIBU MIRAGE	

TITLE: Applicability List, Piper, Light Aircraft, Multiple Models			DWG. NO. 5-0156		REV. B
CAGE CODE: 63017	DRAWN: DGG 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12	SHEET: 3 OF 5



Type Certificate	Certification Basis	Model No.	Serial No.
TC A1EA	CAR 3 also FAR 23	PA-30 TWIN COMANCHE	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-39 TWIN COMANCHE	
		PA-40 TWIN COMANCHE	
TC A7SO	FAR 23	PA-34-200 SENECA	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-34-200T SENECA II	
		PA-34-220T SENECA III	
		PA-34-220T SENECA IV	
		PA-34-220T SENECA V	
A17WE	FAR 23	PA-60-600	Refer to Aircraft IPC and TC for Serial Number eligibility
		PA-60-601	
		PA-60-601P	
		PA-60-602P	
		PA-60-700P	

The purpose of this report is to provide instructions for the replacement of the original equipment flooded lead acid battery with a Concorde Battery Corporation flooded lead acid or Valve Regulated Sealed Lead Acid (VRSLA) Battery in Piper Aircraft Corporation aircraft.

#### DESCRIPTION

The Concorde flooded lead acid or VRSLA RG series batteries referenced here are direct replacements for the flooded lead acid batteries originally installed in these aircraft. No mechanical or electrical modifications of the aircraft are required to install the Concorde battery. The Concorde VRSLA battery requires no venting.

A supplemental kit is required for the installation of the RG24-20 battery in place of Piper 450-029.

The Concorde batteries are compatible to all electrical specifications and operating procedures as specified in the Pilots Operating Handbooks and should be operated in exactly the same manner as the original battery. Any references to adding water can be ignored if the VRSLA battery is selected. Inspection and maintenance can be performed in any shop by reference to the latest revision of Concorde Battery Corp., Instructions for Continued Airworthiness (ICA).

The Concorde VRSLA Battery can be safely recharged in the aircraft by following the Concorde Instructions for Continued Airworthiness (ICA) that are part of this document.

The Concorde batteries offer the operator a choice of capacities to suit the particular mission.

Piper P/N	Concorde P/N	Ampere-Hour (AH) Capacity at the 1 hour rate (C1)	Weight (lbs.)
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TITLE: Applicability List, Piper, Light Aircraft, Multiple Models				DWG. NO. 5-0156	REV. B
CAGE CODE: 63017	DRAWN: DGG 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12	SHEET: 4 OF 5



To replace the Piper 12 volt battery P/N 450-030	Concorde CB-25 Concorde CB-25XC Concorde RG-25 Concorde RG-25XC	20 AH 25 AH 22 AH 24 AH	22 lbs. 24.5 lbs. 22.75 lbs. 23.5 lbs.
To replace the Piper 12 volt battery P/N 450-022	Concorde RG-25	22 AH	22.75 lbs.
To replace the Piper 12 volt battery P/N 450-035	Concorde CB-35A Concorde CB-35AXC Concorde RG-35A Concorde RG-35AXC	29 AH 34 AH 29 AH 33 AH	28.5 lbs. 32.5 lbs. 29.5 lbs. 32 lbs.
To replace the Piper 24 volt manifold battery P/N 450-101	Concorde CB24-11M Concorde CB24-11MXC Concorde RG24-11M Concorde RG24-15M	10 AH 15 AH 11 AH 13.6 AH	28 lbs. 31 lbs. 26.5 lbs. 29.5 lbs.
The Concorde RG-24-11 or RG-24-15 can also be used as no venting is required. Cap and stow or remove the existing manifold vent line. Install NAS 43HT4-48 spacer or equivalent 3/4 inch spacer on hold down bolts to compensate for height differences in the batteries.			
To replace the Piper 24 volt battery P/N 450-027 or 450-032	Concorde CB24-11 Concorde CB24-11XC Concorde RG24-11 Concorde RG24-15 Concorde RG24-16	10 AH 15 AH 11AH 13.6 AH 13.6 AH	27 lbs. 31 lbs. 26.5 lbs. 29.5 lbs. 29.5 lbs.
To replace the Piper 24 volt battery P/N 450-028, or 450-031	Concorde RG24-20	19 AH	42 lbs.
To replace the Piper 24 volt battery P/N 450-029	Concorde RG24-20	19 AH	42 lbs.

Prepared by Donald G. Grunke, BSEE, Concorde Battery Corp., Wichita, KS. (316) 943-9200

Checked by John Newman, DER Electrical, Newman Consulting LLC, Bethany, OK.. 73008 (405) 789-8148

Revisions					
Rev.	Description	Date	Approved		
A	Add RG24-16 battery	3/27/06	JBT		
B	Improved clarity of document by removing S/N's and referencing TC and IPC's	01/13/12	JBT		
TITLE: Applicability List, Piper, Light Aircraft, Multiple Models				DWG. NO. 5-0156	
CAGE CODE: 63017		DRAWN: DGG 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED BT 2/7/12
					REV. B
					SHEET: 5 OF 5



## PIPER INSTALLATION INSTRUCTIONS

### 1.0 REMOVAL

- 1.1 Assure that the "Battery Master Switch" is "OFF".
- 1.2 Gain access to the battery compartment and loosen the battery hold downs, if not secured by the battery box lid.
- 1.3 Disconnect the vent tubes if installed on the battery. Cap and stow if replacement battery is not manifold type.
- 1.4 Disconnect the battery cables. Always disconnect the Negative cable first and reconnect it last for safety reasons.
- 1.5 Remove the battery and **PROPERLY DISPOSE OF IT**.
- 1.6 Clean the battery compartment and inspect the cables and connector for airworthiness. Refer to applicable service manuals instructions for cleaning, repairs and/or preventive maintenance operations on battery compartment.

### 2.0 INSTALLATION

- 2.1 Install the fully charged Concorde Battery in the battery compartment. Engage the battery hold down if not secured by the battery box lid, tighten and safety wire. Reconnect battery cables, Negative cable last.
- 2.2 Installation of the Concorde RG-25 to replace the Piper 450-022 requires removing and stowing the drain tubing. Drain tubing is not required for a VRSLA battery.
- 2.3 Installation of the Concorde RG24-20 to replace the Piper 450-029 requires the supplemental installation kit shown in Concorde Drawing 5-0161.
- 2.4 Make entry into the aircraft records to show the accomplishment of this battery installation, including a change of the aircraft weight and balance if the replacement battery has a weight different from the battery being replaced. Refer to the flight manual or appropriate document to determine station number of battery location.

### 3.0 MAINTENANCE

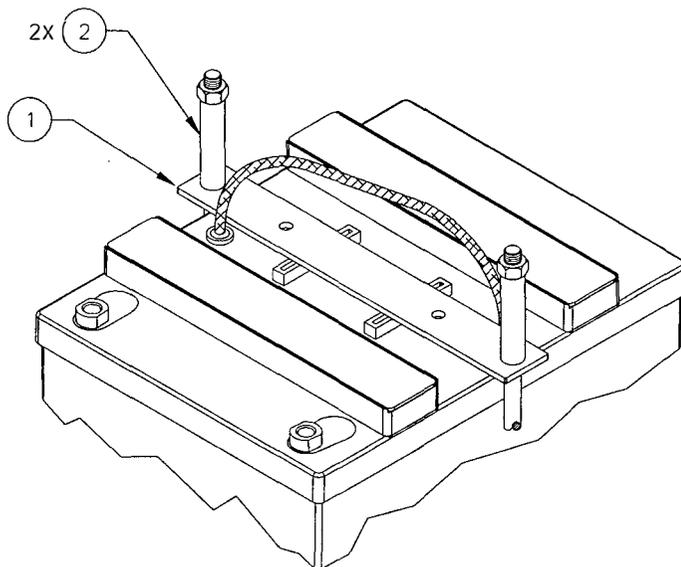
- 3.1 The RG series battery requires no maintenance other than inspection of connections for security. This battery requires no added water.
- 3.2 Refer to the latest revision of Concorde Battery Corporation Instructions for Continued Airworthiness (ICA) for periodic inspection requirements and test procedures for the battery selected. The ICA is available on the Concorde battery web site at [www.concordebattery.com](http://www.concordebattery.com)

<b>CONCORDE BATTERY CORPORATION</b> , 2009 San Bernardino Road, West Covina, CA 91790					
TITLE: Installation Instructions, Piper, Light Aircraft, Multiple Models			DWG NO. 5-0158		REV. NC
CAGE CODE: 63017	DRAWN: JBT 11/5/02	CHECKED HRF 11/15/02	APPROVED JBT 11/15/02	ISSUED AT 11/15/02	SHEET: 1 OF 1



NOTES: UNLESS OTHERWISE SPECIFIED

1. KIT REQUIRED WHEN REPLACING PIPER P/N 450-029 WITH CONCORDE RG24-20



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

International AeroTech Academy For Training Purposes Only

2	8798	SPACER		2	
1	9771	PLATE, HOLD DOWN		1	
QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONTRACT NO.		
FRACTIONS	DECIMALS	ANGLES	CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
	.xx ± .03		APPROVALS	DATE	TITLE
	.xxx ± .010		DRAWN JBT	11/7/02	INSTALLATION KIT, PIPER AEROSTAR
TREATMENT	NONE		CHECKED AMIII	11/7/02	SIZE CAGE CODE DWG NO. REV
FINISH	NONE		APPROVED JBT	11/8/02	B 63017 5-0161
SIMILAR TO	ACT WT	CALC WT	ISSUED AT	11/8/02	SCALE NONE SHEET 1 OF 1

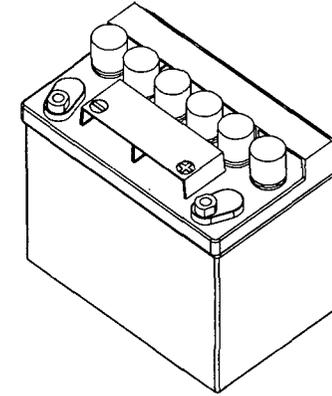
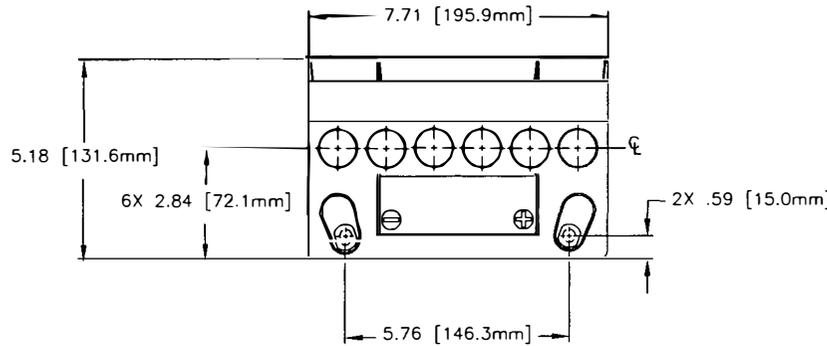
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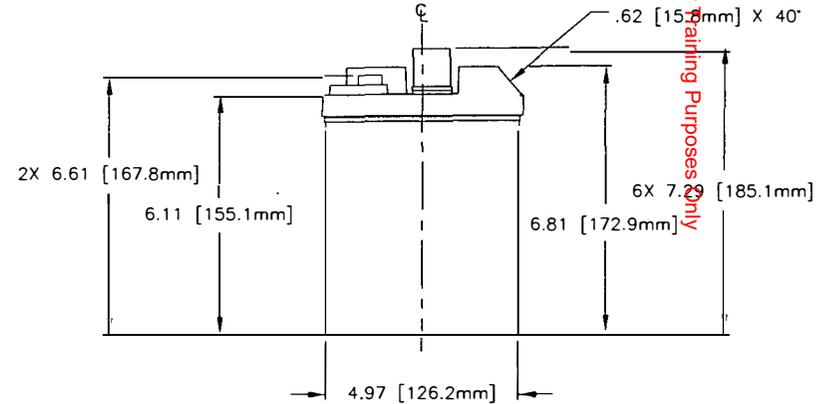
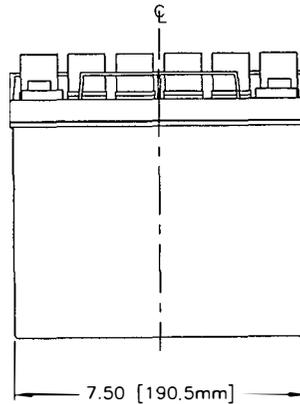
NOTES: UNLESS OTHERWISE SPECIFIED

1. BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
2. INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
3. SEE DRAWING NO. CB-00101 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS AND CONICAL WASHERS.
5. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STD. 952-1 UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE IN INCHES[MM].

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	NOTE 4 WAS: ...CB-00266...	1/10/00	JBT
B	REVISED NOTES & RATE TABLE	1/15/02	JBT



REFERENCE VIEW



International AeroTech Academy For Training Purposes Only

CAPACITY RATINGS	
PART NUMBER	CB-25
MAXIMUM WEIGHT	22 LBS [10 KG]
RATED CAPACITY, C <sub>1</sub>	20 AH
POWER RATING AT 23°C (74°F)	I <sub>pr</sub> 525 A, I <sub>pp</sub> 635 A
POWER RATING AT -18°C (0°F)	I <sub>pr</sub> 340 A, I <sub>pp</sub> 395 A
POWER RATING AT -30°C (-22°F)	I <sub>pr</sub> 230 A, I <sub>pp</sub> 270 A

ENVELOPE DRAWING

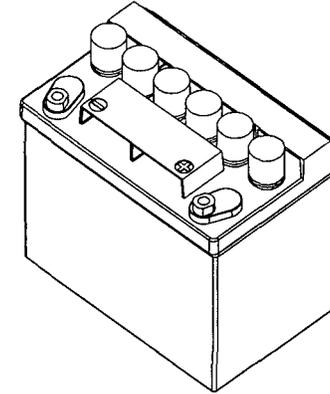
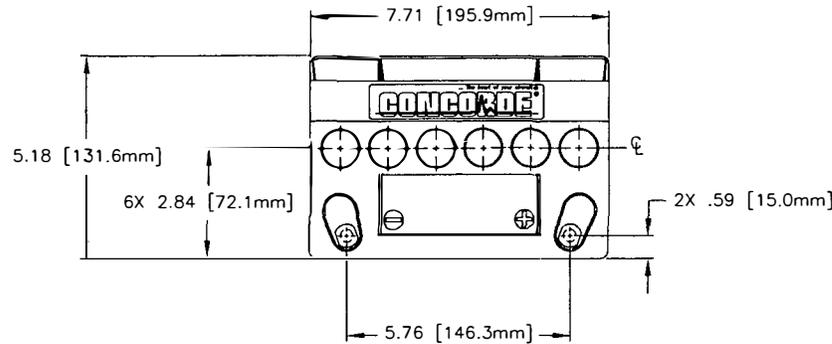
QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NUMERICAL OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .06 ± 1'			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
TREATMENT NONE		APPROVALS	DATE	TITLE	
FINISH NONE		DRAWN A. MISTRESTIA	2/16/99	BATTERY, LEAD ACID, 12 VOLT	
SIMILAR TO NA		CHECKED JBT	4/30/99	SIZE	REV
ACT WT NA	QAL WT NA	APPROVED M.K	4/30/99	C 63017	B
		ISSUED AT	1/16/02	DWG NO. CB-25	
				SCALE 1=2.5	SHEET 1 OF 1



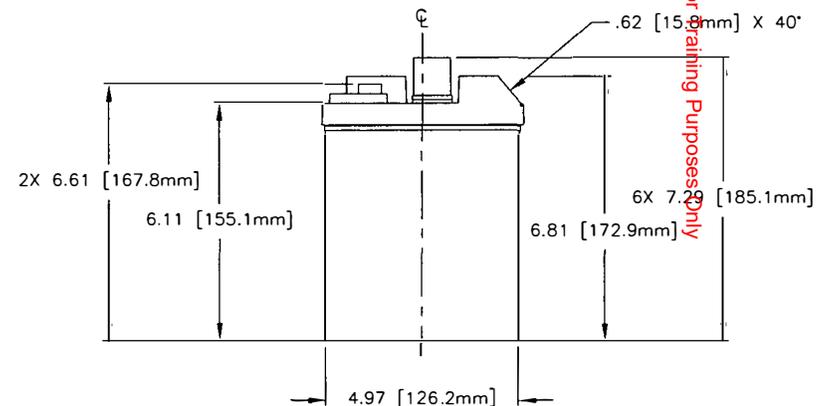
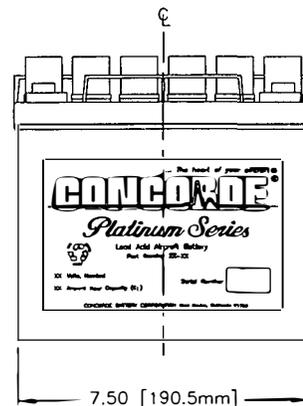
NOTES: UNLESS OTHERWISE SPECIFIED

- BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
- INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
- SEE DRAWING NO. CB-00101 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS AND CONICAL WASHERS.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STD. 952-1 UNLESS OTHERWISE SPECIFIED.
- ALL DIMENSIONS ARE IN INCHES[MM].

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



REFERENCE VIEW



ENVELOPE DRAWING

CAPACITY RATINGS	
PART NUMBER	CB-25XC
MAXIMUM WEIGHT	24.5 LBS [11.2 KG]
RATED CAPACITY, C <sub>1</sub>	25 AH
POWER RATING AT 23°C (74°F)	lpr 738 A, lpp 895 A
POWER RATING AT -18°C (0°F)	lpr 513 A, lpp 625 A
POWER RATING AT -30°C (-22°F)	lpr 371 A, lpp 447 A

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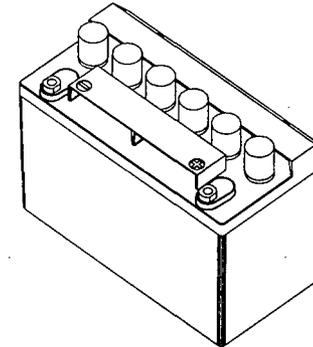
QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO. NA		CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790	
FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .00 ± 1'		APPROVALS DATE		TITLE BATTERY, LEAD ACID, 12 VOLT, PLATINUM SERIES	
TREATMENT NONE		DRAWN S. VALDEZ 12/4/01		SIZE CAGE CODE DWG NO. REV	
FINISH NONE		CHECKED HRF 12/4/01		C 63017 CB-25XC	
SIMILAR TO NA		APPROVED JBT 1/15/02		SCALE 1=2.5	
ACT WT NA		ISSUED AT 1/16/02		SHEET 1 OF 1	



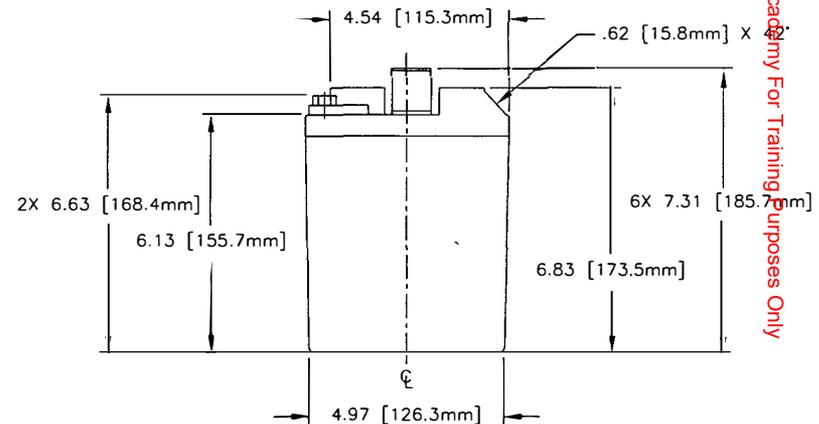
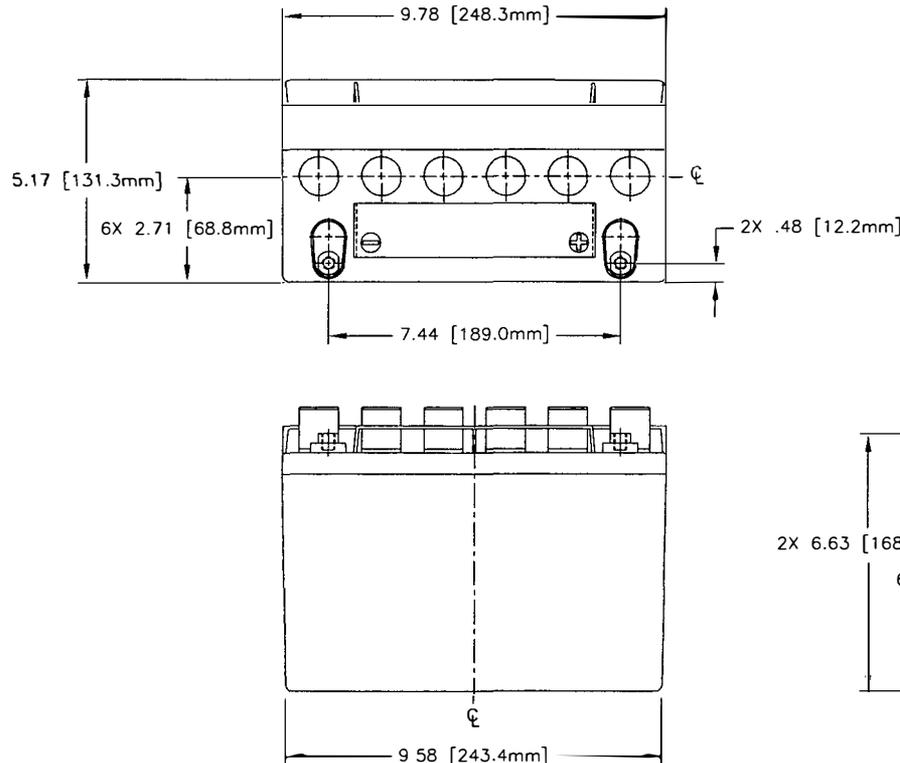
NOTES: UNLESS OTHERWISE SPECIFIED

- BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
- INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
- SEE DRAWING NUMBER CB-00243 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURE AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY
- TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS, CONICAL WASHERS. AND INSTRCTION TAG.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1 UNLESS OTHERWISE SPECIFIED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED 42° CHAMFER TO COVER	1/8/99	JBT
B	REVISED NOTES & RATE TABLE	1/15/02	JBT



REFERENCE VIEW



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CAPACITY RATINGS	
PART NUMBER	CB-35A
MAXIMUM WEIGHT	28.5 LBS [13.0 KG]
RATED CAPACITY, C <sub>1</sub>	29 AH
POWER RATING AT 23°C (74°F)	lpr 725 A, lpp 823 A
POWER RATING AT -18°C (0°F)	lpr 496 A, lpp 600 A
POWER RATING AT -30°C (-22°F)	lpr 365 A, lpp 441 A

ENVELOPE DRAWING

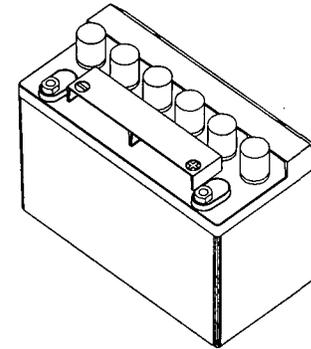
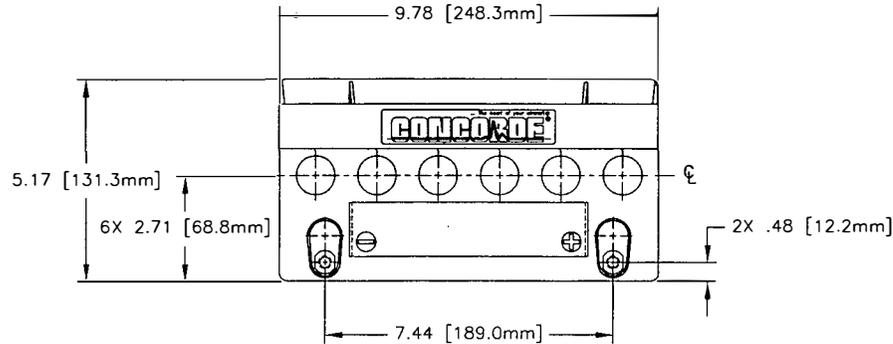
QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .06 ± 1°			APPROVALS	DATE	TITLE
			DRAWN PRECIADO M.	6/18/98	BATTERY, LEAD ACID, 12 VOLT
TREATMENT NONE			CHECKED AMIII	7/8/98	SIZE
FINISH NONE			APPROVED JBT	7/8/98	CAGE CODE
SIMILAR TO			ISSUED AT	1/16/02	DWG NO.
					CB-35A
					REV B
					SCALE 1=2.5
					SHEET 1 OF 1



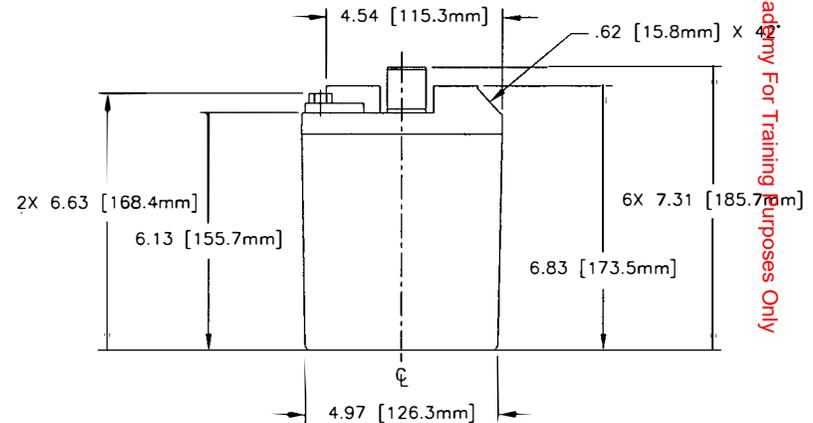
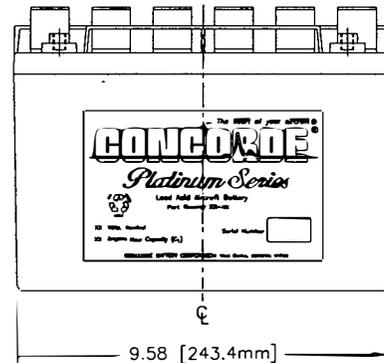
NOTES: UNLESS OTHERWISE SPECIFIED

- BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
- INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
- SEE DRAWING NUMBER CB-00243 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURE AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY
- TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS, CONICAL WASHERS, AND INSTRUCTION TAG.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1 UNLESS OTHERWISE SPECIFIED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



REFERENCE VIEW



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CAPACITY RATINGS	
PART NUMBER	CB-35AXC
MAXIMUM WEIGHT	32.5 LBS [14.8 KG]
RATED CAPACITY, C <sub>1</sub>	34 AH
POWER RATING AT 23°C (74°F)	Ipr 939 A, Ipp 1121 A
POWER RATING AT -18°C (0°F)	Ipr 665 A, Ipp 818 A
POWER RATING AT -30°C (-22°F)	Ipr 492 A, Ipp 613 A

ENVELOPE DRAWING

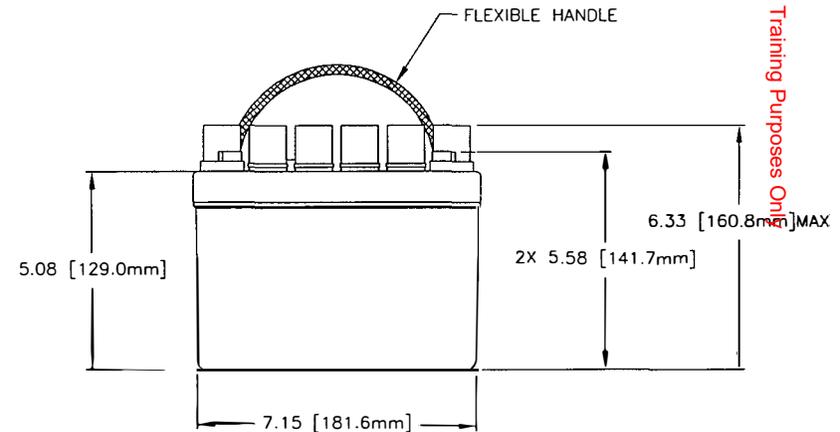
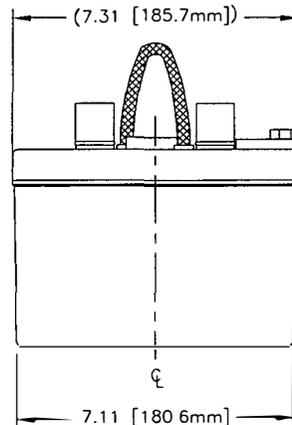
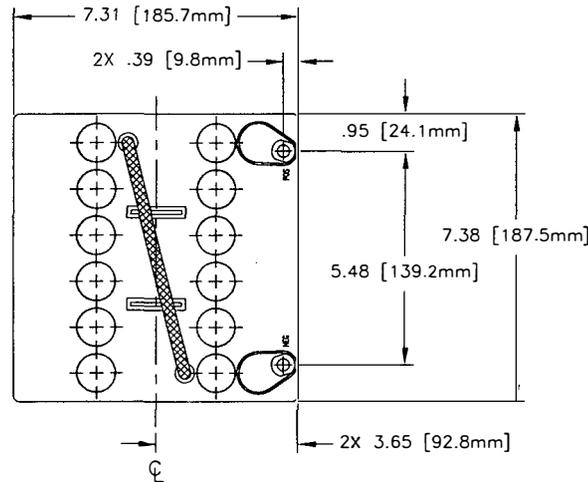
QTY	RECD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .05 * 1° .XXX ± .060				CONTRACT NO. CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
TREATMENT NONE		CHECKED HRF		DATE 12/3/01	TITLE BATTERY, LEAD ACID, 12 VOLT, PLATINUM SERIES	
FINISH NONE		APPROVED JBT		DATE 1/15/02	SIZE C	CAGE CODE 63017
SIMILAR TO		ACT WT	CALC WT	ISSUED AT	DATE 1/15/02	DWG NO. CB-35AXC
				SCALE 1=2.5	REV SHEET 1 OF 1	



NOTES: UNLESS OTHERWISE SPECIFIED

1. INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
2. BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
3. SEE DRAWING NUMBER CB-00117 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS AND CONICAL WASHERS.
5. ALL DIMENSIONS ARE IN INCH [MM].
6. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1. UNLESS OTHERWISE SPECIFIED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED BATT WEIGHT TO TABLE	6/5/00	JBT
B	REVISED RATING CHART WITH IEC RATES; ADDED NOTE 5 & 6	2/5/02	JBT



CAPACITY RATINGS	
PART NUMBER	CB24-11
MAXIMUM WEIGHT	27 LBS [12.3 kg]
RATED CAPACITY, C <sub>1</sub>	10 AH
POWER RATING AT 23°C (74°F)	Ipr 353 A, Ipp 554 A
POWER RATING AT -18°C (0°F)	Ipr 281 A, Ipp 437 A
POWER RATING AT -30°C (-22°F)	Ipr 166 A, Ipp 317 A

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ENVELOPE DRAWING

QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .06 ± 1'			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
APPROVALS		DATE	TITLE		
DRAWN	PRECIADO M	9/8/98	BATTERY, LEAD ACID, 24 VOLT		
TREATMENT	NONE	CHECKED	AMIII	9/8/98	
FINISH	NONE	APPROVED	JBT	9/9/98	
SIMILAR TO	ACT WT	CALC WT	ISSUED	AT	2/2/02
SIZE	CAGE CODE	OWG NO	REV		
C	63017	CB24-11	B		
SCALE	NONE		SHEET 1 OF 1		

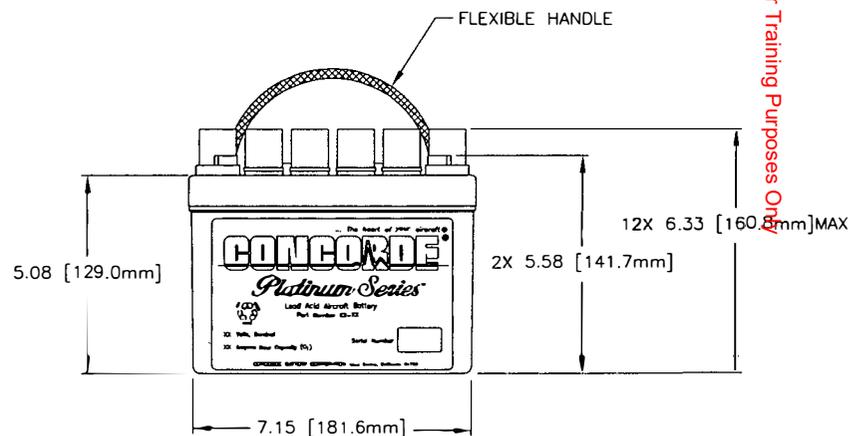
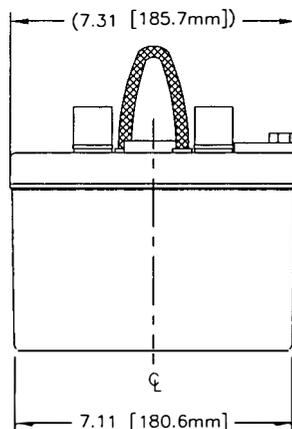
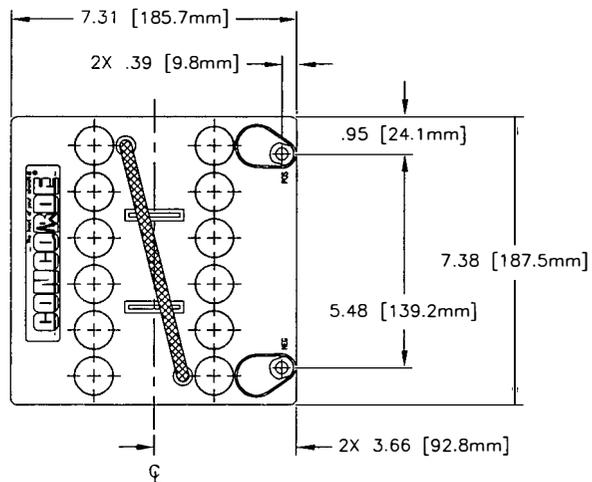


NOTES: UNLESS OTHERWISE SPECIFIED

1. INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
2. BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
3. SEE DRAWING NUMBER CB-00117 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS AND CONICAL WASHERS.
5. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1. UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE IN INCHES [MM].

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

CAPACITY RATINGS	
PART NUMBER	CB24-11XC
MAXIMUM WEIGHT	31 LBS [14.0 kg]
RATED CAPACITY, C <sub>1</sub>	15 AH
POWER RATING AT 23°C (74°F)	I <sub>pr</sub> 643 A, I <sub>pp</sub> 1064 A
POWER RATING AT -18°C (0°F)	I <sub>pr</sub> 437 A, I <sub>pp</sub> 884 A
POWER RATING AT -30°C (-22°F)	I <sub>pr</sub> 310 A, I <sub>pp</sub> 633 A



ENVELOPE DRAWING

QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NDNOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
FRACTIONS DECIMALS ANGLES ± 1/32 .XX ± .06 ± 1'			TITLE BATTERY, LEAD ACID, 24 VOLT, PLATINUM SERIES		
TREATMENT NONE			APPROVALS	DATE	SIZE
FINISH NONE			DRAWN S. VALDEZ	11/26/01	CAGE CODE 63017
SIMILAR TO NA			CHECKED HRF	1/30/02	DWG NO. CB24-11XC
ACT WT N/A			APPROVED JBT	2/5/02	REV
CALC WT N/A			ISSUED AT	2/21/02	SCALE NONE
					SHEET 1 OF 1

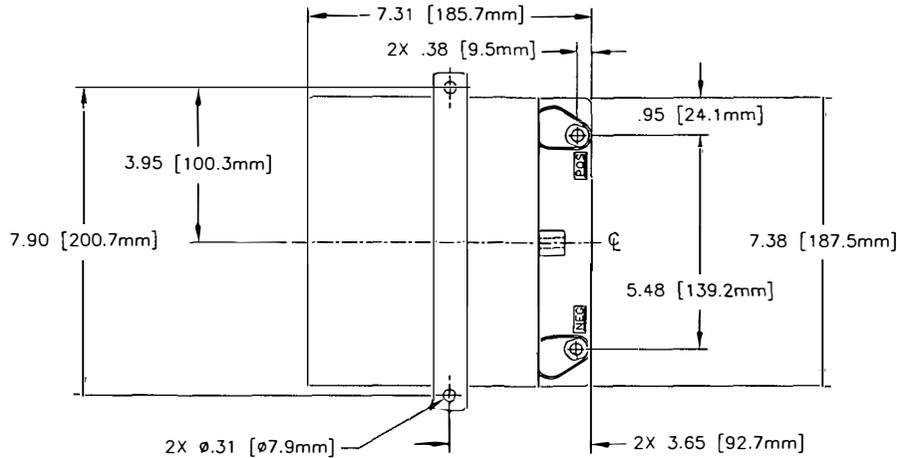
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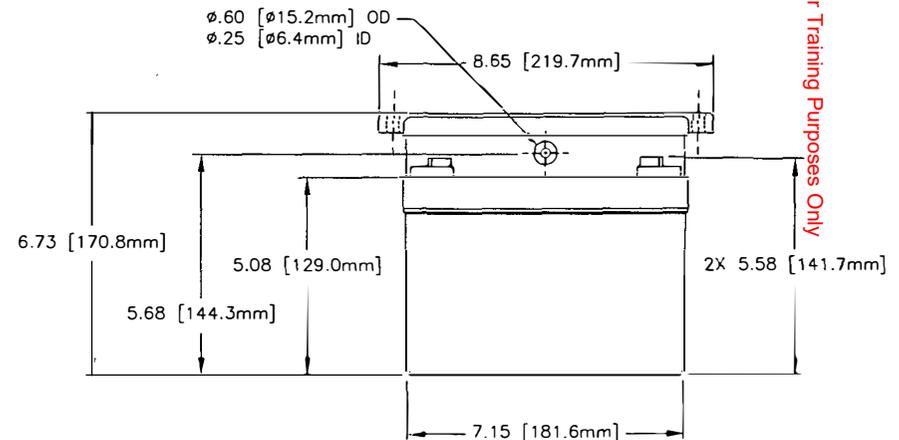
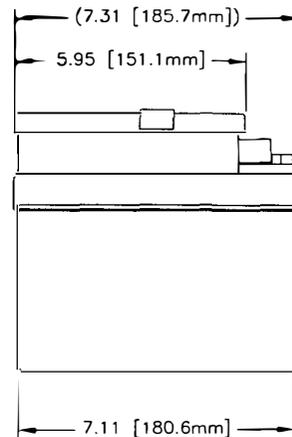
NOTES: UNLESS OTHERWISE SPECIFIED

- INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
- BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
- SEE DRAWING NUMBER CB-00118 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS AND CONICAL WASHERS.
- ALL DIMENSIONS ARE IN INCH [MM].
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1. UNLESS OTHERWISE SPECIFIED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED BATT WEIGHT TO TABLE	6/5/00	JBT
B	REVISED RATING CHART; NOTE 3, ADDED NOTE 5 & 6	2/5/02	JBT



CAPACITY RATINGS	
PART NUMBER	CB24-11M
MAXIMUM WEIGHT	28 LBS [12.7 kg]
RATED CAPACITY, C <sub>1</sub>	10 AH
POWER RATING AT 23°C (74°F)	Ipr 353 A, Ipp 554 A
POWER RATING AT -18°C (0°F)	Ipr 281 A, Ipp 437 A
POWER RATING AT -30°C (-22°F)	Ipr 166 A, Ipp 317 A



ENVELOPE DRAWING

QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONCORDE BATTERY CORPORATION		
FRACTIONS DECIMALS ANGLES			2009 SAN BERNARDINO RD., W. COVINA, CA 91790		
± 1/32 .XX ± .06 ± 1'			TITLE BATTERY, LEAD ACID, 24 VOLT		
.XXX ± .060			DRAWN PRECIADO M. 9/8/98		
TREATMENT	NONE	CHECKED AMIII	9/8/98	DATE	9/8/98
FINISH	NONE	APPROVED JBT	9/9/98	DATE	9/9/98
SIMILAR TO	ACT WT	CAGE WT	ISSUED AT	2/21/02	SCALE NONE
				SIZE C	CAGE CODE 63017
				DWG NO.	CB24-11M
				REV	B
				SHEET	1 OF 1

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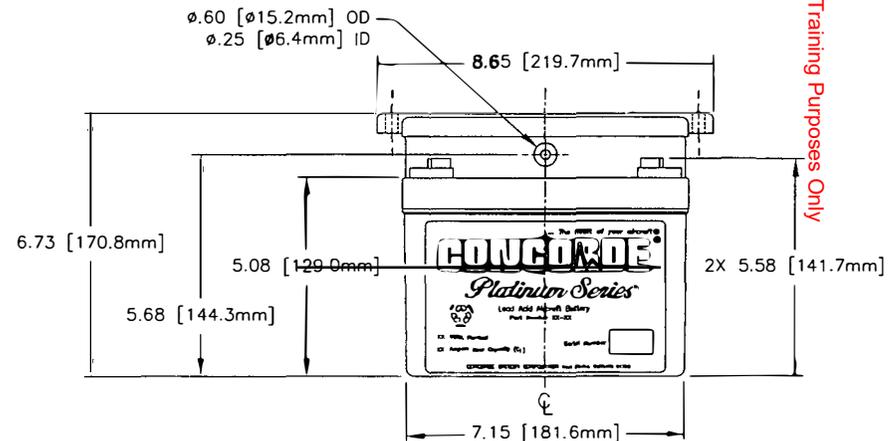
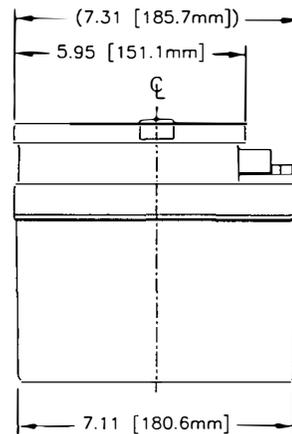
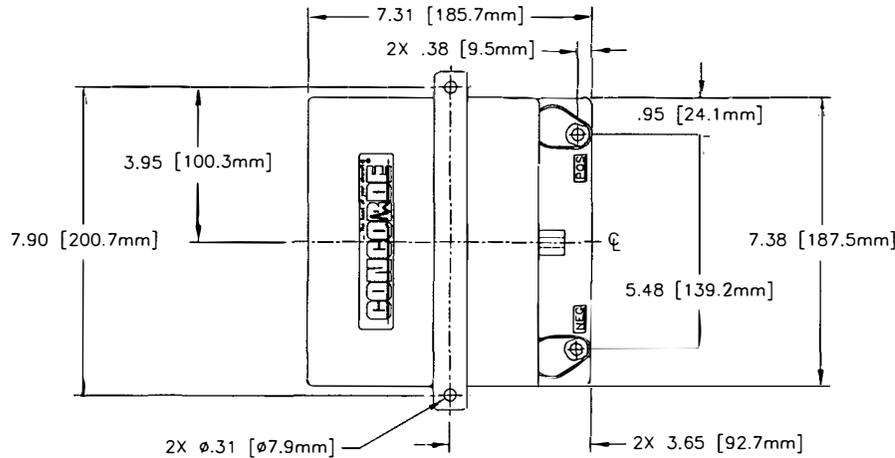


NOTES: UNLESS OTHERWISE SPECIFIED

1. INSPECT PER FAR 21.303(h) QUALITY SYSTEM.
2. BATTERY CONFORMS TO THE DESIGN REQUIREMENTS OF 14 CFR PART 25.1353(c).
3. SEE DRAWING NUMBER CB-00118 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURE AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. TERMINAL HARDWARE KIT (CBC PN 9586) CONTAINS M8 HEX HEAD SCREWS, CONICAL WASHERS AND INSTRUCTION TAG.
5. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 952-1 UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE IN INCHES [MM].

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

CAPACITY RATINGS	
PART NUMBER	CB24-11MXC
MAXIMUM WEIGHT	31 LBS [14.0 kg]
RATED CAPACITY, C <sub>1</sub>	15 AH
POWER RATING AT 23°C (74°F)	Ipr 643 A, Ipp 1064 A
POWER RATING AT -18°C (0°F)	Ipr 437 A, Ipp 684 A
POWER RATING AT -30°C (-22°F)	Ipr 310 A, Ipp 533 A



ENVELOPE DRAWING

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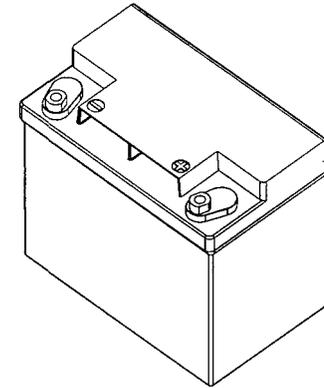
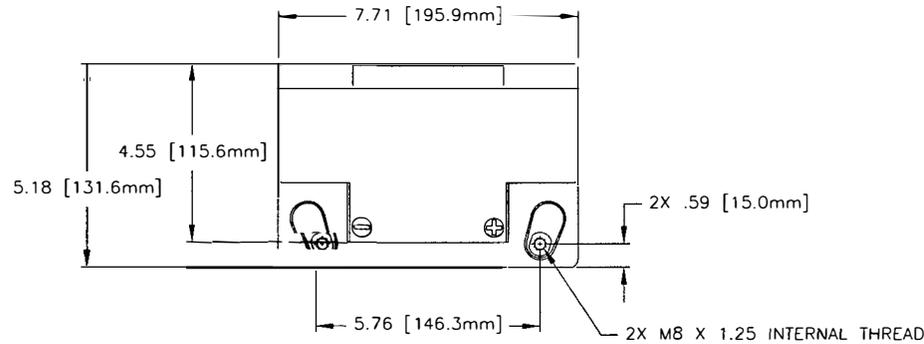
QTY	REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:				CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
FRACTIONS DECIMALS ANGLES				TITLE BATTERY, LEAD ACID, 24 VOLT, PLATINUM SERIES		
± 1/32 .XX ± .06 ± 1'				DRAWN S. VALDEZ 11/26/01		
.XXX ± .030				CHECKED HRF 1/30/02		
TREATMENT NONE				APPROVED JBT 2/5/02		
FINISH NONE				SIZE C CAGE CODE 63017 DWG NO. CB24-11MXC		
SIMILAR TO NA				ISSUED AT 2/21/02 SCALE NONE SHEET 1 OF 1		



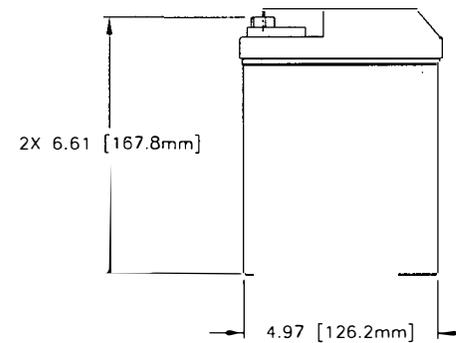
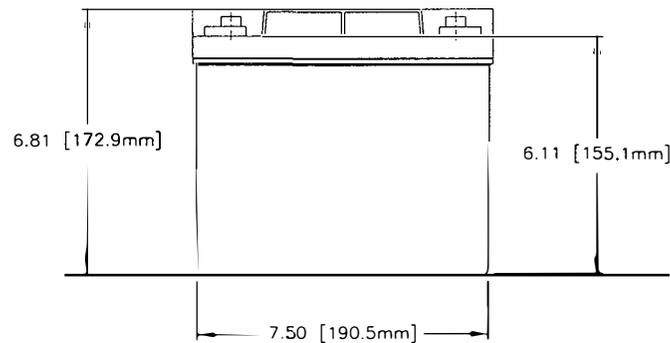
NOTES: UNLESS OTHERWISE SPECIFIED

1. MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
2. ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
3. RECOMMENDED SUBSTITUTE FOR OBSOLETE PN RG 25M (AC 54).
4. SEE DRAWING NO. CB-00212 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
5. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
6. GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
G	REVISED BATTERY COVER	4/30/99	MK
H	CHANGED XC RATED CAPACITY FROM 26 AH TO 24 AH	7/5/99	JBT
J	REVISED RG-25XC WEIGHT FROM 23.0 TO 23.5	11/15/99	JBT
K	REVISED POWER RATINGS AND NOTES	2/17/10	JBT



REFERENCE VIEW



International AeroTech Academy For Training Purposes Only

PART NUMBER	RG-25	RG-25XC
MAXIMUM WEIGHT	22.75 LBS [10.3 KG]	23.5 LBS [10.7 KG]
RATED CAPACITY, C <sub>1</sub>	22 AH	24 AH
POWER RATING AT 23°C	lpp 700 A, lpr 500 A	lpp 850 A, lpr 600 A
POWER RATING AT -18°C	lpp 450 A, lpr 375 A	lpp 600 A, lpr 500 A
POWER RATING AT -30°C	lpp 325 A, lpr 250 A	lpp 475 A, lpr 400 A

ENVELOPE DRAWING

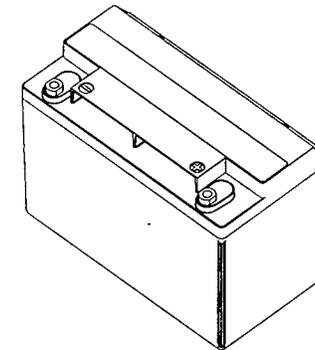
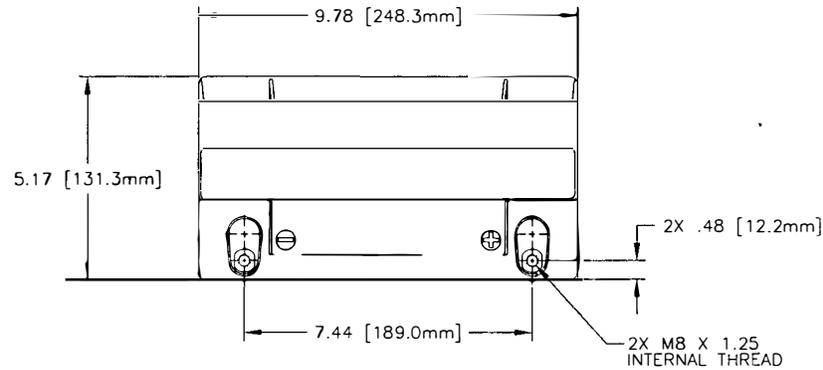
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PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:				CONCORDE BATTERY CORPORATION		
FRACTIONS DECIMALS ANGLES				2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
.XX ± .06				TITLE BATTERY, VRSLA, 12 VOLT,		
.XXX ± .060				RG-25 SERIES		
TREATMENT	NONE	CHECKED	DG	7/1/91	SIZE	C
FINISH	NONE	APPROVED	DG	7/1/91	CAGE CODE	63017
SIMILAR TO	ACT WT	DLIC WT	ISSUED	JJ	DWG NO.	RG-25
					SCALE	NONE
						SHEET 1 OF 1



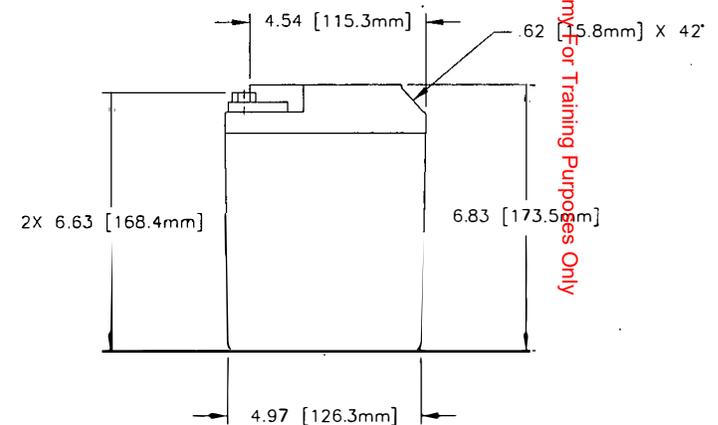
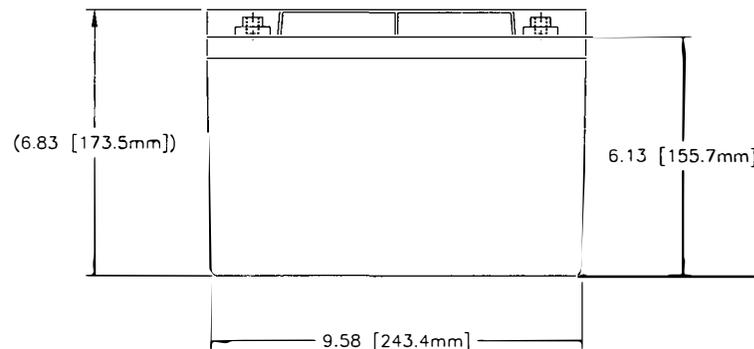
NOTES: UNLESS OTHERWISE SPECIFIED

1. MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
2. ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
3. SEE DRAWING NO. CB-00242 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
5. GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED 42° CHAMFER TO COVER	1/8/99	JBT
B	REVISED CAPACITY RATES	11/17/99	JBT
C	REVISED POWER RATINGS AND NOTES	2/17/10	JBT



REFERENCE VIEW



International AeroTech Academy For Training Purposes Only

PART NUMBER	RG-35A	RG-35AXC
MAXIMUM WEIGHT	29.5 LBS [13.4 KG]	32 LBS [14.5 KG]
RATED CAPACITY, C <sub>1</sub>	29 AH	33 AH
POWER RATING AT 23°C	Ipp 1000 A, Ipr 800 A	Ipp 1200 A, Ipr 900 A
POWER RATING AT -18°C	Ipp 675 A, Ipr 575 A	Ipp 800 A, Ipr 700 A
POWER RATING AT -30°C	Ipp 475 A, Ipr 350 A	Ipp 625 A, Ipr 550 A

ENVELOPE DRAWING

QTY. REQD.	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES XX ± .06 .XXX ± .060			CONTRACT NO	CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790	
TREATMENT NONE			APPROVALS	DATE	TITLE
FINISH NONE			DRAWN A MISTRETTA	12/11/97	BATTERY, VRSLA, 12 VOLT, RG-35A SERIES
SIMILAR TO			CHECKED AMIII	1/22/98	SIZE CAGE CODE
			APPROVED JBT	1/22/98	C 63017
			ISSUED JJ	2/18/10	DWG NO. RG-35A
					SCALE 1=2.5
					SHEET 1 OF 1

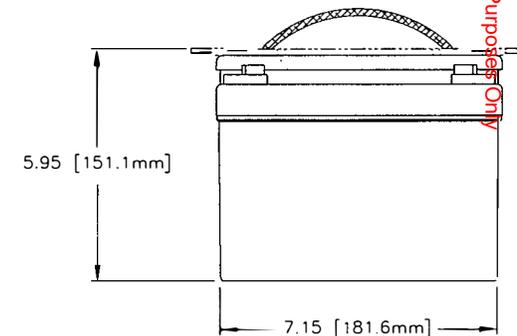
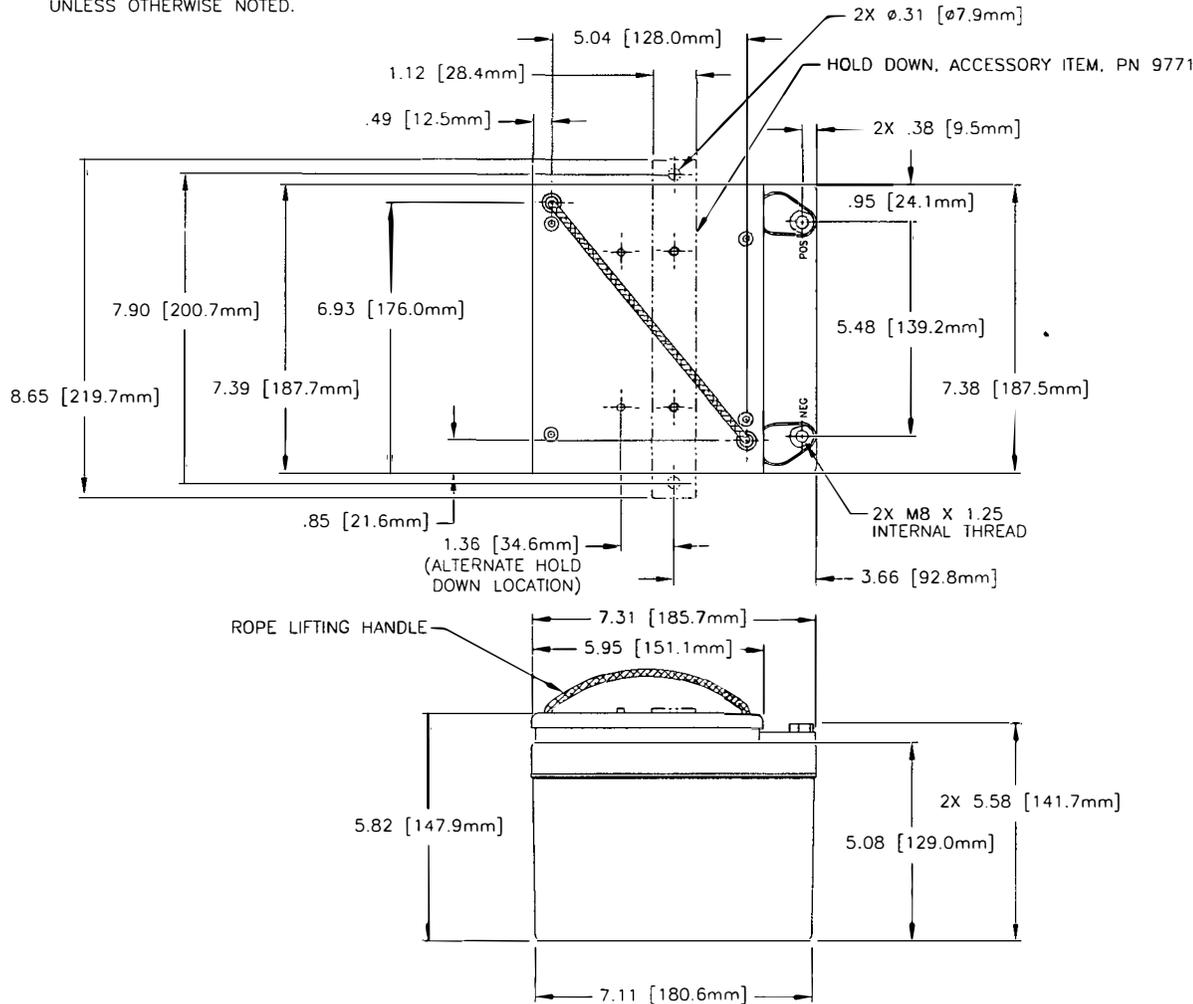


NOTES: UNLESS OTHERWISE SPECIFIED

- ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
- MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
- SEE DRAWING NO. CB-00229 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
- GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	REVISED TERMINAL	9/9/98	JBT
B	REVISED LIFTING HOLES TO ROPE LIFTING HANDLE	9/29/05	JBT
C	REVISED POWER RATINGS AND NOTES	2/17/10	JBT

PART NUMBER	RG24-11
MAXIMUM WEIGHT	26.5 LBS [12.0 KG]
RATED CAPACITY, C <sub>1</sub>	11 AH
POWER RATING AT 23°C	lpp 625 A, lpr 450 A
POWER RATING AT -18°C	lpp 350 A, lpr 250 A
POWER RATING AT -30°C	lpp 250 A, lpr 200 A



ENVELOPE DRAWING

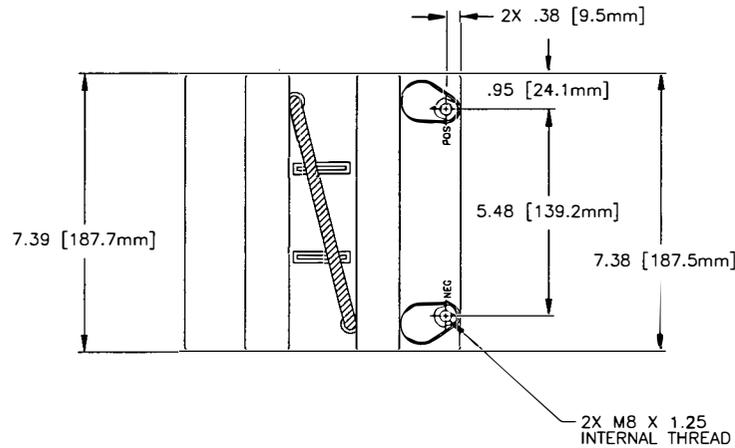
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PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
FRACTIONS	DECIMALS	ANGLES	CONTRACT NO.	TITLE	
	xx ± .06		APPROVALS	DATE	BATTERY, VRSLA, 24 VOLT
	xxx ± .060		DRAWN A MISTRETTA	5/14/97	
TREATMENT	NONE	CHECKED AMIII	5/17/97	SIZE	CAGE CODE
FINISH	NONE	APPROVED JBT	7/25/97	C	63017
SIMILAR TO	ACT WT	CAC WT	ISSUED JJ	2/18/10	SCALE NONE
					OWG NO RG24-11
					REV C
					SHEET 1 OF 1



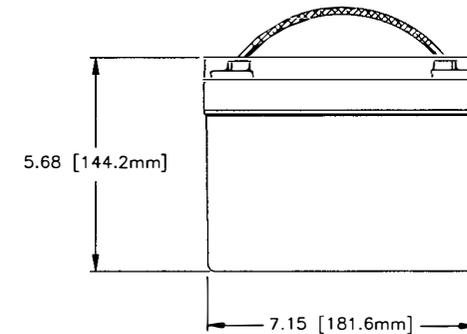
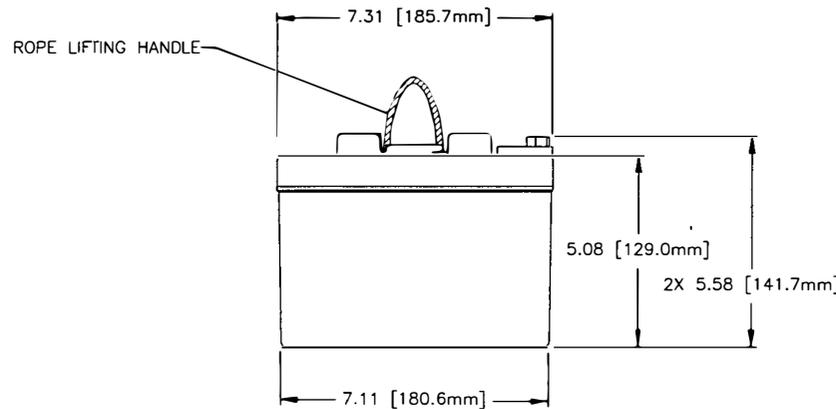
NOTES: UNLESS OTHERWISE SPECIFIED

- ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
- MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
- SEE DRAWING NUMBER CB-00350 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1, AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
- GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.
- USE SPACER, CBC PART NUMBER 9909, AS REQUIRED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	REVISED POWER RATINGS AND NOTES	2/17/10	JBT
B	ADDED NOTE 6	10/6/10	JBT



PART NUMBER	RG24-16
MAXIMUM WEIGHT	29.5 LBS [13.4 KG]
RATED CAPACITY, C <sub>1</sub>	13.6 AH
POWER RATING AT 23°C	I <sub>pp</sub> .850 A, I <sub>pr</sub> 600 A
POWER RATING AT -18°C	I <sub>pp</sub> 575 A, I <sub>pr</sub> 375 A
POWER RATING AT -30°C	I <sub>pp</sub> 450 A, I <sub>pr</sub> 250 A



ENVELOPE DRAWING

QTY REQD	CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .06 .XXX ± .060			CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
TREATMENT NONE			CONTRACT NO.	TITLE	
FINISH NONE			APPROVALS	DATE	BATTERY, VRSLA, 24 VOLT
SIMILAR TO			CHECKED AMIII	1/25/06	
ACT WT			APPROVED JBT	1/25/06	
ISSUED JJ			SIZE C	CODE 63017	DWG NO. RG24-16
SCALE NONE			10/6/10	SHEET 1	OF 1

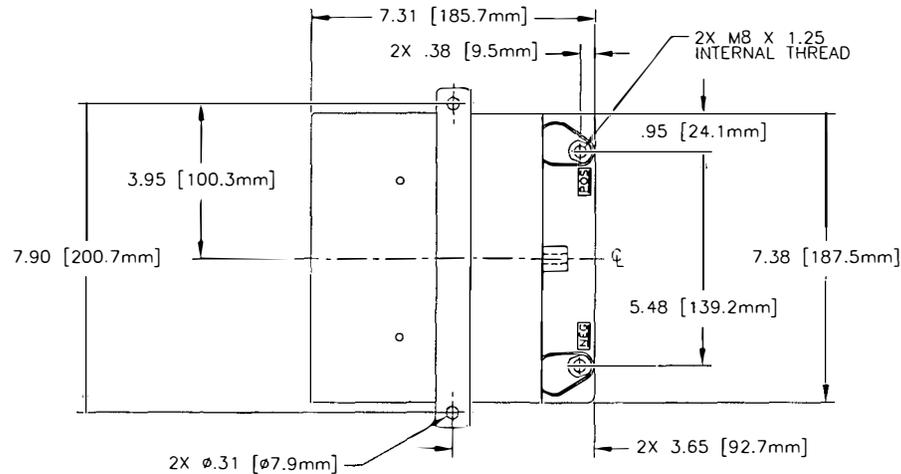
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NOTES: UNLESS OTHERWISE SPECIFIED

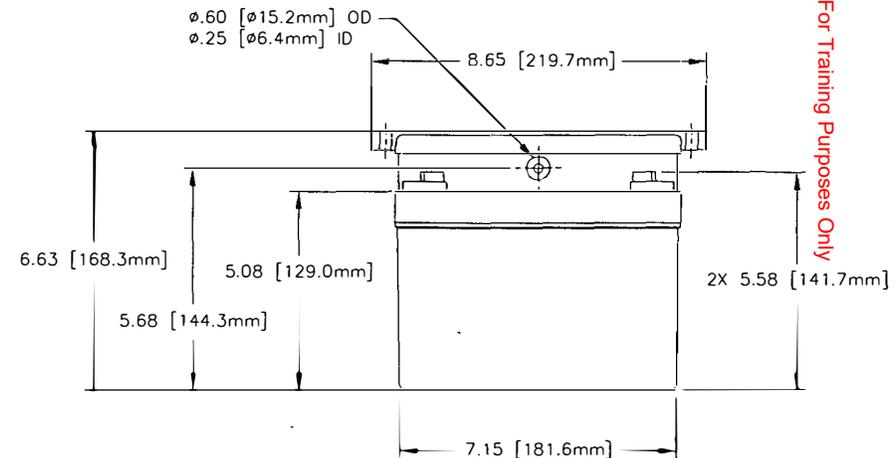
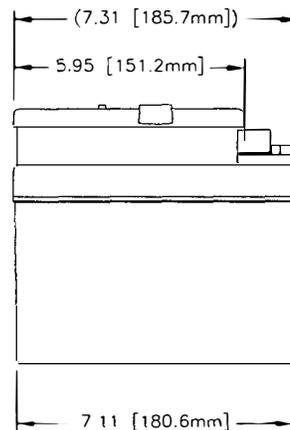
- ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
- MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
- SEE DRAWING NO. CB-00164 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
- GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	REVISED TERMINAL	9/9/98	JBT
B	REVISED POWER RATINGS AND NOTES	2/17/10	JBT
C	REVISED COVER, DIM 6.63[168.3mm] WAS 6.73[170.8mm], ADDED 2X HOLD-DOWN PINS	3/24/11	JBT



PART NUMBER	RG24-11M
MAXIMUM WEIGHT	26.5 LBS [12.0 KG]
RATED CAPACITY, C <sub>1</sub>	11 AH
POWER RATING AT 23°C	Ipp 625 A, Ipr 450 A
POWER RATING AT -18°C	Ipp 350 A, Ipr 250 A
POWER RATING AT -30°C	Ipp 250 A, Ipr 200 A

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ENVELOPE DRAWING

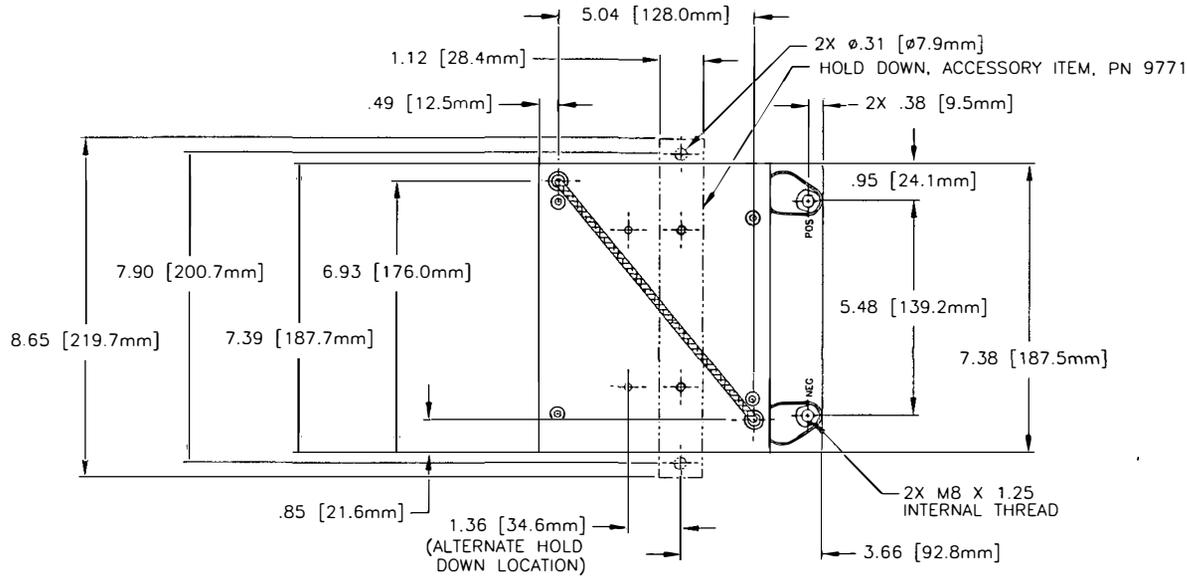
QTY REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .06 .XXX ± .060			CONTRACT NO.	CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790	
TREATMENT NONE			APPROVALS	DATE	TITLE
FINISH NONE			DRAWN AMIII	5/14/97	BATTERY, VRSLA, 24 VOLT
SIMILAR TO			CHECKED AMIII	5/23/97	SIZE C
			APPROVED JBT	5/23/97	CAGE CODE 63017
			ISSUED JJ	3/25/11	DWG NO. RG24-11M
					REV C
					SCALE NONE
					SHEET 1 OF 1



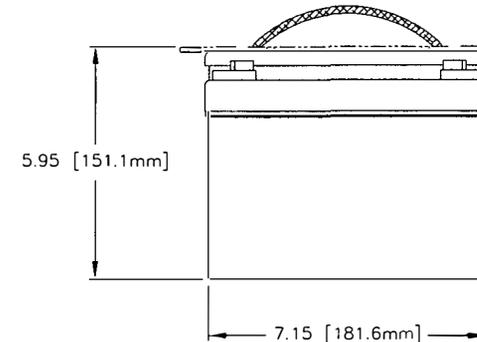
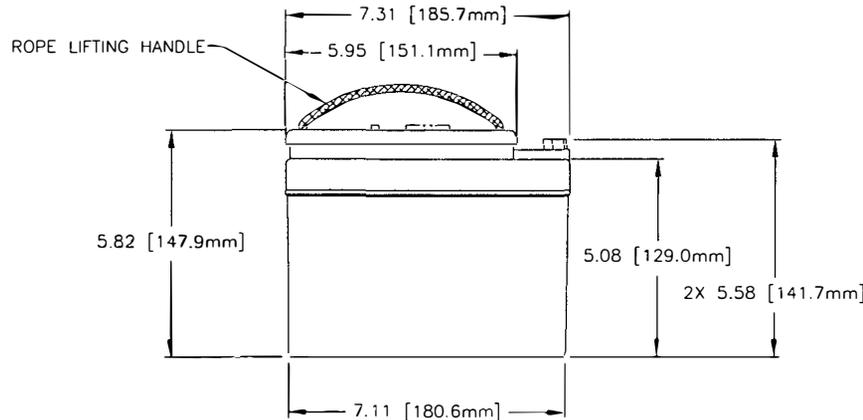
NOTES: UNLESS OTHERWISE SPECIFIED

- ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA).
- MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
- SEE DRAWING NO. CB-00229 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1, AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
- GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	SEE DCN 0171	4/7/97	DG
B	SEE DCN 0197	7/25/97	JBT
C	REVISED TERMINAL	9/9/98	JBT
D	REVISED WEIGHT TO 29.5 LBS.	9/2/99	JBT
E	REVISED LIFTING HOLES TO ROPE LIFTING HANDLE	9/29/05	JBT
F	REVISED POWER RATINGS AND NOTES	2/17/10	JBT



PART NUMBER	RG24-15
MAXIMUM WEIGHT	29.5 LBS [13.4 KG]
RATED CAPACITY, C <sub>1</sub>	13.6 AH
POWER RATING AT 23°C	Ipp 850 A, Ipr 600 A
POWER RATING AT -18°C	Ipp 575 A, Ipr 375 A
POWER RATING AT -30°C	Ipp 450 A, Ipr 350 A



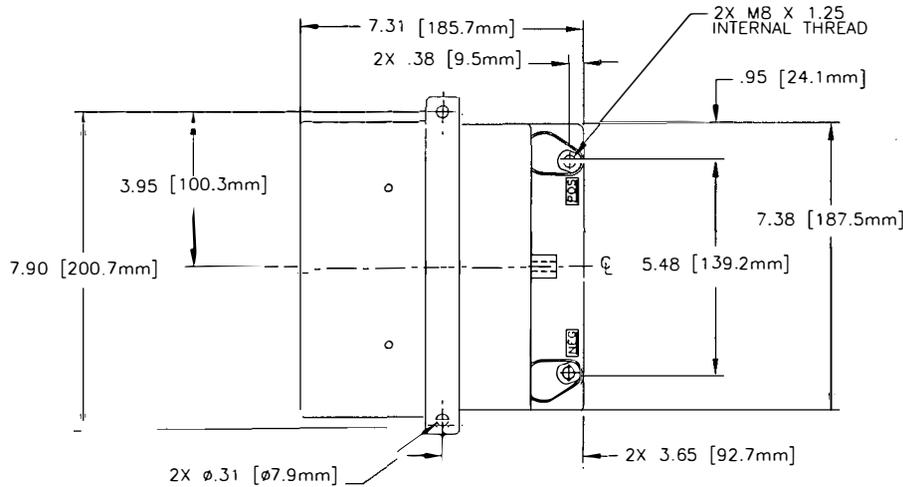
QTY	REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:				CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
FRACTIONS DECIMALS ANGLES				TITLE		
XX ± .06				BATTERY, VRSLA, 24 VOLT		
.XXX ± .060				DRAWN AMIII 6/28/96		
TREATMENT NONE		CHECKED AMIII 7/23/96		DATE		
FINISH NONE		APPROVED DG 7/23/96		SIZE		
SIMILAR TO		ISSUED JJ 2/18/10		CAGE CODE 63017		
ACT WT		CALC WT		SCALE NONE		
				DWG NO. RG24-15		
				REV F		
				SHEET 1 OF 1		



NOTES: UNLESS OTHERWISE SPECIFIED

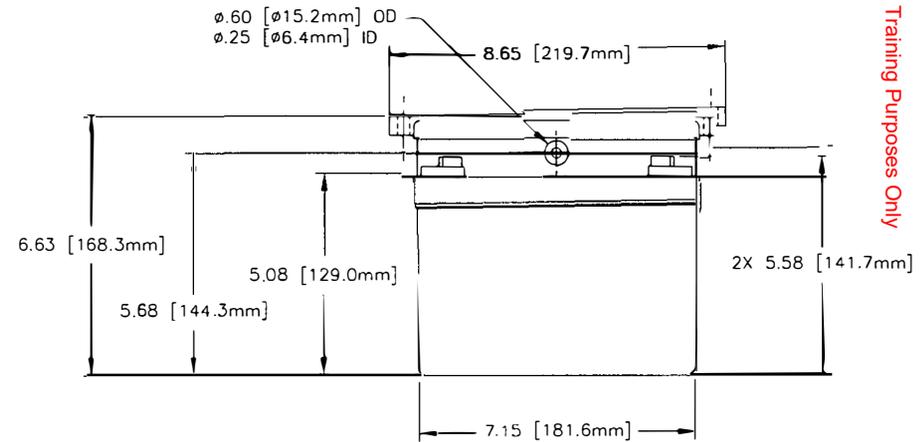
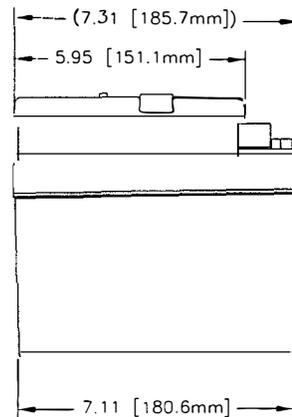
- ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLA)
- MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
- SEE DRAWING NO. CB-00164 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
- BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.
- GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	SEE DCN 0199	5/23/97	JBT
B	REVISED TERMINAL	9/9/98	JBT
C	REVISED WEIGHT TO 29.5 LBS.	9/2/99	JBT
D	REVISED POWER RATINGS AND NOTES	2/17/10	JBT
E	REVISED COVER, DIM 6.63[168.3mm] WAS 6.73[170.8mm], ADDED 2X HOLD-DOWN PINS	3/24/11	JBT



PART NUMBER	RG24-15M
MAXIMUM WEIGHT	29.5 LBS [13.4 KG]
RATED CAPACITY, C <sub>1</sub>	13.6 AH
POWER RATING AT 23°C	I <sub>pp</sub> 850 A, I <sub>pr</sub> 600 A
POWER RATING AT -18°C	I <sub>pp</sub> 575 A, I <sub>pr</sub> 375 A
POWER RATING AT -30°C	I <sub>pp</sub> 450 A, I <sub>pr</sub> 350 A

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ENVELOPE DRAWING

QTY	RECD	CAGE CODE	PART OR IDENTIFYING NO	NUMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO		CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD, W. COVINA, CA 91790		
FRACTIONS	DECIMALS	ANGLES	APPROVALS	DATE	TITLE	
.XX ± .06	.XXX ± .060		DRAWN	S. VALDEZ	3/26/96	BATTERY, VRSLA, 24 VOLT
TREATMENT	NONE	CHECKED	AM:ll	6/19/96	SIZE	CAGE CODE
FINISH	NONE	APPROVED	DG	6/19/96	C	63017
SIMILAR TO	ACT WT	CALC WT	ISSUED	JJ	3/25/11	DWG NO.
						RG24-15M
						REV
						E
						SCALE
						NONE
						SHEET
						1 OF 1

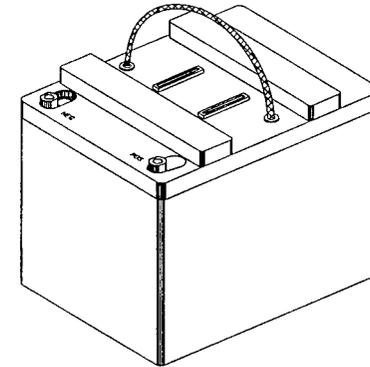
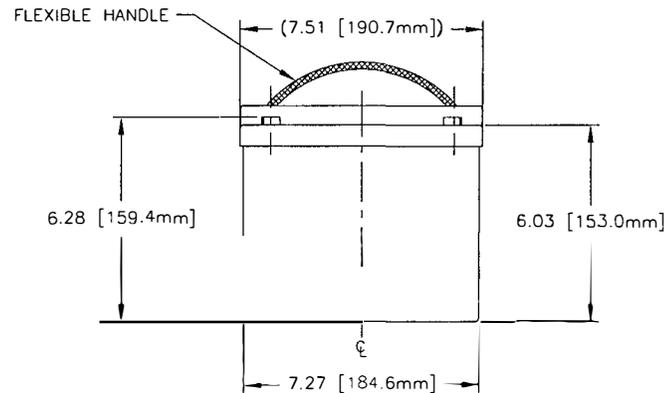
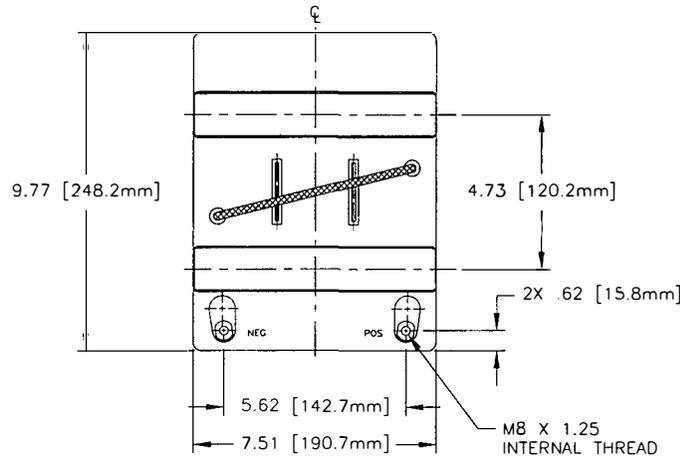


NOTES: UNLESS OTHERWISE SPECIFIED

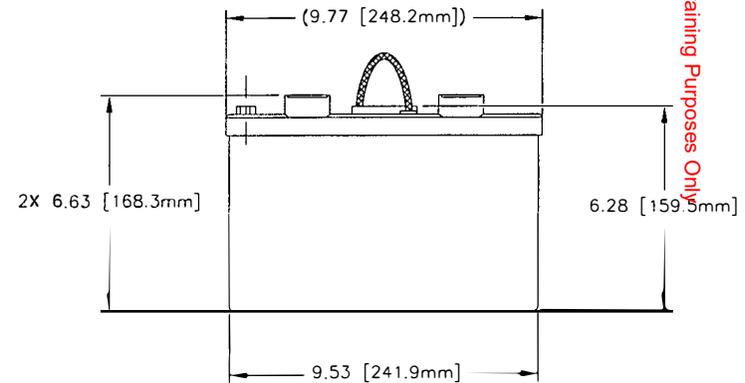
1. MANUFACTURED AND INSPECTED IAW AS9100 QUALITY SYSTEM REQUIREMENTS.
2. ABBREVIATION USED IN TITLE IS: VALVE REGULATED SEALED LEAD ACID (VRSLS).
3. SEE DRAWING NUMBER CB-00241 AND PROCEDURE P-1000 FOR ASSEMBLY AND TEST INSTRUCTION. PROCEDURES AND ASSEMBLY DRAWINGS ARE FOR INTERNAL USE ONLY.
4. BATTERIES ARE RATED IAW INTERNATIONAL ELECTROTECHNICAL COMMISSION STANDARD 60952-1 AND RTCA STANDARD DO-293, UNLESS OTHERWISE NOTED.

5. GENERAL AVIATION BATTERIES ARE NOT DESIGNED FOR REPETITIVE TURBINE ENGINE STARTING.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INC 8242 REV E CHANGES	6/7/99	JBT
B	REMOVED SLEEVE, REV. HT. OF CONTAINER (WAS) 6.250	1/19/01	JBT
C	REVISED POWER RATINGS AND NOTES	2/17/10	JBT



ENVELOPE DRAWING



ENVELOPE DRAWING

PART NUMBER	RG24-20
MAXIMUM WEIGHT	42 LBS [19.1 KG]
RATED CAPACITY, C <sub>1</sub>	19 AH
POWER RATING AT 23°C	I <sub>pp</sub> 900 A, I <sub>pr</sub> 600 A
POWER RATING AT -18°C	I <sub>pp</sub> 600 A, I <sub>pr</sub> 475 A
POWER RATING AT -30°C	I <sub>pp</sub> 475 A, I <sub>pr</sub> 375 A

QTY	REQD	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE				CONCORDE BATTERY CORPORATION 2009 SAN BERNARDINO RD. W. COVINA, CA 91790		
FRACTIONS	DECIMALS	ANGLES	CONTRACT NO	APPROVALS	DATE	TITLE
XXX ± .06					7/10/98	BATTERY, VRSLS, 24 VOLT
.XXX ± .060			DRAWN	PRECIAO M.		
TREATMENT	NONE	CHECKED	AM:II	7/21/98	SIZE	CAGE CODE
FINISH	NONE	APPROVED	JBT	9/9/98	C	63017
SIMILAR TO	ACT WT	CNC W	ISSUED	JJ	2/18/10	DWG NO.
						RG24-20
						REV
						C
						SCALE
						NONE
						SHEET
						1 OF 1

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**INSTRUCTIONS FOR CONTINUED AIRWORTHINESS  
MAINTENANCE MANUAL SUPPLEMENT  
CONCORDE FLOODED or VALVE REGULATED SEALED  
LEAD-ACID SERIES BATTERIES INSTALLED IN  
PIPER LIGHT AIRCRAFT, MULTIPLE MODELS**

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NOTE: Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the Operator's Aircraft Maintenance Manual and the Operator's Aircraft Scheduled Maintenance Program. Any maintenance significant items that have periodic scheduled servicing, maintenance, or inspections are listed in section 5 of this document.

Revisions					
Rev.	Description	Date		Approved	
<b>CONCORDE BATTERY CORPORATION, 2009 San Bernardino Road, West Covina, CA 91790</b>					
TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models				DWG NO. 5-0456	REV.
CAGE CODE: 63017	DRAWN: RD 01/13/12	CHECKED AT 01/06/12	APPROVED JBT 02/07/12	ISSUED BT 02/07/12	SHEET: 1 OF 6



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<b>CONCORDE BATTERY CORPORATION</b> , 2009 San Bernardino Road, West Covina, CA 91790		
TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models	DWG NO. 5-0456	REV.
CAGE CODE: 63017		SHEET: 2 OF 6



1. **Scope:** This ICA, Maintenance Manual Supplement provides the additional data required to ensure satisfactory operation and maintenance of the Concorde Flooded Batteries and Concorde Valve Regulated Sealed Lead-Acid Batteries installed in Piper Light Model Aircrafts.
  
2. **Alteration Description:** Installation of a Concorde Battery System replacing original equipment batteries with Concorde Battery valve regulated sealed lead-acid (VRSLA) or flooded batteries. Each installation utilizes the aircraft's original mounting tray, hardware and existing wiring. Installation aboard Piper Aerostar model aircraft requires Concorde Battery Installation Kit DWG 5-0161, which includes hold down bar and spacers for installation. No modifications are required to the airframe for any installation. The Concorde Battery System consists of the following major components, each of which is determined by the aircraft being modified.
  - a. One battery CB-25 manufactured by Concorde Battery Corporation.
  - b. One battery CB-25XC manufactured by Concorde Battery Corporation.
  - c. One battery CB-35A manufactured by Concorde Battery Corporation.
  - d. One battery CB-35AXC manufactured by Concorde Battery Corporation.
  - e. One battery CB24-11 manufactured by Concorde Battery Corporation.
  - f. One battery CB24-11XC manufactured by Concorde Battery Corporation.
  - g. One battery CB24-11M manufactured by Concorde Battery Corporation.
  - h. One battery CB24-11MXC manufactured by Concorde Battery Corporation.
  - i. One battery RG-25 manufactured by Concorde Battery Corporation.
  - j. One battery RG-35A manufactured by Concorde Battery Corporation.
  - k. One battery RG24-11 manufactured by Concorde Battery Corporation.
  - l. One battery RG24-16 manufactured by Concorde Battery Corporation.
  - m. One battery RG24-11M manufactured by Concorde Battery Corporation.
  - n. One battery RG24-15 manufactured by Concorde Battery Corporation.
  - o. One battery RG24-15M manufactured by Concorde Battery Corporation.
  - p. One battery RG24-20 manufactured by Concorde Battery Corporation.
  - q. Concorde Installation Kit 5-0161 supplied by Concorde Battery Corporation.
  
3. **Safety Precautions:**
  - a. **WARNING: LOW CAPACITY HAZARD.** Aircraft batteries are certified to have a certain minimum capacity for emergency operations in the event of a electrical generator system failure. Never use a battery that has less than 80% of rated capacity.
  - b. **WARNING: ELECTRIC BURN HAZARD.** Lead-acid batteries are capable of delivering high currents if the terminals are shorted. The resulting heat can cause severe burns and is a potential fire hazard. Take the following precautions:
    - Do not place tools or metal objects across battery terminals.
    - Do not wear conductive rings, belt buckles, watches or other jewelry when servicing batteries.
    - Wear insulated gloves and use insulated tools when servicing batteries.
    - Install battery terminal protectors whenever the battery is not connected in

<b>CONCORDE BATTERY CORPORATION</b> , 2009 San Bernardino Road, West Covina, CA 91790		
TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models	DWG NO. 5-0456	REV.
CAGE CODE: 63017		SHEET: 3 OF 6



- the aircraft or to the test equipment.
- c. **WARNING: DANGER OF EXPLODING BATTERIES.** Lead-acid batteries can produce explosive mixtures of hydrogen and oxygen while on charge or discharge, which can explode if ignited. Take the following precautions:
- Do not smoke, use an open flame, or cause sparking near a battery.
  - Wear proper eye and face protection when servicing batteries.
  - Make sure work area is well ventilated.
  - Do not constant current charge a battery when installed in an aircraft.
  - Connect cables securely to the battery terminals to avoid arcing.
- d. **WARNING: DANGER OF CHEMICAL BURNS.** Lead-acid batteries contain sulfuric acid which can cause severe burns to body tissue. Take the following precautions:
- Never remove or damage vent valves.
  - Avoid contact of the electrolyte with skin, eyes or clothing.
  - Do not touch eyes after touching battery.
  - In the event of acid in the eyes, flush thoroughly with clean cool water for several minutes and get professional medical attention immediately.
  - Refer to battery MSDS for additional information.
- e. **CAUTION: DANGER OF EQUIPMENT DAMAGE.** To prevent damage to the connector, arc burns, or explosion, batteries should never be connected or disconnected while being charged or discharged. Batteries must be connected or disconnected only when the circuit is open. Ensure the aircraft battery switch, external power source, or the charger/analyzer is in the "OFF" position before connecting or disconnecting the battery. Battery terminal protectors should be installed whenever the battery is not connected in the aircraft or to the test equipment.
4. **Maintenance Manual Information:** Refer to the Piper Aircraft Maintenance Manual for the applicable maintenance information with regard to removal and installation procedures. Information is also referenced on Concorde Battery Corporation Installation Instructions drawing number 5-0158.
5. **Line Replaceable Unit (LRU) Part Numbers:**

<b><u>Manufacturer</u></b>	<b><u>Part Number</u></b>	<b><u>Description</u></b>
Concorde Battery Corporation	CB-25	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB-25XC	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB-35A	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB-35AXC	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB24-11	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB24-11XC	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB24-11M	Flooded Lead-Acid Battery
Concorde Battery Corporation	CB24-11MXC	Flooded Lead-Acid Battery
Concorde Battery Corporation	RG-25	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG-35A	Valve Regulated Sealed Lead-Acid Battery

**CONCORDE BATTERY CORPORATION**, 2009 San Bernardino Road, West Covina, CA 91790

TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models

DWG NO. 5-0456

REV.

CAGE CODE: 63017

SHEET:  
4 OF 6



<u>Manufacturer</u>	<u>Part Number</u>	<u>Description</u>
Concorde Battery Corporation	RG24-11	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG24-16	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG24-11M	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG24-15	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG24-15M	Valve Regulated Sealed Lead-Acid Battery
Concorde Battery Corporation	RG24-20	Valve Regulated Sealed Lead-Acid Battery

6. **Wiring Diagram Information:** The wiring changes associated with this alteration are provided to the customer to be contained in the aircraft's Wiring Diagram Manual. There are no required wiring changes. (Reference: Concorde Battery Drawing 5-0158, *Installation Instructions, Piper, Light Aircraft, Multiple Models.*)

7. **Recommended Periodic Scheduled Maintenance:**

<u>Item</u>	<u>Schedule</u>
CB-25	Refer to Concorde Battery Corp. Drawing 5-0144, Component Maintenance Manual
CB-25XC	
CB-35A	
CB-35AXC	
CB24-11	
CB24-11XC	
CB24-11M	
CB24-11MXC	Refer to Concorde Battery Corp. Drawing 5-0171, Component Maintenance Manual
RG-25	
RG-35A	
RG24-11	
RG24-16	
RG24-11M	
RG24-15	
RG24-15M	
RG24-20	

\* The latest released Concorde Battery Drawing 5-0144 and 5-0171 can be obtained on the Concorde Battery website at [www.concordebattery.com](http://www.concordebattery.com) or by calling Concorde Battery at (626)-813-1234.

8. **Recommended Periodic Structural Inspections:** None Required

9. **Airworthiness Limitations:** There are no airworthiness limitations required by the modification.

“The Airworthiness Limitations section is FAA approved and specifies maintenance required under section 43.16 and 91.403 of the Federal Aviation Regulations, unless an alternative program has been FAA approved.”

<b>CONCORDE BATTERY CORPORATION</b> , 2009 San Bernardino Road, West Covina, CA 91790		
TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models	DWG NO. 5-0456	REV.
CAGE CODE: 63017		SHEET: 5 OF 6



**CONCORDE BATTERY CORPORATION**

2009 San Bernardino Road

West Covina, CA 91790

Tel. 626-813-1234

[www.concordebattery.com](http://www.concordebattery.com)

<b>CONCORDE BATTERY CORPORATION, 2009 San Bernardino Road, West Covina, CA 91790</b>		
TITLE: Instructions for Continued Airworthiness, Piper, Light Aircraft, Multiple Models	DWG NO. 5-0456	REV.
CAGE CODE: 63017		SHEET: 6 OF 6





Transport  
Canada

Transports  
Canada

Aircraft Certification Division  
800-1601 Airport Road NE  
Calgary, Alberta, Canada  
T2E 6Z8

August 26, 2008

Concorde Battery Corp.  
2009 San Bernardino Rd.  
West Covina, CA  
USA 919790

**Attention: Ramuntxo Duhart**

**Subject: Notification of Transport Canada Acceptance of FAA STC SA01147WI  
Aircraft: Piper PA-25 Pawnee Series and PA-36 Pawnee Brave Series Agricultural  
Aircraft per Canadian Type Certificates A-118 and A-228  
Title: Concorde FLA or VRSLA Series Batteries in accordance with Concorde Battery  
Corporation Master Drawing List No. 5-0157, Rev A or later FAA Approved Revision**

This will notify you that Transport Canada has reviewed and accepted FAA STC SA01147WI in respect to the PA-25 and PA-36 series agricultural aircraft in accordance with the Bilateral Aviation Safety Agreement between the US and Canada without the issue of a corresponding Canadian STC.

***All other aircraft types listed in the Approved Model List (AML) are automatically accepted in Canada without review because they are small (CAR 3 / FAR 23), non-restricted category US State of Design aircraft covered by a US STC.***

This STC will be added to the Transport Canada listing of FAA STC's which have been accepted or familiarized in Canada. This listing is available on the TC Web Site at:  
[http://www.tc.gc.ca/aviation/applications/nico-celn/en/adv\\_search.asp?x\\_lang=e](http://www.tc.gc.ca/aviation/applications/nico-celn/en/adv_search.asp?x_lang=e)

This letter confirms formal acceptance of the referenced STC by Transport Canada.

Dennis Hoepfner, P. Eng.  
Senior Engineer - Aircraft Certification

cc:  
Federal Aviation Administration  
Wichita Aircraft Certification Office  
1801 Airport Road, Room 100  
Wichita, Kansas  
USA 67209  
**Attention – Harvey Nero, Program Manager**

Canada

Your file      Votre référence

Our file      Notre référence  
File: NAPA C-08-0724

Phone: 403-292-4145  
FAX: 403-292-4992  
email: hoepnd@tc.gc.ca





US Department  
of Transportation  
Federal Aviation  
Administration

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

Form Approved  
OMB No. 2120-0020  
2/28/2011

Electronic Tracking Number

For FAA Use Only

**INSTRUCTIONS:** Print or type all entries. See Title 14 CFR §43.9, Part 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. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

<b>1. Aircraft</b>	Nationality and Registration Mark N531A	Serial No. 32-57160	
	Make Piper	Model PA-32R-301T	Series
<b>2. Owner</b>	Name (As shown on registration certificate) Terry L Friedman		Address (As shown on registration certificate) Address 6 Appaloosa Dr
			City <u>Manalapan</u> State <u>NJ</u>
			Zip <u>07726-8865</u> Country <u>USA</u>

**3. For FAA Use Only**

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type _____		
			Manufacturer _____		

**6. Conformity Statement**

<b>A. Agency's Name and Address</b>		<b>B. Kind of Agency</b>	
Name <u>Thomas J. Gray for Air Mods and Repair</u>		<input checked="" type="checkbox"/> U. S. Certificated Mechanic	
Address <u>67 Park Ave.</u>		<input type="checkbox"/> Foreign Certificated Mechanic	
City <u>Jackson</u> State <u>NJ</u>		<input type="checkbox"/> Certificated Repair Station	
Zip <u>08527</u> Country <u>USA</u>		<input type="checkbox"/> Certificated Maintenance Organization	
		C. Certificate No. <b>2777905</b>	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 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 herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual Thomas J. Gray August 8, 2012
--	--

**7. Approval for Return to Service**

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  Approved  Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)

Certificate or Designation No. 2777905 IA	Signature/Date of Authorized Individual Thomas J. Gray August 8, 2012
--	--



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	N531A	August 8, 2012
	Nationality and Registration Mark	Date

**Piper PA-32R-301T    S/N 32-57160    N531A**

1. Installed J.P.instruments model EGT-730 Engine Temperature Monitoring System IAW Installation manual # 103 Rev.E Dated 1/20/2009.
2. This installation is approved for this aircraft under STC SA2586NM.
3. STC SA2586NM issued to J.P. Instruments on 8/14/85 Latest amendment 6/17/99.
4. This installation will not adversely affect other previously approved modifications, and will introduce no adverse effects on the airworthiness of this aircraft.
5. Aircraft weight and balance records revised.
6. Log book entries have been made reflecting this installation.
7. A copy of this STC and AML has been added to the permanent records of this aircraft.
8. Instructions for Continued Airworthiness are not required with this STC (Page 30 of Installation manual # 103 Rev.E Dated 1/20/2009.) Therefore, the scope and detail of FAR 43, Appendix D shall apply, where applicable.

----- END -----

{ | Additional Sheets Are Attached



# Supplemental Type Certificate

Number SA2586NM

This Certificate issued to J. P. INSTRUMENTS

PO Box 7033  
Huntington Beach, CA 92646

certifies that the change in the type design for the following products with the limitations and conditions therein as specified herein meets the airworthiness requirements of Part 3 of the Civil Aviation Regulations, including respective Amendments as specified in the attached Approved Model List.

Original Product Type Certificate Number: \* See attached FAA Approved J.P. Instruments

Make: \* Master Eligibility List No. SA2586NM for list

Model: \* of approved aircraft models and applicable TCDS

**Description of Type Design Change:**

Installation of J. P. Instruments temperature monitoring systems in accordance with FAA Approved J. P. Instruments Drawing List Report No. 100, Revision D, dated December 19, 1996, or later FAA approved revisions. FAA Approved Airplane/Rotorcraft Flight Manual Supplement No. 1 for EGT-701 temperature indicator. Revision A, dated December 13, 1996, or later FAA approved revisions.

**Limitations and Conditions:** The approval of the change in type design applies to the basic airplane of the specific models that are otherwise unmodified. This approval should not be extended to other specific airplanes of these models on which other previously approved modifications are incorporated, 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 that airplane. 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)

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 31, 1984

Date issued:

Date of issuance: August 14, 1985

Date extended: July 13, 1987, November 13, 1992, December 19, 1996, May 15, 1998, June 17, 1999

By direction of the Administrator



*[Signature]*  
(Signature)

Manager, Propulsion Branch  
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.

MAKE	AIRCRAFT MODEL	T.C.D.S. (See P. 11 for Series)	Part Number
103 Piper	PA-32-260, -32-300, -32S-300 PA-32R-300, -32RT-300, -32RT-300T, PA-32R-301, -32R-301T, PA-32-301, -32-301T	A3SO	(6*), (B*)
104 Piper	PA-34-200	A7SO	(4T), (AT)
Piper	PA-34-200T, -220T	A7SO	(6T*), (BT*)
105 Piper	PA-38-112	A18SO	(4), (A)
106 Piper	PA-44-180, -44-180T	A19SO	(4T*), (AT*)
107 Piper	PA-46-310P, -350P	A25SO	(6T*), (BT*)
108 Piper	PA-60-600, -60-601, -60-700P, A, CR PA-60-601P, PA-60-602P, PA-60-650	A17WE	(6T*), (BT*)
109 Republic	RC-3	A-769	(6), (B)
110 Robinson Helicopter	R22, R22 ALPHA, R22 BETA, R22 MARINER R44	A10WE A11NM	(4), (A) (6), (B)
111 Siai-Marchetti	S.205-18/F, -18/R, -20/F, -20/R, -22/R, S.208, S208A	A9EU A10EU	(4), (A) (6*), (B*)
112 Slingsby	T67M260, T67M260-T3A	A73EU	(6), (B)
113 S.O.C.A.T.A Aerospatiale	TB9, 10, TB20, TB21, 200	A51EU A51EU	(4), (A) (6*), (B*)
114 Univair Aircraft Corp, Stinson	108, 108-1, -2, -3, -5	A-767	(6), (A)
115 Swift	GC-1A	A-766	(4), (A)
116 Swift	GC-1B	A-766	(6), (B)
117 Thompson	Navion, A, B, C, D, E, F, G, H	A-782	(6), (B)
118 VARGA Augustair, Inc.	2150, 2150A, 2180	A-4A19	(4), (A)
119 WACO	YMF, YKC, YKC-S, YKS-6, ZKS-6 UPF-7 VPF-7	A7C542 A-533 A-642	(7), (C) (7), (C) (7), (C)
120 WACO	YMF (F5, F5C modification per STC SA1000GL)	A7C 542	(7), (C)
121 PITTS (AVIAT) White Inter Ltd.	S-1S, S-1T, S-2, S-2A, S-2S, S-2B	A8SO	(4), (A) (6), (B)
122 Christen (AVIAT) White Inter / Sky Inter.	A-1, A, B	A22NM	(4), (A)
123 Weatherly	620, A, B	A26WE	(9), (E)
124 Wilga	PZL-104 Wilga 80 PZL-104M Wilga 2000	A55EU	(9), (E) (6), (A)





US Department  
of Transportation  
Federal Aviation  
Administration

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

Form Approved  
OMB No. 2120-0020  
2/28/2011

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 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. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark N531A	Serial No. 32-57160	
	Make Piper	Model PA-32R-301T	Series
2. Owner	Name (As shown on registration certificate) Terry L Friedman	Address (As shown on registration certificate) Address 6 Appaloosa Dr	
		City Manalapan	State NJ
		Zip 07726-8865	Country USA

3. For FAA Use Only

Blank area for FAA Use Only.

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency	
Name Thomas J. Gray for Air Mods and Repair		<input checked="" type="checkbox"/> U. S. Certificated Mechanic	Manufacturer
Address 67 Park Ave.		<input type="checkbox"/> Foreign Certificated Mechanic	C. Certificate No.
City Jackson	State NJ	<input type="checkbox"/> Certificated Repair Station	
Zip 08527	Country USA	<input type="checkbox"/> Certificated Maintenance Organization	2777905

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 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 herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual Thomas J. Gray August 8, 2012
--	--

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  Approved  Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	Inspection Authorization <input checked="" type="checkbox"/>	
Certificate or Designation No. 2777905 IA		Signature/Date of Authorized Individual Thomas J. Gray August 8, 2012		



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

N531A

August 8, 2012

Nationality and Registration Mark

Date

**Piper PA-32R-301T S/N 32-57160 N531A**

**This repair entails the replacement of the aft LH tail fuselage skin (Piper P/N 99470-00) due to localized ground handling damage.**

1. Major repair was made referencing the following data:
  - a) Structural Repair Criteria located in Piper PA-32 Maintenance manual, sections as applicable, regarding structural repair, control surface removal, replacement, and rigging.
  - b) AC 43.13-1B, chapter 4, section 4, paragraphs 4-50 , 4-51, and 4-52 labeled "Metal Repair Procedures" (General), as applicable.
  - c) AC 43.13-1B, chapter 4, section 4, paragraph 4-57, labeled "Riveting", as applicable.
  - d) AC 43.13-1B, chapter 4, section 4, paragraph 4-58 labeled "Repair Methods and Procedures for Aluminum Structures", as applicable.
2. Affected areas were painted to match existing aircraft paint scheme.
3. A log book entry was made reflecting this repair.
4. Weight and balance was not affected.
5. A copy of this 337 has been added to the permanent records of this aircraft.

————— END —————





U.S. 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 AC43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$ 1000 for each such violation (Section 901 Federal Aviation Act of 1958).

<b>1. Aircraft</b>	Make <b>PIPER</b>	Model <b>PA-32R-301T</b>
	Serial No. <b>3257160</b>	Nationality and Registration Mark <b>N531A</b>
<b>2. Owner</b>	Name (As shown on registration certificate) <b>TERRY L FRIEDMAN</b>	Address (As shown on registration certificate) <b>6 APPALOOSA DR MANALAPAN, NEW JERSEY 07726-8865 USA</b>

### 3. For FAA Use Only

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in Item 1 above)				<b>X</b>
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

### 6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
<b>Three Wing Avionics, Inc.</b> <b>400 Great Meadow Rd</b> <b>Stratford, CT 06615</b> <b>SL5R201N</b>	<input type="checkbox"/> U. S. Certified Mechanic	<b>SL5R201N</b>
	<input type="checkbox"/> Foreign Certified Mechanic	
	<input checked="" type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

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 herein is true and correct to the best of my knowledge.

Date <b>30-March-2012</b>	Signature of Authorized Individual 
------------------------------	--

### 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

<b>BY</b>	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	<input checked="" type="checkbox"/>	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <b>30-March-2012</b>		Certificate or Designation No. <b>SL5R201N</b>		Signature of Authorized Individual 	

# 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 (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)**

**N531A PIPER PA-32R-301T 3257160**

Installed VoiceFlight Systems LLC VFS101 Speech Recognition Module in accordance with STC# SA02717NY Configuration 2. Wired system per VoiceFlight Systems Installation Instructions VFS101-INSISTR2, Revision C dated 2/22/2012.

VFS101 unit was mounted to the bottom of the lower removable floor of the nose baggage compartment.

System was interfaced to the existing Garmin GNS-530W GPS, Garmin GNS-430W GPS, and Garmin GMA-340 Audio Panel.

VAS (VoiceFlight Activation Switch) was installed in the pilots control wheel right side horn in the front.

USB data jack was mounted in the pilots lower panel and placarded.

A 1 amp Klaxon 7274-2-1 pullable resettable circuit breaker was installed in the avionics buss location of the existing circuit breaker panel for the VFS101 and placarded.

The system was operationally tested in accordance with the installation manual.

Aircraft owner was provided with Pilots Guide (WAAS) VFS101-PMAN2, Revision B dated 5/11/2011.

Updated Weight and Balance and Equipment List

Instructions for Continued Airworthiness:

Follow the instructions in the VoiceFlight Systems LLC VFS101 (WAAS) Instructions for Continued Airworthiness, VFS101-ICA2, Revision D, dated 12/19/2011. A copy of this document was provided to the owner and placed with the aircraft permanent records.

Installation conforms to FAA AC43.13-2A Chapter 1 Par 1, 4-12 Chapter 2 Par 21-23, 27, Chapter 3 Par 36 and AC 43.13-1B Chapter 11 sec. 1 par 11.1, sec. 3 par 11.30-11.37, sec. 4 par 1.47-11.56, sec. 5 11.66-11.69, sec. 6 11.76-11.78, sec. 7 11.85-11.89, sec. 8 11.96-11.108, sec. 9 par 11.115-11.126, sec. 10 par 11.135-11.139, sec. 11 par 11.146&11.147, sec. 12 11.155-11.159, sec. 13 par 11.167, sec. 14 par 11.174-11.179, sec. 15 11.185-11.197. Chapter 12 sec. 1 par 12.1 & 2, sec. 2 par 12.8-12.11, 12.14-15, 12.17-12.20, 12.25 as applicable.

\_\_\_\_\_  
END

ADDITIONAL SHEETS ARE ATTACHED

FAA



U.S. 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 a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

<b>1. Aircraft</b>	Make PIPER	Model PA-32R-301T
	Serial No. 32-57160	Nationality and Registration Mark N531A
<b>2. Owner</b>	Name (As shown on registration certificate) PAUL E NOBLE JR	Address (As shown on registration certificate) 110 BLACK ROCK DR HINGHAM, MA 02043

### 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					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

### 6. Conformity Statement

<b>A. Agency's Name and Address</b>	<b>B. Kind of Agency</b>	<b>C. Certificate No.</b>
GRIFFIN AVIONICS INC BARNSTABLE MUNICIPAL AIRPORT HYANNIS MA. 02601	<input type="checkbox"/> U.S. Certificated Mechanic	GN1R172K AIRFRAME CLASS 3
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certificated Repair Station	
	<input type="checkbox"/> Manufacturer	

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 herein is true and correct to the best of my knowledge.

Date 11 / 19 / 07	Signature of Authorized Individual <i>Robert Giff</i>
----------------------	--

### 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	Inspection Authorization	Other (Specify)
	FAA Designee	<input checked="" type="checkbox"/>	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection 11 / 19 / 07		Certificate or Designation No. GN1R172K		Signature of Authorized Individual <i>Robert Giff</i>	

## 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

*(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

Installed upgraded Garmin GNS430W GPS/NAV/COM/WAAS system in accordance with STC# SA01933LA and Approved Model List (AML) dated 11/6/2006, Master Data List, Drawing No. 005-C0221-00, Revision A, dated 10/31/2006, and Upgrade Installation Manual p/n 190-00357-06 Revision B dated 01/2007.

The above work was done in accordance with AC43.13-1B CHG 1 chapters 7,10,11, 12 and 13, AC43.13-2A chapters 1, 2 and 3.

Structural mounting of all equipment installed is sufficient to ensure the restraint of the equipment when subjected to the emergency landing load appropriate to the aircraft category.

Full electrical load does not exceed 80% of the electrical system capacity, determined by using calculated method.

Performed all post installation checks as per installation manual.

Supplied owner / operator with Pilot's Guide p/n 190-00356-00 Revision A, dated November 2006 as supplied by the manufacturer, FAA Approved Flight Manual Supplement p/n 190-00356-63 Revision B, dated 12/21/2006 and Instructions for Continued Airworthiness p/n 190-00356-65 Revision A, dated 11/3/2006.

Completed weight and balance / equipment list update.

\*\*\*\*\* NOTHING FOLLOWS \*\*\*\*\*

Additional Sheets Are Attached

United States Of America  
Department of Transportation - Federal Aviation Administration

# Supplemental Type Certificate

*Number* SA01933LA

*This Certificate issued to* **Garmin AT, Inc.**  
**2345 Turner Road S.E.**  
**Salem, Oregon 97302**

*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)

*Models:*

No. SA01933LA for list of approved aircraft

*Model:*

models and applicable airworthiness regulations.

### *Description of Type Design*

*Change:* Installation of Garmin Model 400W / 500W Series GPS-WAAS Navigation System in accordance with FAA Approved Garmin 400W Series Master Data List, Drawing No.: 005-C0221-00, Revision "A", dated October 31, 2006, or later FAA approved revision; or FAA Approved Garmin 500W Series Master Data List, Drawing No.: 005-C0221-01, Revision "A", dated October 31, 2006, or later FAA approved revision. For Garmin 400W installations: FAA Approved Garmin 400W Series Airplane Flight Manual Supplement, Document No.: 190-00356-63, Revision "Original", dated November 6, 2006, or later FAA approved revision. For Garmin 500W installation: FAA Approved Garmin 500W Series Airplane Flight Manual Supplement, Document No.: 190-00357-63, Revision "Original", dated November 6, 2006, or later FAA approved revision.

*Limitations and Conditions:* This approval should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previous 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*

*Date of application:* January 31, 2006

*Date reissued:*

*Date of issuance:* November 6, 2006

*Date amended:*



*By direction of the Administrator*

*S. Lamm. Hashem*  
(Signature)

Manager, Systems & Equipment Branch, Los Angeles 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.



February 22, 2007

**Subject: STC Permission to use STC SA01933LA for  
Garmin Model 400W / 500W Series GPS-WAAS Navigation System**

Consistent with Order 8110.4B and AC 21-40, Garmin AT, Inc. grants permission to Garmin dealers, installers, and owners of the Garmin Model 400W / 500W Series GPS-WAAS Navigation System to use STC SA01933LA and the data associated with it, for the sole and express purpose of installation and approval of the installation of the Garmin Model 400W / 500W Series GPS-WAAS Navigation System, and associated interfaces to other previously approved equipment.

A handwritten signature in black ink, appearing to read "John Macnab".

John Macnab  
General Manager  
Garmin AT, Inc.

# *FAA Approved Model List (AML)*

## Number STC: SA01933LA

**Installation of Garmin Model 400W / 500W Series GPS-WASS Navigation System**

Issued Date: November 6, 2006

Revision: "Original"

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
<b>Adam Aircraft</b>				
A500	A00009DE	FAR 23	005-C0221-00 005-C0221-01	
<b>Aermacchi S.p.A (Sial Marchetti)</b>				
S.205-18/F, S.205-18/R, S.205-20/F, S.205-20/R S.205-22/R, S.208, S.208A	A9EU	FAR 23	005-C0221-00 005-C0221-01	
F.260, F.260B, F.260C, F.260D, F.260E, F.260F	A10EU	CAR 3	005-C0221-00 005-C0221-01	
S.211A	A86EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Aero Commander (Dynac Aerospace Corp)</b>				
10, 10A, 100, 100A, 100-180	1A21	CAR 3	005-C0221-00 005-C0221-01	
<b>Aeronautica Macchi S.p.A (Macchi)</b>				
AL 60, AL 60-B, AL 60-F5, AL 60-C5	7A12	CAR 3	005-C0221-00 005-C0221-01	
AM-3	A19EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Aerostar Aircraft Corp. (Piper Aerostar)</b>				
PA-60-600, PA-60-601 (Aerostar 601), PA-60-601P Aerostar 601P), PA-60-602P (Aerostar 602P), PA-60- 700P (Aerostar 700P)	A17WE	FAR 23	005-C0221-00 005-C0221-01	
360, 400	A11WE	FAR 23	005-C0221-00 005-C0221-01	
<b>American Champion</b>				
402	A3CE	CAR 3	005-C0221-00 005-C0221-01	
7GCA, 7GCB, 7KC, 7GCBA, 7GCAA, 7GCBC, 7KCAB	A-759	CAR 4a	005-C0221-00 005-C0221-01	
8KCAB, 8GCBC	A21CE	FAR 23	005-C0221-00 005-C0221-01	
<b>Aviat (Sky International)</b>				
A-1, A-1A, A-1B	A22NM	FAR 23	005-C0221-00 005-C0221-01	
S-1S, S-1T, S-2, S-2A, S-2S, S-2B, S-2C	A8SO	FAR 23	005-C0221-00 005-C0221-01	

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
<b>Bellanca (Alexandria Aircraft LLC)</b>				
14-13, 14-13-2, 14-13-3, 14-13-3W	A-773	CAR 4a	005-C0221-00 005-C0221-01	
14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	1A3	CAR 3	005-C0221-00 005-C0221-01	
17-30A, 17-31A, 17-31ATC	A18CE	FAR 23	005-C0221-00 005-C0221-01	
<b>Britten-Norman (B-N Group Limited)</b>				
BN-2, BN-2A, BN-2A-2, BN-2A-3, BN-2A-6, BN-2A-8, BN-2A-20, BN-2A-21, BN-2A-26, BN-2A-27, BN-2B- 20, BN-2B-21, BN-2B-26, BN-2B-27, BN-2T, BN-2T- 4R	A17EU	FAR 23	005-C0221-00 005-C0221-01	
BN2A MK. III, BN2A MK. III-2, BN2A MK. III-3	A29EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Bushmaster</b>				
Bushmaster 2000	A19WE	CAR 3	005-C0221-00 005-C0221-01	
<b>Cessna</b>				
120, 140	A-768	CAR 3	005-C0221-00 005-C0221-01	
140A	5A2	CAR 3	005-C0221-00 005-C0221-01	
150, 150A, 150B, 150C 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, 150M, A150K, A150L, A150M, 152, A152	3A19	CAR 3 FAR 23	005-C0221-00 005-C0221-01	
170, 170A, 170B	A-799	CAR 3	005-C0221-00 005-C0221-01	
172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 172R, 172S	3A12	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
172RG, P172D, R172E, R172F, R172G, R172H, R172J, R172K, 175, 175A, 175B, 175C	3A17	CAR 3	005-C0221-00 005-C0221-01	
177, 177A, 177B	A13CE	FAR 23	005-C0221-00 005-C0221-01	
177RG	A20CE	FAR 23	005-C0221-00 005-C0221-01	
180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6	CAR 3	005-C0221-00 005-C0221-01	
182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182S, 182T, R182, T182, TR182, T182T	3A13	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	3A24	CAR 3	005-C0221-00 005-C0221-01	
190, 195, 195A, 195B	A-790	CAR 3	005-C0221-00 005-C0221-01	
210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, P210N, T210N, 210R, P210R, T210R, 210-5, 210-5A	3A21	CAR 3	005-C0221-00 005-C0221-01	

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
PA-30, PA-39, PA-40	A1EA	CAR 3	005-C0221-00 005-C0221-01	
PA-31, PA-31-300, PA-31-325, PA-31-350	A20SO	CAR 3	005-C0221-00 005-C0221-01	
PA-31P, PA-31T, PA-31T1, PA-31T2, PA-31T3, PA-31P-350	A8EA	CAR 3	005-C0221-00 005-C0221-01	
PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300, PA-32RT-300T, PA-32R-301(SP), PA-32R-301(HP), PA-32R-301T, PA-32-301, PA-32-301T, PA-32-301FT, PA32-301XTC	A3SO	CAR 3	005-C0221-00 005-C0221-01	
PA-34-200, PA-34-200T, PA-34-220T	A7SO	CAR 3	005-C0221-00 005-C0221-01	
PA-42, PA-42-720, PA-42-1000	A23SO	FAR 23	005-C0221-00 005-C0221-01	
PA-42-720R	A32SO	FAR 23	005-C0221-00 005-C0221-01	
PA-44-180, PA-44-180T	A19SO	FAR 23	005-C0221-00 005-C0221-01	
PA-46-310P, PA-46-350P, PA-46-500TP	A25SO	FAR 23	005-C0221-00 005-C0221-01	
<b>Prop-Jets, Inc.</b>				
200, 200A, 200B, 200C, 200D, 400	3A18	CAR 3	005-C0221-00 005-C0221-01	
<b>PZL (Panstwowe Zaklady Lotnicze)</b>				
PZL-104 WILGA 80, PZL-104M WILGA 2000, PZL-WARSZAWA	A55EU	FAR 23	005-C0221-00 005-C0221-01	
PZL-KOLIBER 150A, PZL-KOLIBER 160A,	A69EU	FAR 23	005-C0221-00 005-C0221-01	
<b>PZL (PZL Mielec)</b>				
PZL M20 03	A68EU	FAR 23	005-C0221-00 005-C0221-01	
PZL M26 01	A44CE	FAR 23	005-C0221-00 005-C0221-01	
<b>Raytheon (Beech)</b>				
35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G33, H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 36, A36, A36TC, B36TC	3A15	CAR 3	005-C0221-00 005-C0221-01	
35, A35, B35, C35, D35, E35, F35, G35, 35R	A-777	CAR 3	005-C0221-00 005-C0221-01	
F90	A31CE	FAR 23	005-C0221-00 005-C0221-01	
76	A29CE	FAR 23	005-C0221-00 005-C0221-01	

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
200, 200C, 200CT, 200T, A200, B200, B200C, B200CT, B200T, 300, 300LW, B300, B300C, 1900, 1900C, 1900D, A100-1 (U-21J), A200 (C-12A) A200 (C-12C), A200C (UC-12B), A200CT (C-12D) or (FWC-12D) or (RC-12D) or (C-12F) or (RC-12G) or (RC-12H) or (RC-12K), or (RC-12P) or (RC-12Q), B200C (C-12F) or (UC-12F) or (UC-12M), or (C-12R), 1900C (C-12J)	A24CE	FAR 23	005-C0221-00 005-C0221-01	
65, A65, A65-8200, 65-80, 65-A80, 65-A80-8800, 65-B80, 65-88, 65-A90, 70, B90, C90, C90A, E90, H90, 65-A90-1, 65-A90-2, 65-A90-3, 65-A90-4	3A20	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B (T-42A), 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A	3A16	CAR 3 FAR 23	005-C0221-00 005-C0221-01	
58P, 58PA, 58TC, 58TCA	A23CE	FAR 23	005-C0221-00 005-C0221-01	
99, 99A, 99A(FACH), A99, A99A, B99, C99, 100, A100 (U-21F), A100A, A100C, B100	A14CE	FAR 23	005-C0221-00 005-C0221-01	
2000	A38CE	FAR 23	005-C0221-00 005-C0221-01	
3000	A00009WI	FAR 23	005-C0221-00 005-C0221-01	
390	A00010WI	FAR 23	005-C0221-00 005-C0221-01	
19A, B19, M19A, 23, A23, A23A, A23-19, A23-24, B23, C23, A24, A24R, B24R, C24R	A1CE	CAR 3	005-C0221-00 005-C0221-01	
60, A60, B60	A12CE	FAR 23	005-C0221-00 005-C0221-01	
18D, A18A, A18D, S18D, SA18A, SA18D	A-684	Aero 7A	005-C0221-00 005-C0221-01	
3N, 3NM, 3TM, JRB-6, D18C, D18S, E18S, RC-45J, E18S-9700, G18S, H18, C-45G, C-45H, TC-45G (SNB-5P), TC-45H, TC-45J, UC-45J (SNB-5)	A-765	CAR 3	005-C0221-00 005-C0221-01	
50, B50, C50, D50, D50A, D50B, D50C, D50E, D50E-5990, E50, F50, G50, H50, J50	5A4	CAR 3	005-C0221-00 005-C0221-01	
45 (YT-34), A45 (T-34A) or (B-45), D45 (T-34B)	5A3	CAR 3	005-C0221-00 005-C0221-01	
<b>Short Brothers</b>				
SC-7 Series 2, SC-7 Series 3	A15EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Slingsby Aviation Ltd.</b>				
T67M260, T67M260-T3A	A73EU	FAR 23	005-C0221-00 005-C0221-01	
<b>SOCATA (SOCATA Groupe Aerospatiale)</b>				
TB9, TB10, TB20, TB21, TB200	A51EU	FAR 23	005-C0221-00 005-C0221-01	
TBM 700 (TBM850)	A60EU	FAR 23	005-C0221-00 005-C0221-01	
M.S.760, M.S.760A, M.S.760B	7A3	CAR 3	005-C0221-00 005-C0221-01	

# 400W Series AML STC Installation

## Master Data List

Garmin Ltd. or its subsidiaries  
c/o Garmin International, Inc.  
1200 E. 151st Street  
Olathe, Kansas 66062 USA

Dwg. Number:  
005-C0221-00 Rev. A

### Record of Revision

Rev.	Date	Description of Change
1	10-19-06	Initial Release
A	10-31-06	Revision for STC Issuance

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## 1. INTRODUCTION

### 1.1 Purpose

The purpose of this document is to list the data required to support STC installation of the Garmin 400W series GPS/WAAS Nav/Com navigator in accordance with STC SA01933LA requirements, and to list other data associated with the STC which is not required for installation.

### 1.2 Scope

This document applies to the installation of the 400W series units when installed IAW the data listed in this document on the Approved Model List aircraft as defined for this STC. This document includes general installation requirements, special installation instructions, and it provides an index of STC data including both data required for installation and data associated with the STC, but not required for installation. This STC covers both new installations and upgrade installations.

### 1.3 Document Revision

This document shall be released, archived, and controlled in accordance with Garmin document control system. As such when this and other documents are revised, the entire document is revised and the new revision nomenclature is changed on each page of the revised document.

### 1.4 Definitions

The following terminology is used within this document:

- 1) **AC:** Advisory Circular
- 2) **AML:** Approved Model List
- 3) **DER:** Designated Engineering Representative
- 4) **FAA:** Federal Aviation Administration
- 5) **FARs:** Federal Aviation Regulations
- 6) **IAW:** In accordance with
- 7) **STC:** Supplemental Type Certificate
- 8) **TIA:** Type Inspection Authorization

## 2. DATA AND EQUIPMENT LIST REQUIRED FOR INSTALLATION

### 2.1 Data Required for Installation

#### 2.1.1 400W Series Installation Data (New Installations)

All documents listed in Table 1 are required for installation purposes for new installations of the 400W series equipment. All documents must be of the revision listed or later FAA approved revisions.

**Table 1 STC Data (New Installations)**

Mfg.	Doc No.	Rev	Description
Garmin	005-C0221-00	A	400W Series Master Data List (this document)
Garmin	190-00356-65	A	400W Series Instructions for Continued Airworthiness
Garmin	190-00356-02	A	400W Series Installation Manual
Garmin	190-00356-63	A	400W Series AFMS

**2.1.2 400W Series Installation Data (Upgrade Installations)**

All documents listed in Table 2 are required for installation purposes when installing upgraded 400W series equipment in the location in the aircraft where a legacy 400 series unit was installed. Specific instructions for the installation of an upgraded unit are contained in 190-00357-06, STC Upgrade Installation Manual. All documents must be of the revision listed or later FAA approved revisions.

**Table 2 STC Data (Upgrade Installations)**

Mfg.	Doc No.	Rev	Description
Garmin	005-C0221-00	A	400W Series Master Data List (this document)
Garmin	190-00356-65	A	400W Series Instructions for Continued Airworthiness
Garmin	190-00357-06	A	STC Upgrade Installation Manual
Garmin	190-00356-02	A	400W Series Installation Manual
Garmin	190-00356-63	A	400W Series AFMS

**2.1.3 Continued Airworthiness**

Instructions for continued airworthiness are found in Garmin document number 190-00356-65 Instructions for Continued Airworthiness. See Table 1 or Table 2 for document revision.

**2.2 Substantiating Data**

The documents listed in Table 3, or later FAA-approved revisions, contain information related to this STC but are not required for follow-on installations.

**Table 3 Related Data (Substantiating Data)**

Doc No.	Rev	Description
005-00221-12	2	Project Specific Certification Plan (PSCP) for Installation of 400W and 500W Series unit in STC AML
005-00221-13	2	400W and 500W series STC System Accomplishment Summary
005-00221-07	3	400W and 500W series System Safety Assessment
005-00221-16	1	Ground Test Plan
005-00221-17	1	Flight Test Plan
005-00221-75	1	400W/500W Series Model Qualification Process
005-00221-76	1	400W/500W Series Acceptance Analysis for STC AML

## 2.3 Equipment List

All equipment must have the Part Numbers and Software Versions contained in the following table, or later FAA Approved revisions or versions.

Table 4 Required Equipment List

Model	Description	Part Number	Mfg.	Software Ver. (or later FAA approved version)
GPS 400W	GPS Black bezel GPS Gray bezel Upgraded GPS Black bezel Upgraded GPS Gray bezel	011-01057-00 011-01057-10 011-01057-40 011-01057-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNC 420W	GPS Com Black bezel GPS Com Gray bezel Upgraded GPS Com Black bezel Upgraded GPS Com 28V, Black bezel Upgraded GPS Com Gray bezel	011-01058-00 011-01058-10 011-01058-40 011-01058-45 011-01058-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNC 420AW	GPS Black bezel GPS Gray bezel Upgraded GPS Black bezel Upgraded GPS Gray bezel	011-01059-00 011-01059-10 011-01059-40 011-01059-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 430W	GPS Com Nav Black bezel GPS Com Nav Gray bezel Upgraded GPS Com Nav Black bezel Upgraded GPS Com Nav 28V, Black bezel Upgraded GPS Com Nav Gray bezel	011-01060-00 011-01060-10 011-01060-40 011-01060-45 011-01060-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 430AW	GPS Com Nav Black bezel GPS Com Nav Gray bezel Upgraded GPS Com Nav Black bezel Upgraded GPS Com Nav Gray bezel	011-01060-00 011-01060-10 011-01060-40 011-01060-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4

## 3. GENERAL INSTALLATION REQUIREMENTS

### 4. GENERAL

The installation must be done in accordance with all applicable FARs. The installation shall conform to the data listed in Section 2.1, Data Required for Installation with exception of special instructions as defined in Section 5 Special Installation Instructions, which shall have precedence over the data listed in Section 2.1.

#### 4.1 Prerequisite

This 400W Series STC requires a TSO-C144 GPS/WAAS antenna as specified in the 190-00356-02 Installation Manual. This STC does not support mounting installation of these antennas, but this STC does support the operational checks for the GPS/WAAS antenna. For mounting installation of the GPS/WAAS antenna, use STC SA01695SE, follow aircraft manufacturer's installation data, or use other approval method.

#### 4.2 Mechanical

Mechanical installation, wiring, cable bundling and routing, and connections to existing aircraft systems must conform to those specific instructions or requirements found in the STC data. Those aspects of the

STC where specific installation instructions or requirements are not provided in the STC data, the installer shall conform to the recommended practices and procedures found in AC 43.13-2A, Chapter 2, Radio Installations, and Chapter 3, Antenna Installations; AC 43.13-1B, Chapter 11, Electrical Systems, Section 3, 4 and 7.

#### **4.3 Hardware**

Hardware not supplied with the equipment, or otherwise specified in the appropriate installation manuals or other STC data (ie screws, nuts, tie wrap.... etc) shall be from standard aircraft hardware as described by AC 43.13-1B, Chapter 7, Aircraft Hardware, Control Cables and Turnbuckles.

#### **4.4 Wiring**

All wire used in the installation shall be of appropriate standard aircraft quality grade and size as described in AC 43.13-1B, Chapter 11, Sections 5-20.

#### **4.5 Circuit Protection**

All 400W series unit modification circuits shall be protected in accordance with AC 43.13-1B, Chapter 11, Section 4, Circuit Protection Devices.

#### **4.6 Electrical Load Analysis**

An electrical load analysis shall be performed on each aircraft, as described in AC 43.13-1B, Chapter 11 Section 3. The document P/N 190-00356-02 400W Series Installation Manual provides specifications on the 400W Series power requirements.

### **5. SPECIAL INSTALLATION INSTRUCTIONS**

None

### **6. ADDITIONAL SYSTEM NOTES**

No other system notes.

# 400W Series

## Instructions for Continued Airworthiness

Document Number 190-00356-65 Rev. A

Garmin Ltd. Or its subsidiaries  
c/o Garmin International, Inc.  
1200 E. 151st Street  
Olathe, Kansas 66062 USA

### Record of Revision

Rev.	Date	Description of Change
1	10-19-06	Initial Release
A	11-03-06	Revision for STC Issuance

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# 1. INTRODUCTION

## 1.1 PURPOSE

This document is designed for use by the installing agency of the Garmin Model 400W Series GPS/WAAS Nav/Com as Instructions for Continued Airworthiness in response to Federal Aviation regulation (FAR) Part 23.1529, and Part 23 Appendix G. The ICA includes information required by the operator to adequately maintain the Garmin Models 400W series installed under Approved Model List (AML) STC SA01933LA.

## 1.2 Scope

This document identifies the Instruction for Continued Airworthiness for the modification of the aircraft for installation of the Garmin Models 400W series GPS/WAAS Nav/Com installed under Approved Model List (AML) STC SA01933LA.

## 1.3 Document Control

This document shall be released, archived, and controlled in accordance with the Garmin document control system. When this document is revised, refer to Section 2.15 for information on how to gain FAA acceptance or approval and how to notify customers of changes.

## 1.4 Airworthiness Limitations Section

There are no additional Airworthiness Limitations as defined in 14 CFR § 23, Appendix G. G23.4 that result from this modification. The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

## 1.5 Permission to Use Certain Documents

Permission is granted to any corporation or person applying for approval of a Garmin Model 400W Series to use and reference appropriate STC documents to accomplish the Instructions for Continued Airworthiness and show compliance with STC engineering data. This permission does not construe suitability of the documents. It is the responsibility of the applicant to determine the suitability of the documents for the ICA.

## 1.6 Definitions

The following terminology is used within this document:

- 1) **AC:** Advisory Circular
- 2) **ACO:** Aircraft Certification Office
- 3) **AEG:** Aircraft Evaluation Group
- 4) **CFR:** Code of Federal Regulations
- 5) **DER:** Designated Engineering Representative
- 6) **FAA:** Federal Aviation Administration

- 7) **IAW:** In Accordance With
- 8) **ICA:** Instructions for Continued Airworthiness
- 9) **MFD:** Multi-Function Display unit
- 10) **PMI:** Primary Manufacturing Inspector
- 11) **POI:** Primary Operations Inspector
- 12) **STC:** Supplemental Type Certificate
- 13) **TC:** Type Certification or Type Certificate
- 14) **TSO:** Technical Standard Order

## 2. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

### 2.1 Introduction

Content, Scope, Purpose and Arrangement:	This document identifies the Instructions for Continued Airworthiness for the modification of the aircraft by installation of the Garmin Models 400W Series GPS/WAAS Nav/Com.
Applicability:	Applies to aircraft altered by installation of the Garmin Model 400W Series GPS/WAAS Nav/Com.
Definition of Abbreviations:	See Section 1.6
Precautions:	None
Units of measurement:	None
Referenced publications: (or later FAA approved revisions)	190-00356-02 Rev. A <i>400W Series Installation Manual</i>  005-C0221-00 Rev. A <i>400W Series STC Master Data List</i>
Retention:	This document, or the information contained within, will be included in the aircraft's permanent records.

### 2.2 Description of Alteration

The Garmin Model 400W Series GPS/WAAS Nav/Com unit is a 6 ¼ inch wide panel mounted unit with all the interface connections behind the instrument panel. Installation of the Garmin Model 400W Series GPS/WAAS Nav/Com system interfaces, specific for the aircraft installation, is documented in the GNS 400W Series Post-Installation Checkout Log that is retained as part of the aircraft's permanent records. The 400W Series units combine a large number of easily acceptable controls to use the color multi-function display, Nav and Com transceiver, GPS/WAAS navigator in a single unit.

### 2.3 Control, Operating Information

See the 400W Series Installation Manual, listed under the reference documentation in paragraph 2.1 of this document, for system operation and self-test information.

## 2.4 Servicing Information

None. In the event of system failure, return the unit to the manufacturer or an approved Garmin repair station.

## 2.5 Periodic Maintenance Instructions

The 400W Series units are designed to detect internal failure. A thorough self-test is executed automatically upon application of power to the units, and built-in test is continuously executed. Detected errors are indicated on the equipment via failure annunciations and maintenance is on-condition.

Operation of the 400W Series unit is not permitted unless an inspection as described in this section has been completed within the preceding 12 calendar months. Conduct a visual inspection on the 400W series unit and its wire harness to insure installation integrity:

1. Inspect the unit for security of attachment.
2. Inspect all knobs and buttons for legibility.
3. Inspect condition of wiring, routing and attachment/clamping.

### 2.5.1 Cleaning the Front Panel

The front bezel, keypad, and display can be cleaned with a soft cotton cloth dampened with clean water. DO NOT use any chemical-cleaning agents. Care should be taken to avoid scratching the surface of the display.

### 2.5.2 Display Backlight

The display backlight lamp is rated by the manufacturer as having a usable life of 20,000 hours. This life may be more or less than the rated time depending on the operating conditions of the 400W series unit. Over time, the backlight lamp may dim and the display may not perform as well in direct sunlight conditions. The user must determine by observation when the display brightness is not suitable for its intended use. Contact the Garmin factory repair station when the backlight lamp requires service.

### 2.5.3 Battery Replacement

The 400W series has an internal keep-alive battery that will last about 10 years. The battery is used for GPS system information. Regular planned replacement is not necessary. The 400W series will display a 'low battery' message when replacement is required. Once the low battery message is displayed, the battery should be replaced within 1 to 2 months.

If the battery is not replaced and becomes totally discharged, the 400W series unit will remain fully operational, but the GPS signal acquisition time may be increased. This acquisition time can be reduced by entering a new seed position each time the unit is powered on. There is no loss of function or accuracy of the 400W series unit with a dead battery.

The battery must be replaced by the Garmin factory repair station or factory authorized repair station.

## 2.6 Troubleshooting Information

If error indications are displayed on the 400W series unit, consult the Troubleshooting section contained in the 400W Series Installation Manual, listed under reference documentation in paragraph 2.1 of this

document. The '400W Series Post-Installation Checkout Log' in the aircraft permanent records includes the configuration information for the installation. (See Section 5 in the 400W Series Installation Manual for a sample Log).

## 2.7 Removal and Replacement Information

If the 400W series unit is removed and reinstalled, verify that the 400W series unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

If the 400W series unit is removed for repair and reinstalled, or if the 400W unit is removed and replaced with a different 400W series unit, then follow 'Post Installation Configuration & Checkout Procedures' procedures contained in the 400W Series Installation Manual listed in paragraph 2.1 of this document, and verify the 400W unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

If any work has been done on the aircraft that could affect the system wiring, antenna cable, or any interconnected equipment, verify the 400W series unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

To remove the 400W series unit from the mounting rack, insert a 3/32-inch hex drive tool into the access hole at the bottom of the unit face. Rotate the hex tool counterclockwise until the unit is forced out about 3/8 inches and can be freely pulled from the rack.

The 400W unit is installed in the rack by sliding it straight in until it stops, about 1 inch short of the final position. Insert the hex drive tool into the access hole at the bottom of the unit face. Rotate the hex tool clockwise while pressing on the left side of the bezel until the unit is firmly seated in the rack.

Note: There are no special handling requirements for the 400W series units.

## 2.8 Diagrams

Refer to the 400W Series Installation Manual (listed under reference documentation in section 2.1 of this document) for drawings applicable to this installation. Point to point wiring diagrams are in Appendix H of the 400W Series Installation Manual. Refer to the GNS 400W Series Post-Installation Checkout Log retained in the aircraft permanent for a list of the interfaced equipment. The antenna cables are routed between the 400W series unit and the antenna with disconnects at each unit. The antenna cable typically is routed behind interior panels in the fuselage.

## 2.9 Special Inspection Requirements

None, N/A.

## 2.10 Application of Protective Treatments

None, N/A.

## 2.11 Data Relative to Structural Fasteners

None, N/A.

## 2.12 Special Tools

No special tools are required for system checkout. See 400W Series Installation Manual listed in reference documentation in section 2.1 of this document.

## 2.13 Additional Instructions

None

## 2.14 Overhaul Period

The system does not require overhaul at a specific time period. Power on self-test and continuous BIT will monitor the health of the 400W series unit. If the unit indicates an internal failure, the unit may be removed and replaced. See troubleshooting section contained in the 400W Series Installation Manual, listed under reference documentation in paragraph 2.1 of this document.

## 2.15 ICA Revision and Distribution

To revise this ICA, a letter must be submitted to the ACO along with the revised ICA. The ACO will obtain AEG acceptance, and approve any revision to the Airworthiness Limitations Section 1.4. After FAA acceptance/approval, Garmin will release the revised ICA for customer use, and provide any required notification of the revision.

The latest revision of this document will be available on the Garmin website ([www.garmin.com](http://www.garmin.com)). A Garmin Service Bulletin, describing ICA revision, will be sent to dealers if revision is determined to be significant.

## 2.16 Assistance

Flight Standards Inspectors or the certificate holder's PMI have the required resources to respond to questions regarding this ICA. In addition, the customer may refer questions regarding this equipment and its installation to the manufacturer, Garmin. Garmin customer assistance may be contacted during normal business hours via telephone 913-397-8200 or email from the Garmin web site at [www.garmin.com](http://www.garmin.com).

## 2.17 Implementation and Record Keeping

Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operator's aircraft maintenance manual and/or the operator's aircraft scheduled maintenance program.



FAA



U.S. 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 a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make PIPER	Model PA-32R-301T
	Serial No. 32-57160	Nationality and Registration Mark N531A
2. Owner	Name (As shown on registration certificate) PAUL E NOBLE JR	Address (As shown on registration certificate) 110 BLACK ROCK DR HINGHAM, MA 02043

#### 3. For FAA Use Only

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#### 4. Unit Identification

#### 5. Type

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	_____ (As described in item 1 above) _____				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

#### 6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
GRIFFIN AVIONICS INC BARNSTABLE MUNICIPAL AIRPORT HYANNIS MA. 02601	<input type="checkbox"/> U.S. Certificated Mechanic	GN1R172K AIRFRAME CLASS 3
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certificated Repair Station	
	<input type="checkbox"/> Manufacturer	

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 herein is true and correct to the best of my knowledge.

Date 11/19/07	Signature of Authorized Individual <i>Robert Griffin</i>
------------------	---

#### 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	Inspection Authorization	Other (Specify)
	FAA Designee	<input checked="" type="checkbox"/> Repair Station	Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection 11/19/07	Certificate or Designation No. GN1R172K	Signature of Authorized Individual <i>Robert Griffin</i>
---	--	---

**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**

*(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

Installed upgraded Garmin GNS530W GPS/NAV/COM/WAAS system in accordance with STC# SA01933LA and Approved Model List (AML) dated 11/6/2006, Master Data List, Drawing No. 005-C0221-01, Revision A, dated 10/31/2006, and Upgrade Installation Manual p/n 190-00357-06 Revision B dated 01/2007.

The above work was done in accordance with AC43.13-1B CHG 1 chapters 7,10,11, 12 and 13, AC43.13-2A chapters 1, 2 and 3.

Structural mounting of all equipment installed is sufficient to ensure the restraint of the equipment when subjected to the emergency landing load appropriate to the aircraft category.

Full electrical load does not exceed 80% of the electrical system capacity, determined by using calculated method.

Performed all post installation checks as per installation manual.

Supplied owner / operator with Pilot's Guide p/n 190-00357-00 Revision A, dated October 2006 as supplied by the manufacturer, FAA Approved Flight Manual Supplement p/n 190-00357-63 Revision B, dated 12/21/2006 and Instructions for Continued Airworthiness p/n 190-00357-65 Revision A, dated 11/3/2006.

Completed weight and balance / equipment list update.

\*\*\*\*\* NOTHING FOLLOWS \*\*\*\*\*

Additional Sheets Are Attached

# Supplemental Type Certificate

*Number* SA01933LA

*This Certificate issued to* **Garmin AT, Inc.**  
**2345 Turner Road S.E.**  
**Salem, Oregon 97302**

*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. SA01933LA for list of approved aircraft

*Model:*

models and applicable airworthiness regulations.

### *Description of Type Design*

*Change:* Installation of Garmin Model 400W / 500W Series GPS-WAAS Navigation System in accordance with FAA Approved Garmin 400W Series Master Data List, Drawing No.: 005-C0221-00, Revision "A", dated October 31, 2006, or later FAA approved revision; or FAA Approved Garmin 500W Series Master Data List, Drawing No.: 005-C0221-01, Revision "A", dated October 31, 2006, or later FAA approved revision. For Garmin 400W installations: FAA Approved Garmin 400W Series Airplane Flight Manual Supplement, Document No.: 190-00356-63, Revision "Original", dated November 6, 2006, or later FAA approved revision. For Garmin 500W installation: FAA Approved Garmin 500W Series Airplane Flight Manual Supplement, Document No.: 190-00357-63, Revision "Original", dated November 6, 2006, or later FAA approved revision.

*Limitations and Conditions:* This approval should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previous 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*

*Date of application:* January 31, 2006

*Date reissued:*

*Date of issuance:* November 6, 2006

*Date amended:*



*By direction of the Administrator*

*S. James Harshen*  
(Signature)

Manager, Systems & Equipment Branch, Los Angeles 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.



February 22, 2007

Subject: STC Permission to use STC SA01933LA for  
Garmin Model 400W / 500W Series GPS-WAAS Navigation System

Consistent with Order 8110.4B and AC 21-40, Garmin AT, Inc. grants permission to Garmin dealers, installers, and owners of the Garmin Model 400W / 500W Series GPS-WAAS Navigation System to use STC SA01933LA and the data associated with it, for the sole and express purpose of installation and approval of the installation of the Garmin Model 400W / 500W Series GPS-WAAS Navigation System, and associated interfaces to other previously approved equipment.

A handwritten signature in black ink, appearing to read "John Macnab".

John Macnab  
General Manager  
Garmin AT, Inc.

Garmin AT, Inc.  
2345 Turner Road SE,  
Salem Oregon 97302  
P: 800-525-6726

20070222jm03  
Page 1 of 1

# FAA Approved Model List (AML)

## Number STC: SA01933LA

Installation of Garmin Model 400W / 500W Series GPS-WASS Navigation System

Issued Date: November 6, 2006

Revision: "Original"

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
<b>Adam Aircraft</b>				
A500	A00009DE	FAR 23	005-C0221-00 005-C0221-01	
<b>Aermacchi S.p.A (Siai Marchetti)</b>				
S.205-18/F, S.205-18/R, S.205-20/F, S.205-20/R S.205-22/R, S.208, S.208A	A9EU	FAR 23	005-C0221-00 005-C0221-01	
F.260, F.260B, F.260C, F.260D, F.260E, F.260F	A10EU	CAR 3	005-C0221-00 005-C0221-01	
S.211A	A86EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Aero Commander (Dynac Aerospace Corp)</b>				
10, 10A, 100, 100A, 100-180	1A21	CAR 3	005-C0221-00 005-C0221-01	
<b>Aeronautica Macchi S.p.A (Macchi)</b>				
AL 60, AL 60-B, AL 60-F5, AL 60-C5	7A12	CAR 3	005-C0221-00 005-C0221-01	
AM-3	A19EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Aerostar Aircraft Corp. (Piper Aerostar)</b>				
PA-60-600, PA-60-601 (Aerostar 601), PA-60-601P Aerostar 601P), PA-60-602P (Aerostar 602P), PA-60- 700P (Aerostar 700P)	A17WE	FAR 23	005-C0221-00 005-C0221-01	
360, 400	A11WE	FAR 23	005-C0221-00 005-C0221-01	
<b>American Champion</b>				
402	A3CE	CAR 3	005-C0221-00 005-C0221-01	
7GCA, 7GCB, 7KC, 7GCBA, 7GCAA, 7GCBC, 7KCAB	A-759	CAR 4a	005-C0221-00 005-C0221-01	
8KCAB, 8GCBC	A21CE	FAR 23	005-C0221-00 005-C0221-01	
<b>Aviat (Sky International)</b>				
A-1, A-1A, A-1B	A22NM	FAR 23	005-C0221-00 005-C0221-01	
S-1S, S-1T, S-2, S-2A, S-2S, S-2B, S-2C	A8SO	FAR 23	005-C0221-00 005-C0221-01	

International AeroTech Academy For Training Purposes Only

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
<b>Bellanca (Alexandria Aircraft LLC)</b>				
14-13, 14-13-2, 14-13-3, 14-13-3W	A-773	CAR 4a	005-C0221-00 005-C0221-01	
14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	1A3	CAR 3	005-C0221-00 005-C0221-01	
17-30A, 17-31A, 17-31ATC	A18CE	FAR 23	005-C0221-00 005-C0221-01	
<b>Britten-Norman (B-N Group Limited)</b>				
BN-2, BN-2A, BN-2A-2, BN-2A-3, BN-2A-6, BN-2A-8, BN-2A-20, BN-2A-21, BN-2A-26, BN-2A-27, BN-2B- 20, BN-2B-21, BN-2B-26, BN-2B-27, BN-2T, BN-2T- 4R	A17EU	FAR 23	005-C0221-00 005-C0221-01	
BN2A MK. III, BN2A MK. III-2, BN2A MK. III-3	A29EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Bushmaster</b>				
Bushmaster 2000	A19WE	CAR 3	005-C0221-00 005-C0221-01	
<b>Cessna</b>				
<del>120, 140</del>	<del>A-768</del>	<del>CAR 3</del>	<del>005-C0221-00 005-C0221-01</del>	
140A	5A2	CAR 3	005-C0221-00 005-C0221-01	
150, 150A, 150B, 150C 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, 150M, A150K, A150L, A150M, 152, A152	3A19	CAR 3 FAR 23	005-C0221-00 005-C0221-01	
170, 170A, 170B	A-799	CAR 3	005-C0221-00 005-C0221-01	
172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 172R, 172S	3A12	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
172RG, P172D, R172E, R172F, R172G, R172H, R172J, R172K, 175, 175A, 175B, 175C	3A17	CAR 3	005-C0221-00 005-C0221-01	
177, 177A, 177B	A13CE	FAR 23	005-C0221-00 005-C0221-01	
177RG	A20CE	FAR 23	005-C0221-00 005-C0221-01	
180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6	CAR 3	005-C0221-00 005-C0221-01	
182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182S, 182T, R182, T182, TR182, T182T	3A13	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	3A24	CAR 3	005-C0221-00 005-C0221-01	
190, 195, 195A, 195B	A-790	CAR 3	005-C0221-00 005-C0221-01	
210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, P210N, T210N, 210R, P210R, T210R, 210-5, 210-5A	3A21	CAR 3	005-C0221-00 005-C0221-01	

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
PA-30, PA-39, PA-40	A1EA	CAR 3	005-C0221-00 005-C0221-01	
PA-31, PA-31-300, PA-31-325, PA-31-350	A20SO	CAR 3	005-C0221-00 005-C0221-01	
PA-31P, PA-31T, PA-31T1, PA-31T2, PA-31T3, PA-31P-350	A8EA	CAR 3	005-C0221-00 005-C0221-01	
PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300, PA-32RT-300T, PA-32R-301(SP), PA-32R-301(HP), PA-32R-301T, PA-32-301, PA-32-301T, PA-32-301FT, PA32-301XTC	A3SO	CAR 3	005-C0221-00 005-C0221-01	
PA-34-200, PA-34-200T, PA-34-220T	A7SO	CAR 3	005-C0221-00 005-C0221-01	
PA-42, PA-42-720, PA-42-1000	A23SO	FAR 23	005-C0221-00 005-C0221-01	
PA-42-720R	A32SO	FAR 23	005-C0221-00 005-C0221-01	
PA-44-180, PA-44-180T	A19SO	FAR 23	005-C0221-00 005-C0221-01	
PA-46-310P, PA-46-350P, PA-46-500TP	A25SO	FAR 23	005-C0221-00 005-C0221-01	
<b>Prop-Jets, Inc.</b> 200, 200A, 200B, 200C, 200D, 400	3A18	CAR 3	005-C0221-00 005-C0221-01	
<b>PZL (Panstwowe Zaklady Lotnicze)</b> PZL-104 WILGA 80, PZL-104M WILGA 2000, PZL-WARSZAWA PZL-KOLIBER 150A, PZL-KOLIBER 160A,	A55EU A69EU	FAR 23 FAR 23	005-C0221-00 005-C0221-01 005-C0221-00 005-C0221-01	
<b>PZL (PZL Mielec)</b> PZL M20 03 PZL M26 01	A68EU A44CE	FAR 23 FAR 23	005-C0221-00 005-C0221-01 005-C0221-00 005-C0221-01	
<b>Raytheon (Beech)</b> 35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G33, H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 36, A36, A36TC, B36TC 35, A35, B35, C35, D35, E35, F35, G35, 35R	3A15 A-777	CAR 3 CAR 3	005-C0221-00 005-C0221-01 005-C0221-00 005-C0221-01	
F90	A31CE	FAR 23	005-C0221-00 005-C0221-01	
76	A29CE	FAR 23	005-C0221-00 005-C0221-01	

Aircraft Make and Model Designation	Type Certificate Number	Certification Basis	Required Approved Data & Added Model Specific Limitations	AML Revision Date
200, 200C, 200CT, 200T, A200, B200, B200C, B200CT, B200T, 300, 300LW, B300, B300C, 1900, 1900C, 1900D, A100-1 (U-21J), A200 (C-12A) A200 (C-12C), A200C (UC-12B), A200CT (C-12D) or (FWC-12D) or (RC-12D) or (C-12F) or (RC-12G) or (RC-12H) or (RC-12K), or (RC-12P) or (RC-12Q), B200C (C-12F) or (UC-12F) or (UC-12M), or (C-12R), 1900C (C-12J)	A24CE	FAR 23	005-C0221-00 005-C0221-01	
65, A65, A65-8200, 65-80, 65-A80, 65-A80-8800, 65-B80, 65-88, 65-A90, 70, B90, C90, C90A, E90, H90, 65-A90-1, 65-A90-2, 65-A90-3, 65-A90-4	3A20	CAR 3, FAR 23	005-C0221-00 005-C0221-01	
95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B (T-42A), 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A	3A16	CAR 3 FAR 23	005-C0221-00 005-C0221-01	
58P, 58PA, 58TC, 58TCA	A23CE	FAR 23	005-C0221-00 005-C0221-01	
99, 99A, 99A(FACH), A99, A99A, B99, C99, 100, A100 (U-21F), A100A, A100C, B100	A14CE	FAR 23	005-C0221-00 005-C0221-01	
2000	A38CE	FAR 23	005-C0221-00 005-C0221-01	
3000	A00009WI	FAR 23	005-C0221-00 005-C0221-01	
390	A00010WI	FAR 23	005-C0221-00 005-C0221-01	
19A, B19, M19A, 23, A23, A23A, A23-19, A23-24, B23, C23, A24, A24R, B24R, C24R	A1CE	CAR 3	005-C0221-00 005-C0221-01	
60, A60, B60	A12CE	FAR 23	005-C0221-00 005-C0221-01	
18D, A18A, A18D, S18D, SA18A, SA18D	A-684	Aero 7A	005-C0221-00 005-C0221-01	
3N, 3NM, 3TM, JRB-6, D18C, D18S, E18S, RC-45J, E18S-9700, G18S, H18, C-45G, C-45H, TC-45G (SNB-5P), TC-45H, TC-45J, UC-45J (SNB-5)	A-765	CAR 3	005-C0221-00 005-C0221-01	
50, B50, C50, D50, D50A, D50B, D50C, D50E, D50E-5990, E50, F50, G50, H50, J50	5A4	CAR 3	005-C0221-00 005-C0221-01	
45 (YT-34), A45 (T-34A) or (B-45), D45 (T-34B)	5A3	CAR 3	005-C0221-00 005-C0221-01	
<b>Short Brothers</b>				
SC-7 Series 2, SC-7 Series 3	A15EU	FAR 23	005-C0221-00 005-C0221-01	
<b>Slingsby Aviation Ltd.</b>				
T67M260, T67M260-T3A	A73EU	FAR 23	005-C0221-00 005-C0221-01	
<b>SOCATA (SOCATA Groupe Aerospatiale)</b>				
TB9, TB10, TB20, TB21, TB200	A51EU	FAR 23	005-C0221-00 005-C0221-01	
TBM 700 (TBM850)	A60EU	FAR 23	005-C0221-00 005-C0221-01	
M.S.760, M.S.760A, M.S.760B	7A3	CAR 3	005-C0221-00 005-C0221-01	

# 500W Series AML STC Installation

## Master Data List

Garmin Ltd. or its subsidiaries  
c/o Garmin International, Inc.  
1200 E. 151st Street  
Olathe, Kansas 66062 USA

Dwg. Number:  
005-C0221-01 Rev. A

### Record of Revision

Rev.	Date	Description of Change
1	10-19-06	Initial Release
A	10-31-06	Revision for STC issuance

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## 1. INTRODUCTION

### 1.1 Purpose

The purpose of this document is to list the data required to support STC installation of the Garmin 500W series GPS/WAAS Nav/Com navigator in accordance with STC SA01933LA requirements, and to list other data associated with the STC which is not required for installation.

### 1.2 Scope

This document applies to the installation of the 500W series units when installed IAW the data listed in this document on the Approved Model List aircraft as defined for this STC. This document includes general installation requirements, special installation instructions, and it provides an index of STC data including both data required for installation and data associated with the STC, but not required for installation. This STC covers both new installations and upgrade installations.

### 1.3 Document Revision

This document shall be released, archived, and controlled in accordance with Garmin document control system. As such when this and other documents are revised, the entire document is revised and the new revision nomenclature is changed on each page of the revised document.

### 1.4 Definitions

The following terminology is used within this document:

- 1) **AC:** Advisory Circular
- 2) **AML:** Approved Model List
- 3) **DER:** Designated Engineering Representative
- 4) **FAA:** Federal Aviation Administration
- 5) **FARs:** Federal Aviation Regulations
- 6) **IAW:** In accordance with
- 7) **STC:** Supplemental Type Certificate
- 8) **TIA:** Type Inspection Authorization

## 2. DATA AND EQUIPMENT LIST REQUIRED FOR INSTALLATION

### 2.1 Data Required for Installation

#### 2.1.1 500W Series Installation Data (New Installations)

All documents listed in Table 1 are required for installation purposes for new installations of the 500W series equipment. All documents must be of the revision listed or later FAA approved revisions.

**Table 1 STC Data (New Installations)**

Mfg.	Doc No.	Rev	Description
Garmin	005-C0221-01	A	500W Series Master Data List (this document)
Garmin	190-00357-65	A	500W Series Instructions for Continued Airworthiness
Garmin	190-00357-02	A	500W Series Installation Manual
Garmin	190-00357-63	A	500W Series AFMS

**2.1.2 500W Series Installation Data (Upgrade Installations)**

All documents listed in Table 2 are required for installation purposes when installing upgraded 500W series equipment in the location in the aircraft where a legacy 500 series unit was installed. Specific instructions for the installation of an upgraded unit is contained in 190-00357-06, STC Upgrade Installation Manual. All documents must be of the revision listed or later FAA approved revisions.

**Table 2 STC Data (Upgrade Installations)**

Mfg.	Doc No.	Rev	Description
Garmin	005-C0221-01	A	500W Series Master Data List (this document)
Garmin	190-00357-65	A	500W Series Instructions for Continued Airworthiness
Garmin	190-00357-06	A	STC Upgrade Installation Manual
Garmin	190-00357-02	A	500W Series Installation Manual
Garmin	190-00357-63	A	500W Series AFMS

**2.1.3 Continued Airworthiness**

Instructions for continued airworthiness are found in Garmin document number 190-00357-65 Instructions for Continued Airworthiness. See Table 1 or Table 2 for document revision.

**2.2 Substantiating Data**

The documents listed in Table 3, or later FAA-approved revisions, contain information related to this STC but are not required for follow-on installations.

**Table 3 Related Data (Substantiating Data)**

Doc No.	Rev	Description
005-00221-12	2	Project Specific Certification Plan (PSCP) for Installation of 400W and 500W Series unit in STC AML
005-00221-13	2	400W and 500W series STC System Accomplishment Summary
005-00221-07	3	400W and 500W series System Safety Assessment
005-00221-16	1	Ground Test Plan
005-00221-17	1	Flight Test Plan
005-00221-75	1	400W/500W Series Model Qualification Process
005-00221-76	1	400W/500W Series Acceptance Analysis for STC AML

## 2.3 Equipment List

All equipment must have the Part Numbers and Software Versions contained in the following table, or later FAA Approved revisions or versions.

Table 4 Required Equipment List

Model	Description	Part Number	Mfg.	Software Ver. (or later FAA approved version)
GPS 500W	GPS Black bezel GPS Gray bezel Upgraded GPS Black bezel Upgraded GPS Gray bezel	011-01062-00 011-01062-10 011-01062-40 011-01062-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GPS 500W TAWS	GPS Black bezel GPS Gray bezel Upgraded GPS Black bezel Upgraded GPS Gray bezel	011-01063-00 011-01063-10 011-01063-40 011-01063-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 530W	GPS Com Nav Black bezel GPS Com Nav Gray bezel Upgraded GPS Com Nav Black bezel Upgraded GPS Com Nav 28V, Black bezel Upgraded GPS Com Nav Gray bezel	011-01064-00 011-01064-10 011-01064-40 011-01064-45 011-01064-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 530W TAWS	GPS Com Nav Black bezel GPS Com Nav Gray bezel Upgraded GPS Com Nav Black bezel Upgraded GPS Com Nav 28V, Black bezel Upgraded GPS Com Nav Gray bezel	011-01065-00 011-01065-10 011-01065-40 011-01065-45 011-01065-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 530AW	GPS Com Nav 28V, Black bezel GPS Com Nav 28V, Gray bezel Upgraded GPS Com Nav 28V, Black bezel Upgraded GPS Com Nav 28V, Gray bezel	011-01066-00 011-01066-10 011-01066-40 011-01066-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4
GNS 530AW TAWS	GPS Com Nav 28V, Black bezel GPS Com Nav 28V, Gray bezel Upgraded GPS Com Nav 28V, Black bezel Upgraded GPS Com Nav 28V, Gray bezel	011-01067-00 011-01067-10 011-01067-40 011-01067-50	Garmin	Main Ver. 2.00 GPS Ver. 2.4

## 3. GENERAL INSTALLATION REQUIREMENTS

### 4. GENERAL

The installation must be done in accordance with all applicable FARs. The installation shall conform to the data listed in Section 2.1, Data Required for Installation with exception of special instructions as defined in Section 5 Special Installation Instructions, which shall have precedence over the data listed in Section 2.1.

#### 4.1 Prerequisite

This 500W Series STC requires a TSO-C144 GPS/WAAS antenna as specified in the 190-00357-02 Installation Manual. This STC does not support mounting installation of these antennas, but this STC does support the operational checks for the GPS/WAAS antenna. For mounting installation of the GPS/WAAS antenna, use STC SA01695SE, follow aircraft manufacturer's installation data, or use other approval method.

## **4.2 Mechanical**

Mechanical installation, wiring, cable bundling and routing, and connections to existing aircraft systems must conform to those specific instructions or requirements found in the STC data. Those aspects of the STC where specific installation instructions or requirements are not provided in the STC data, the installer shall conform to the recommended practices and procedures found in AC 43.13-2A, Chapter 2, Radio Installations, and Chapter 3, Antenna Installations; AC 43.13-1B, Chapter 11, Electrical Systems, Section 3, 4 and 7.

## **4.3 Hardware**

Hardware not supplied with the equipment, or otherwise specified in the appropriate installation manuals or other STC data (ie screws, nuts, tie wrap.... etc) shall be from standard aircraft hardware as described by AC 43.13-1B, Chapter 7, Aircraft Hardware, Control Cables and Turnbuckles.

## **4.4 Wiring**

All wire used in the installation shall be of appropriate standard aircraft quality grade and size as described in AC 43.13-1B, Chapter 11, Sections 5-20.

## **4.5 Circuit Protection**

All 500W series unit modification circuits shall be protected in accordance with AC 43.13-1B, Chapter 11, Section 4, Circuit Protection Devices.

## **4.6 Electrical Load Analysis**

An electrical load analysis shall be performed on each aircraft, as described in AC 43.13-1B, Chapter 11 Section 3. The document P/N 190-00357-02 500W Series Installation Manual provides specifications on the 500W Series power requirements.

## **5. SPECIAL INSTALLATION INSTRUCTIONS**

None

## **6. ADDITIONAL SYSTEM NOTES**

No other system notes.

# 500W Series

## Instructions for Continued Airworthiness

Document Number 190-00357-65 Rev. A

Garmin Ltd. Or its subsidiaries  
c/o Garmin International, Inc.  
1200 E. 151st Street  
Olathe, Kansas 66062 USA

### Record of Revision

Rev.	Date	Description of Change
1	10-19-06	Initial Release
A	11-03-06	Revision for STC Issuance

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## 1. INTRODUCTION

### 1.1 PURPOSE

This document is designed for use by the installing agency of the Garmin Model 500W series GPS/WAAS Nav/Com as Instructions for Continued Airworthiness in response to Federal Aviation regulation (FAR) Part 23.1529, and Part 23 Appendix G. The ICA includes information required by the operator to adequately maintain the Garmin Models 500W series installed under Approved Model List (AML) STC SA01933LA.

### 1.2 Scope

This document identifies the Instruction for Continued Airworthiness for the modification of the aircraft for installation of the Garmin Models 500W series GPS/WAAS Nav/Com installed under Approved Model List (AML) STC SA01933LA.

### 1.3 Document Control

This document shall be released, archived, and controlled in accordance with the Garmin document control system. When this document is revised, refer to Section 2.15 for information on how to gain FAA acceptance or approval and how to notify customers of changes.

### 1.4 Airworthiness Limitations Section

There are no additional Airworthiness Limitations as defined in 14 CFR § 23, Appendix G. G23.4 that result from this modification. The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

### 1.5 Permission to Use Certain Documents

Permission is granted to any corporation or person applying for approval of a Garmin Models 500W series to use and reference appropriate STC documents to accomplish the Instructions for Continued Airworthiness and show compliance with STC engineering data. This permission does not construe suitability of the documents. It is the responsibility of the applicant to determine the suitability of the documents for the ICA.

### 1.6 Definitions

The following terminology is used within this document:

- 1) **AC:** Advisory Circular
- 2) **ACO:** Aircraft Certification Office
- 3) **AEG:** Aircraft Evaluation Group
- 4) **CFR:** Code of Federal Regulations
- 5) **DER:** Designated Engineering Representative
- 6) **FAA:** Federal Aviation Administration

- 7) **IAW:** In Accordance With
- 8) **ICA:** Instructions for Continued Airworthiness
- 9) **MFD:** Multi-Function Display unit
- 10) **PMI:** Primary Manufacturing Inspector
- 11) **POI:** Primary Operations Inspector
- 12) **STC:** Supplemental Type Certificate
- 13) **TC:** Type Certification or Type Certificate
- 14) **TSO:** Technical Standard Order

## 2. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

### 2.1 Introduction

Content, Scope, Purpose and Arrangement:	This document identifies the Instructions for Continued Airworthiness for the modification of the aircraft by installation of the Garmin Models 500W series GPS/WAAS Nav/Com.
Applicability:	Applies to aircraft altered by installation of the Garmin Models 500W series GPS/WAAS Nav/Com.
Definition of Abbreviations:	See Section 1.6
Precautions:	None
Units of measurement:	None
Referenced publications:  (or later FAA approved revisions)	190-00357-02 Rev. A <i>500W Series Installation Manual</i>  005-C0221-01 Rev. A <i>500W Series STC Master Data List</i>
Retention:	This document, or the information contained within, will be included in the aircraft's permanent records.

### 2.2 Description of Alteration

The Garmin Model 500W Series GPS/WAAS Nav/Com unit is a 6 ¼ inch wide panel mounted unit with all the interface connections behind the instrument panel. Installation of the Garmin Model 500W series GPS/WAAS Nav/Com system interfaces, specific for the aircraft installation, is documented in the GNS 500W Series Post-Installation Checkout Log that is retained as part of the aircraft's permanent records. The 500W series units combine a large number of easily acceptable controls to use the color multi-function display, Nav and Com transceiver, GPS/WAAS navigator in a single unit.

## 2.3 Control, Operating Information

See the 500W Series Installation Manual, listed under the reference documentation in paragraph 2.1 of this document, for system operation and self-test information.

## 2.4 Servicing Information

None. In the event of system failure, return the unit to the manufacturer or an approved Garmin repair station.

## 2.5 Periodic Maintenance Instructions

The 500W Series units are designed to detect internal failure. A thorough self-test is executed automatically upon application of power to the units, and built-in test is continuously executed. Detected errors are indicated on the equipment via failure annunciations and maintenance is on-condition.

Operation of the 500W Series unit is not permitted unless an inspection as described in this section has been completed within the preceding 12 calendar months. Conduct a visual inspection on the 500W series unit and its wire harness to insure installation integrity:

1. Inspect the unit for security of attachment.
2. Inspect all knobs and buttons for legibility.
3. Inspect condition of wiring, routing and attachment/clamping.

### 2.5.1 Cleaning the Front Panel

The front bezel, keypad, and display can be cleaned with a soft cotton cloth dampened with clean water. DO NOT use any chemical-cleaning agents. Care should be taken to avoid scratching the surface of the display.

### 2.5.2 Display Backlight

The display backlight lamp is rated by the manufacturer as having a usable life of 20,000 hours. This life may be more or less than the rated time depending on the operating conditions of the 500W series unit. Over time, the backlight lamp may dim and the display may not perform as well in direct sunlight conditions. The user must determine by observation when the display brightness is not suitable for its intended use. Contact the Garmin factory repair station when the backlight lamp requires service.

### 2.5.3 Battery Replacement

The 500W series has an internal keep-alive battery that will last about 10 years. The battery is used for GPS system information. Regular planned replacement is not necessary. The 500W series will display a 'low battery' message when replacement is required. Once the low battery message is displayed, the battery should be replaced within 1 to 2 months.

If the battery is not replaced and becomes totally discharged, the 500W series unit will remain fully operational, but the GPS signal acquisition time may be increased. This acquisition time can be reduced by entering a new seed position each time the unit is powered on. There is no loss of function or accuracy of the 500W series unit with a dead battery.

The battery must be replaced by the Garmin factory repair station or factory authorized repair station.

## 2.6 Troubleshooting Information

If error indications are displayed on the 500W series unit, consult the Troubleshooting section contained in the 500W Series Installation Manual, listed under reference documentation in paragraph 2.1 of this document. The '500W Series Post-Installation Checkout Log' in the aircraft permanent records includes the configuration information for the installation. (See Section 5 in the 500W Series Installation Manual for a sample Log).

## 2.7 Removal and Replacement Information

If the 500W series unit is removed and reinstalled, verify that the 500W series unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

If the 500W series unit is removed for repair and reinstalled, or if the 500W unit is removed and replaced with a different 500W series unit, then follow 'Post Installation Configuration & Checkout Procedures' procedures contained in the 500W Series Installation Manual listed in paragraph 2.1 of this document, and verify the 500W unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

If any work has been done on the aircraft that could affect the system wiring, antenna cable, or any interconnected equipment, verify the 500W series unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

To remove the 500W series unit from the mounting rack, insert a 3/32-inch hex drive tool into the access hole at the bottom of the unit face. Rotate the hex tool counterclockwise until the unit is forced out about 3/8 inches and can be freely pulled from the rack.

The 500W unit is installed in the rack by sliding it straight in until it stops, about 1 inch short of the final position. Insert the hex drive tool into the access hole at the bottom of the unit face. Rotate the hex tool clockwise while pressing on the left side of the bezel until the unit is firmly seated in the rack.

Note: There are no special handling requirements for the 500W series units.

## 2.8 Diagrams

Refer to the 500W Series Installation Manual (listed under reference documentation in section 2.1 of this document) for drawings applicable to this installation. Point to point wiring diagrams are in Appendix H of the 500W Series Installation Manual. Refer to the GNS 500W Series Post-Installation Checkout Log retained in the aircraft permanent for a list of the interfaced equipment. The antenna cables are routed between the 500W series unit and the antenna with disconnects at each unit. The antenna cable typically is routed behind interior panels in the fuselage.

## 2.9 Special Inspection Requirements

None, N/A.

## 2.10 Application of Protective Treatments

None, N/A.

## **2.11 Data Relative to Structural Fasteners**

None, N/A.

## **2.12 Special Tools**

No special tools are required for system checkout. See 500W Series Installation Manual listed in reference documentation in section 2.1 of this document.

## **2.13 Additional Instructions**

None

## **2.14 Overhaul Period**

The system does not require overhaul at a specific time period. Power on self-test and continuous BIT will monitor the health of the 500W series unit. If the unit indicates an internal failure, the unit may be removed and replaced. See troubleshooting section contained in the 500W Series Installation Manual, listed under reference documentation in paragraph 2.1 of this document.

## **2.15 ICA Revision and Distribution**

To revise this ICA, a letter must be submitted to the ACO along with the revised ICA. The ACO will obtain AEG acceptance, and approve any revision to the Airworthiness Limitations Section 1.4. After FAA acceptance/approval, Garmin will release the revised ICA for customer use, and provide any required notification of the revision.

The latest revision of this document will be available on the Garmin website ([www.garmin.com](http://www.garmin.com)). A Garmin Service Bulletin, describing ICA revision, will be sent to dealers if revision is determined to be significant.

## **2.16 Assistance**

Flight Standards Inspectors or the certificate holder's PMI have the required resources to respond to questions regarding this ICA. In addition, the customer may refer questions regarding this equipment and its installation to the manufacturer, Garmin. Garmin customer assistance may be contacted during normal business hours via telephone 913-397-8200 or email from the Garmin web site at [www.garmin.com](http://www.garmin.com).

## **2.17 Implementation and Record Keeping**

Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operator's aircraft maintenance manual and/or the operator's aircraft scheduled maintenance program.



US Department of Transportation  
Federal Aviation Administration

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

Form Approved  
OMB No. 2120-0020 *WKC*

For FAA Use Only

Office Identification

*BOSFSDU-01*

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 form is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make <b>Piper</b>	Model <b>PA-32R-301T</b>
	Serial No. <b>32-57160</b>	Nationality and Registration Mark <b>N531A</b>
2. Owner	Name (As shown on registration certificate) <b>Noble Paul E. jr.</b>	Address (As shown on registration certificate) <b>7 Ridge Rd. Norfolk, MA 02056-1747</b>

3. For FAA Use Only

4. Unit Identification

5. Type

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	<del>XXXXXXXXXXXXXXXXXXXX</del> (As described in item 1 above) <del>XXXXXXXXXXXXXXXXXXXX</del>				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
<b>John E. Sheehan Shoreline Aviation Inc. 93 Old Colony Lane Marshfield, MA 02050</b>	<input checked="" type="checkbox"/> U.S. Certificated Mechanic	<b>A&amp;P16603796IA</b>
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input type="checkbox"/> Certificated Repair Station	
	<input type="checkbox"/> Manufacturer	

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 herein is true and correct to the best of my knowledge.

Date <b>02-24-2005</b>	Signature of Authorized Individual <i>John E. Sheehan</i>
---------------------------	--

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 Fit. Standards Inspector	Manufacturer	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)
	FAA Designee	Repair Station	Person Approved by Transport Canadian Airworthiness Group	
Date of Approval or Rejection <b>2/24/2005</b>		Certificate or Designation No. <b>A&amp;P16603796IA</b>	Signature of Authorized Individual <i>John E. Sheehan</i>	

## 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

*(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

- 1) Installed Precise Flight Inc. Speedbrake 2000 System in accordance with STC SA00762SE and installation manual 08067, rev. C dated 04-16-01.
- 2) Instructions for continued airworthiness are found on the inspection form on page 27 of the above referenced installation manual. This manual was placed with the aircraft records.
- 3) Aircraft equipment list and weight and balance were revised as required.

----- E N D -----

Additional Sheets Are Attached

2001B2221  
FSR

~~577 5154~~ ~~NE03200104814~~

U.S. Department of Transportation Federal Aviation Administration	<b>MAJOR REPAIR AND ALTERATION</b> <b>(Airframe, Powerplant, Propeller, or Appliance)</b>	For FAA Use Only
		Office Identification <b>NE-03</b>

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$ 1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

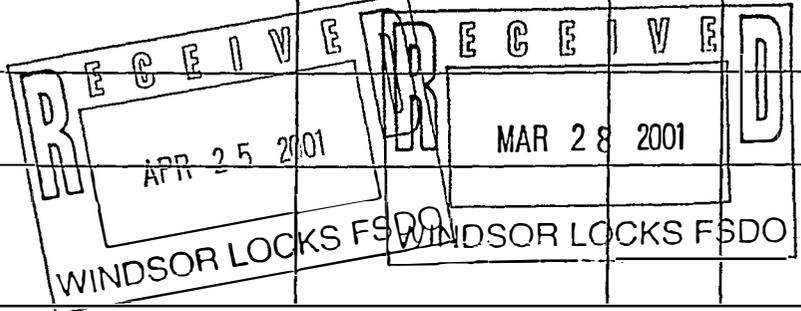
1. Aircraft	Make <b>PIPER</b>	Model <b>PA32R-301T</b>
	Serial No. <b>3257160</b>	Nationality and Registration Mark <b>N531A</b>
2. Owner	Name (As shown on registration certificate) <b>Paul E Noble Jr</b>	Address (As shown on registration certificate) <b>7 Ridge Road Norfolk, MA 02056-1747</b>

**3. For FAA Use Only**

THE DATA IDENTIFIED HEREIN COMPLIES WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS AND IS APPROVED ONLY FOR THE ABOVE DESCRIBED AIRCRAFT SUBJECT TO A CONFORMITY INSPECTION BY A PERSON AUTHORIZED IN FAR SECTION 43-7

NE-FSDO-03 APPROVING INSPECTOR *[Signature]* DATE **APR 17 2001**

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
<b>AIRFRAME</b>	<b>(As described in Item 1 above)</b>				<b>X</b>
<b>POWERPLANT</b>					
<b>PROPELLER</b>					
<b>APPLIANCE</b>	Type				
	Manufacturer				



**6. Conformity Statement**

A. Agency's Name and Address <b>Columbia Air Services, Inc. 175 Tower Ave Groton-NewLondon Arpt Groton, CT 06340 CRS# S05R204N</b>	B. Kind of Agency <input type="checkbox"/> U. S. Certified Mechanic <input type="checkbox"/> Foreign Certified Mechanic <input checked="" type="checkbox"/> Certified Repair Station <input type="checkbox"/> Manufacturer	C. Certificate No. <b>CRS# S05R204N RADIO CLASS I,II,III</b>
---	--	---

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 herein is true and correct to the best of my knowledge.

Date <b>30-March-2001</b>	Signature of Authorized Individual <b>Christopher J Bergman</b> <i>[Signature]</i>
------------------------------	---

**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 Fit. Standards Inspector	Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee <input checked="" type="checkbox"/>	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <b>4-18-01</b>	Certificate or Designation No. <b>S05R204N</b>	Signature of Authorized Individual <i>[Signature]</i>		

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## 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 (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

**N531A PIPER PA32R-301T 3257160**

Installed B.F. Goodrich Skywatch system consisting of the SkyWatch Processor P/N 805-10800-001, and Skywatch Antenna P/N 805-10890-001. This system was installed in reference to the B.F. Goodrich SkyWatch installation manual P/N 009-10800-001 REV B dated May 12, 2000, AC43.13-1B chpt 7 sec 1-5 and chpt 10 and 11, AC43.13-2A chpt 1 and 3, and in reference to B.F. Goodrich STC# SA00733CH of a like system installed in a Beech 58P; 58TC. A copy of the FAA approved flight manual supplement dated APR 17 2001 has been provided for the aircraft. This unit is coupled to the existing aircraft heading system, audio panel, #1 and #2 GNS-430's, Aircraft altitude reporting system, aircraft suppression bus, squat switch and gear position systems. B.F. Goodrich TRC497 meets TSO C147.  
B.F. Goodrich NY164 meets TSO C118.

This system requires on condition repairs only.

Full electrical load does not exceed 80% of the aircraft electrical system capacity as described in AC43.13-1B section 11-33 and 11-35.

The aircraft's weight and balance/equipment list has been revised.

-----END-----

ADDITIONAL SHEETS ARE ATTACHED

3454 NE03200104848

GLS

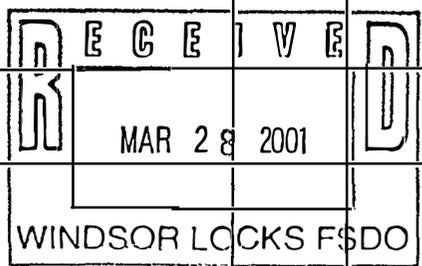
U.S. Department of Transportation  Federal Aviation Administration	<b>MAJOR REPAIR AND ALTERATION</b> <b>(Airframe, Powerplant, Propeller, or Appliance)</b>	For FAA Use Only Office Identification <b>NE-FSDO:03</b>
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INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$ 1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

<b>1. Aircraft</b>	Make <b>PIPER</b> Serial No. <b>3257160</b>	Model <b>PA32R-301T</b> Nationality and Registration Mark <b>N531A</b>
<b>2. Owner</b>	Name (As shown on registration certificate) <b>Paul E Noble Jr</b>	Address (As shown on registration certificate) <b>7 Ridge Road          Norfolk, MA 02056-1747</b>

**3. For FAA Use Only**

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
<b>AIRFRAME</b>	_____ (As described in Item 1 above) _____				<b>X</b>
<b>POWERPLANT</b>					
<b>PROPELLER</b>					
<b>APPLIANCE</b>	Type				
	Manufacturer				



**6. Conformity Statement**

<b>A. Agency's Name and Address</b> Columbia Air Services, Inc. 175 Tower Ave Groton-NewLondon Arpt Groton, CT 06340 CRS# SO5R204N	<b>B. Kind of Agency</b> <input type="checkbox"/> U. S. Certified Mechanic <input type="checkbox"/> Foreign Certified Mechanic <input checked="" type="checkbox"/> Certified Repair Station <input type="checkbox"/> Manufacturer	<b>C. Certificate No.</b> CRS# SO5R204N RADIO CLASS I, II, III
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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 herein is true and correct to the best of my knowledge.

<b>Date</b> 30-March-2001	<b>Signature of Authorized Individual</b> Christopher J Bergman
------------------------------	--

**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	<input type="checkbox"/> FAA Fit. Standards Inspector <input checked="" type="checkbox"/> FAA Designee	<b>X</b>	Manufacturer Repair Station	Inspection Authorization Person Approved by Transport Canada Airworthiness Group	Other (Specify)
<b>Date of Approval or Rejection</b> 30-March-2001		<b>Certificate or Designation No.</b> SO5R204N		<b>Signature of Authorized Individual</b> John R Shields	

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## 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** (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

**N531A PIPER PA32R-301T 3257160**

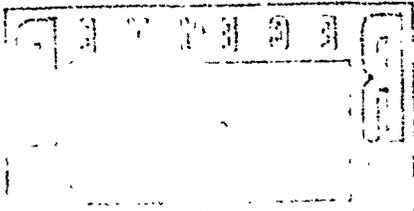
Installed and tested B.F. Goodrich WX-500 Stormscope consisting of the Processor P/N 805-11500-001 and NY-163 Antenna P/N 805-10930-001 in reference to the B.F. Goodrich installation manual P/N 009-11500-001 REV C, dated Oct 20, 2000, AC43.13-1B chpt 7 sec 1-5 chpt 10 and 11, and AC43.13-2A chpt 1, and 3. Coupled to existing aircraft heading system, and #1 and #2 GNS-430's.  
B.F. Goodrich WX-500 meets TSO-C110a.

This system requires on condition repairs only.

Full electrical load does not exceed 80% of the aircraft electrical system capacity as described in AC43.13-1B section 11-33 and 11-35.

The aircraft's weight and balance/equipment list has been revised.

-----END-----



ADDITIONAL SHEETS ARE ATTACHED



## APPLICATION FOR AIRWORTHINESS CERTIFICATE

**INSTRUCTIONS - Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use attachment. For special flight permits complete Sections II and VI as applicable.**

<b>I. AIRCRAFT DESCRIPTION</b>	1. REGISTRATION MARK <b>N531A</b>	2. AIRCRAFT BUILDER'S NAME (Make) <b>PIPER</b>	3. AIRCRAFT MODEL DESIGNATION <b>PA-32R-301T</b>	4. YR. MFR. <b>2000</b>	FAA CODING <b>7103220</b> <b>41533</b>
	5. AIRCRAFT SERIAL NO. <b>3257160</b>	6. ENGINE BUILDER'S NAME (Make) <b>LYCOMING</b>	7. ENGINE MODEL DESIGNATION <b>TIO-540-AH1A</b>		
	8. NUMBER OF ENGINES <b>1</b>	9. PROPELLER BUILDER'S NAME (Make) <b>HARTZELL</b>	10. PROPELLER MODEL DESIGNATION <b>HC-I3YR-1RF</b>	11. AIRCRAFT IS (Check if applicable) <input type="checkbox"/> EXPORT <input checked="" type="checkbox"/> IMPORT	

<b>II. CERTIFICATION REQUESTED</b>	APPLICATION IF HEREBY MADE FOR: (Check applicable items)																													
	<b>A</b>	<b>1</b>	<input checked="" type="checkbox"/>	STANDARD AIRWORTHINESS CERTIFICATE (Indicate category)			<input checked="" type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
	<b>B</b>	SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)																												
	<b>N/A</b>	<b>2</b>	LIMITED																											
		<b>5</b>	PROVISIONAL (Indicate class)										<b>1</b>	CLASS I					<b>2</b>	CLASS II										
			<b>3</b>	RESTRICTED (Indicate operation(s) to be conducted)										<b>1</b>	AGRICULTURE AND PEST CONTROL					<b>2</b>	AERIAL SURVEYING					<b>3</b>	AERIAL ADVERTISING			
		<b>4</b>												FOREST (Wildlife conservation)					<b>5</b>	PATROLLING					<b>6</b>	WEATHER CONTROL				
		<b>7</b>												CARRIAGE OF CARGO					<b>0</b>	OTHER (Specify)										
		<b>4</b>	EXPERIMENTAL (Indicate operation(s) to be conducted)										<b>1</b>	RESEARCH AND DEVELOPMENT					<b>2</b>	AMATEUR BUILT					<b>3</b>	EXHIBITION				
													<b>4</b>	RACING					<b>5</b>	CREW TRAINING					<b>5</b>	MKT SURVEY				
<b>8</b>		SPECIAL FLIGHT PERMIT (Indicate operation to be conducted, then complete Section VI or VII as applicable on reverse side)										FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE OR STORAGE																		
	EVACUATE FROM AREA OF IMPENDING DANGER																													
	OPERATION IN EXCESS OF MAXIMUM CERTIFICATED TAKE-OFF WEIGHT																													
	<b>4</b>											DELIVERING OR EXPORT					<b>5</b>	PRODUCTION FLIGHT TESTING												
<b>6</b>	CUSTOMER DEMONSTRATION FLIGHTS																													
<b>C</b>	<b>6</b>	<input type="checkbox"/>																												
MULTIPLE AIRWORTHINESS CERTIFICATE (Check ABOVE "Restricted Operation" and "Standard" or "Limited" as applicable.)																														

<b>III. OWNER'S CERTIFICATION</b>	A. REGISTERED OWNER (As shown on certificate of aircraft registration)															IF DEALER, CHECK HERE <input checked="" type="checkbox"/>						
	NAME <b>THE NEW PIPER AIRCRAFT, INC.</b>										ADDRESS <b>2926 PIPER DRIVE, VERO BEACH, FL 32960</b>											
	B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)																					
	<input checked="" type="checkbox"/>	AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) <b>A3SO REV 26</b>										<input checked="" type="checkbox"/>	AIRWORTHINESS DIRECTIVES (Check if all applicable AD's complied with and give latest AD no.) <b>2000-13</b>									
	AIRCRAFT LISTING (Give page number(s)) <b>N/A</b>										SUPPLEMENTAL TYPE CERTIFICATE (List number of each STC incorporated) <b>N/A</b>											
C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS																						
<input checked="" type="checkbox"/>	CHECK IF RECORDS IN COMPLIANCE WITH <del>FAR 91.417</del> FAR 91.417										TOTAL AIRFRAME HOURS <b>6.3</b>					<b>3</b>	EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) <b>N/A</b>					
D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Section 501 of the Federal Aviation Act of 1958, and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.																						
DATE OF APPLICATION <b>JUL 19 2000</b>					NAME AND TITLE (Print or type) <b>JOHN S. HAMBLETON AGENT</b>										SIGNATURE <i>John S. Hambleton</i>							

<b>IV. INSPECTION AGENCY VERIFICATION</b>	A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY (Complete this section only if FAR 21.183(d) applies).																						
	<b>2</b>	FAR PART 121 or 127 CERTIFICATE HOLDER (Give Certificate No.)										<b>3</b>	CERTIFICATED MECHANIC (Give Certificate No.)					<b>6</b>	CERTIFICATED REPAIR STATION (Give Certificate No.)				
	<b>2</b>	AIRCRAFT MANUFACTURER (Give name or firm)																					
DATE					TITLE										SIGNATURE								

<b>V. FAA REPRESENTATIVE CERTIFICATION</b>	(Check ALL applicable blocks in items A and B)															<input checked="" type="checkbox"/> THE CERTIFICATE REQUESTED										
	A. I find that the aircraft described in Section I or VII meets requirements for															<b>4</b>	AMENDMENT OR MODIFICATION OF CURRENT AIRWORTHINESS CERTIFICATE									
	B. Inspection for a special flight permit under Section VII was conducted by															FAA INSPECTOR					FAR DESIGNEE					
																CERTIFICATE HOLDER UNDER					FAR 65   FAR 121, 127 OR 135   FAR 145					
DATE <b>JUL 19 2000</b>					DISTRICT OFFICE <b>CE44</b>					<b>4</b>	DESIGNEE'S SIGNATURE AND NO. <i>[Signature]</i> <b>K.S. MC GLOTHLIN DOA SO-1</b>					<b>1</b>	FAA INSPECTOR'S SIGNATURE									

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VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER						
	NAME		ADDRESS				
	B. PRODUCTION BASIS <i>(Check applicable item)</i>						
	<input type="checkbox"/> PRODUCTION CERTIFICATE <i>(Give production certificate number)</i> <input type="checkbox"/> TYPE CERTIFICATE ONLY <input type="checkbox"/> APPROVED PRODUCTION INSPECTION SYSTEM						
	C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS <span style="float: right;">—————→</span>						
DATE OF APPLICATION		NAME AND TITLE <i>(Print or type)</i>	SIGNATURE				
VIII. AIRWORTHINESS DOCUMENTATION <small>(FAA use only)</small>	A. DESCRIPTION OF AIRCRAFT						
	REGISTERED OWNER		ADDRESS				
	BUILDER (Make)		MODEL				
	SERIAL NUMBER		REGISTRATION MARK				
	B. DESCRIPTION OF FLIGHT						
	CUSTOMER DEMONSTRATION FLIGHTS <input type="checkbox"/> <i>(Check if applicable)</i>						
	FROM		TO				
	VIA	DEPARTURE DATE	DURATION				
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT						
	<input type="checkbox"/>	PILOT	<input type="checkbox"/>	CO-PILOT	<input type="checkbox"/>	NAVIGATOR	<input type="checkbox"/>
D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS							
E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION <i>(Use attachment if necessary)</i>							
F. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Section 501 of the Federal Aviation Act of 1958, and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is airworthy for the flight described.							
DATE		NAME AND TITLE <i>(Print or type)</i>			SIGNATURE		
VIII. AIRWORTHINESS DOCUMENTATION <small>(FAA use only)</small>	<input checked="" type="checkbox"/>	A. Operating Limitations and Markings in Compliance with FAR 91.9 <del>91.9</del> as Applicable			G. Statement of Conformity, FAA Form 8130-9 <i>(Attach when required)</i>		
	<input type="checkbox"/>	B. Current Operating Limitations Attached			H. Foreign Airworthiness Certification for Import Aircraft <i>(Attach when required)</i>		
	<input type="checkbox"/>	C. Data, Drawings, Photographs, etc. <i>(Attach when required)</i>			I. Previous Airworthiness Certificate Issued in Accordance with		
	<input checked="" type="checkbox"/>	D. Current Weight and Balance Information Available in Aircraft			FAR	CAR	<i>(Original Attached)</i>
	<input type="checkbox"/>	E. Major Repair and Alteration, FAA Form 337 <i>(Attach when required)</i>			J. Current Airworthiness Certificate Issued in Accordance with		
	<input checked="" type="checkbox"/>	F. This inspection Recorded in Aircraft Records			FAR	21.183 (a) per 21.273 <i>(Copy attached)</i>	

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UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION--FEDERAL AVIATION ADMINISTRATION  
**STANDARD AIRWORTHINESS CERTIFICATE**

1. NATIONALITY AND REGISTRATION MARKS	2. MANUFACTURER AND MODEL	3 AIRCRAFT SERIAL NUMBER	4. CATEGORY
N531A	PIPER PA-32R-301T	3257160	NORMAL

5. AUTHORITY AND BASIS FOR ISSUANCE

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

Exceptions:

NONE

6. TERMS AND CONDITIONS

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

DATE OF ISSUANCE JUL 19 2000	FAA REPRESENTATIVE  K.S. MC GLOTHLIN	DESIGNATION NUMBER DOA SO-1
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Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding \$1,000, or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.

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