# Restoration of CULVER CADET NC 32482 Mgf. 1941

by
Ed Byars
and
Jerry Reider

**Seneca, SC 2002-2005** 

# CULVER A/C LOG BOOK ENTRY 10/20/05

CULVER A/C LUG BOOK ENTRY 10/20/05
Culver Restoration (NC32482):
NC 32482 Serial: #215 TT: 1736:85 Tach: 01.2hrs. rev. 10
All fabric covering on wings, fuselage, and tail surfaces removed.
A): Wing spars and all supporting structure meticulously inspected. All diagonal steel drag structure stripped and primed. Minor wood repairs made to wood on non-structural fairings in wing root area. Allerons stripped, inspected, primed and prepared for recover. All fittings and hardware stripped, inspected, and primed. All
plywood areas sanded, inspected, and varnished.
B): Fuselage wood surfaces sanded, inspected internally and on all outer surfaces and varnished.
C): Tail surfaces similarly prepared. Elevator trim system removed disassembled cleaned and lubricated. New tri
cable installed IAW AC 43.13-1-B Chapter 7 Section 8.
D): Entire aircraft recovered with Poly-Fiber Process (2.6 oz medium weight fabric and finished in Aerothane
(#120 Daytona White and #191 Pontiac Red) in accordance with STC No. SA-1008-WE, reissued 60ct 1992
and approved for the Culver. All work, finishing, taping, was in strict accordance with Poly Fiber instructions.
Paint scheme is original Culver. See FAA Form 337 for details.  E): Interior panels were removed and replaced with 1/16" varnished White Birch plywood (Aircraft grade).
F): Instrument panel (wood) was removed and replaced with new 0.060" 2024T3 aluminum panel covered with
1/64" white birch veneer.
G): All instruments removed and overhauled or replaced with new (with proper internal markings). New Microair
Radio and Transponder/encoder installed. See Form 337 for this installation.
H): All landing gear mechanism removed, stripped, cleaned, repainted, lubricated, reinstalled, adjusted, safetied
inspected, and cycled for correct operation. All associated AN hardware replaced with new.
I): Replaced all electrical wiring in cabin, engine compartment, wings, and fuselage with new wire and connectors
Installed all new switches and circuit breakers IAW AC 43.13-18 Chapter 11 Sections 1,3,4,5, and 8.
J): Wheels, brakes, struts, and C springs removed, disassembled, cleaned, inspected, repainted, parts replaced
as necessary, reassembled, and adjusted. New tires and tubes installed. All brake lines replaced with new.
Master brake cylinders overhauled. Cleveland kit 100-102 installed. See FAA Form 337 for same.
K): Replaced all control cables and associated hardware in rudder system including steerable tailwheel system.
L): Installed new Strobe light on fuselage bottom. See Form 337 for same.
M): Fabricated and installed top rear and bottom wing root fairings.
N): Install new windshield and glare shield.
O): Repaired and recontoured as necessary both doors and installed new windows therein.
P): Fabricated and installed new top and bottom engine cowls with new hardware IAW AC43.13-1B Chap.3 Sec
Q): Installed new Concorde RG-25 Battery IAW AC43,13-1B Chap 11 Section 2
R): Installed new approved replacement seatbelts and shoulder harnesses IAW AC43.13-1B Chap 9 Section 4
5): Installed new leather seat bottoms with Temper Foam and new leather seat back with approved materials
IAW FAR 25.853 (a) Appendix F Part I (a) (1) (ii).
T): Weighed A/C.EW=921# Calculated cg =18.6", within limits. Copy of W&B dated 5-14-05 placed in A/C.
U): Completed an annual inspection per FAR 43 Appendix D checklist. Checked ELT IAW 91.207, replaced
batteries, due 1/12. Checked Ads through 2005-19, CW 76-07-12 Bendix switches by functional check, next
due 101.2. Post maintenance operational checklist complete.
I certify this aircraft has been inspected IAW an annual inspection and was found to be in airworthy condition.

\_\_Date:\_\_\_\_

John R. Van Surdam IA238040196AP

# CULVER ENGINE LOG BOOK ENTRY 10/20/05

|--|

Tach: 01.2hrs TT:928.7hrs SMOH:382.7hrs

- A): Installed all new Exhaust system with new Blo-Proof gaskets and new Carb Heat and Cabin Heat muffs.
- B): Replaced with new all fuel and oil hoses.
- C): Replaced with new all control housings and cables including Throttle, Mixture, Carb. Heat, and Cabin Heat. Installed new Cabin Heat air box and diffuser.
- D): Replaced with new all SCAT ducts.
- E): Replaced with new all instrument hoses.
- F): Install all new spark plugs.
- G): Installed New left magneto (Slick Model 4301)
- H): Installed new engine mount. (by Kosola)
- I): Installed new engine mount bushings
- J): Performed 100 hr inspection: Compression test: #1 80/70 #2 80/76 #3 80/75 #4 80/74 . Checked timing. Changed oil. 4 qts. Aero Shell 100Plus. Cleaned screens.
- K): Installed new B&C Specialty Products Model BC320 Starter IAW B&C Approved Model List (STC#) SE00145 WI issued Mar.28, 1994. See Form 337. Installed new B&C alternator. See FAA Form 337
- L): Installed overhauled McCauley propeller Model 1A90 IAW AC43.13-1-B Chapter 8 Sections 5 and 6.
- I certify that this engine has been inspected IAW a 100 hour inspection and AC43.13 1-B Chapter 8 Sections 1 and 3 and was found to be airworthy.

Date:

Edward F. Byars A&P # 248-28-9428

## AVIONICS

US Department of Transportation Federal Aviation

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

Form Approved OMB No. 2120-0020

For FAA Use Only

Office Identification

Administration

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43. Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in civil penalty not to exceed \$1,000 for each such violation (Continued and Aviation Act of 1969).

for	each such	violation (Section 9	01 Federal Aviation Act	of 1958	3).							
		<b>Make</b> Culver					Model LCA					
1. Ai	rcraft	Serial No. 215	A - Male - L - Carlotte - Carlott		Nationality and Registration Mark N32482							
		Name (As shown	on registration certifical	te)	<del></del>		Address (A	s shown on registr	ation certif	icate)		
2. O	wner	ECHO DELTA	•	,	3511 SILVERSIDE RD STE 105 WILMINGTON DE 19819-4902							
		<u> </u>			3. F	or FAA Use Or	nly					
		require confor	ata/ <del>alteration</del> identi ements and is appro emity inspection by 1.4. 2005	word at	ntvi ti	authorized in	FAR 43,	section 43.7.	filness t to			
			Date		4. U	nit Identificati	re of EAA on	<u> </u>		5. Type	****	
Unit Make						Model		Serial No	).	Repair	AI	
AIRF	RAME		(	'As des	cribed	d in Item 1 abo	ve)					
POW	/ERPLANT										And the second section of the second	
PRO	PELLER											
APPLIANCE		Туре							The second secon			
AFT	LIANCE	Manufacturer					C Springer Avenue A					
				6	. Cor	nformity State	ment					
A. A	gency's Na	ime and Address			В. К	and of Agency			C. Certif	ficate No.		
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	)1 RUDDE ENECA SC				Certificated Repair Station							
D	have bee	n made in accordar	or alteration made to the nce with the requiremen correct to the best of my	ts of Pa	ırt 43	of the U.S. Fed					eto	
Date GC	TOBER 1	1,2005			Sigr	nature of Autho	rized Individu	ial Short	13 Br	32 × ×		
	41-41-14-14-14-14-14-14-14-14-14-14-14-1			7. Ap	prova	i for Return T	o Service					
			ersons specified below, ation Administration and			itified in item 4 $\mathbb{I}_{\mathbf{x}}$ APPROVE		ed in the manner pr EJECTED	escribed b	y the		
DV.	1 1 1 1 1 1	Fit. Standards ector	Manufacturer	X	Inspection Authorization Other			Other (Specify	Other (Specify)			
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## BACK OF AVONICS FORM 337

### 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. 0	Description of Work Accomplished  (If more space is required, attach additional sheets, Identify with aircraft nationality and registration mark and date work completed.)  A/C Make: Culver Model: LCA S/N 215 Reg. # N32482
	Revision: Date: System: System:
	1. Installed Microair Transceiver, Transponder, Transponder antenna, and Ameri-King Encoder and removed Terr Transceiver from N 32482, a Culver LCA, sn 215.
	<ol> <li>Removed Terra 720 Transceiver from instrument sub panel at Station +4.</li> <li>Installed Microair Avionics 760 channel VHF Transceiver in lower sub panel at Station +4 IAW manufacturer's installation instructions revision K01/2000.</li> <li>Installed Microair Avionics T2000SLF Transponder in lower sub panel at Station +4 IAW T2000 Installation</li> </ol>
	Manual V23.doc23rd August 2003. Installed Ameri-King Altitude Encoder Model AK-350 behind sub panel at station +4 IAW Section II of
	Manufacturer's Installation Manual IM-3501001 rev.2.3 21/11/03.  Installed Microair Transponder Antenna in lower fuselage aluminum panel at station -7.  Installed new 10 amp Switch/Circuit Breaker labeled <i>Avionics Master</i> in instrument panel, between the units an the 12 V bus. All work was performed IAW AC43.13-1B Chapter 11, Sections 1,3 & 4. Wire gage determined from
	Section 5. Installations were made prior to and are reflected in the weight and balance of aircraft dated May 14, 2005 a copy of which was placed in the aircraft and an entry of same made in the aircraft log.
	3. Controls all both installed units are operated by knobs and buttons from the front faces of the units and are in easy reach.
	4. Servicing information is n/a
	5. Normal operation should be assured at each annual inspection. Transponder required to be certified biannual
	6. Trouble shooting information is n/a.
	7. For removal and/or replacement refer to manufacturer's installation manual revision K01/2000 section 6 and T2000V28.
	8. Diagrams of the installation are not required
	9. There are no special inspection requirements.
	10. Protective treatments is n/a
	11. The structural fasteners are n/a
	12. Special tools are not required.
	13. Commuter Aircraft is n/a
	14. There are no recommended overhaul periods.
	15. There are no additional airworthiness limitations.
	16. For revision of this ICA, a letter will be submitted to the local FSDO with a copy of the revised form 337 and revised ICA. The FAA inspector accepts the change by signing block 3 and including the following statement: Ma alterations have been accepted by the FAA superceding the instructions for Continued Airworthiness. Once the revision has been accepted, a maintenance entry will be made identifying the revision, its location, and a date on the form 337.
	END
1	

☐ Additional Sheets Are Attached

US Department of Transportation
Federal Aviation

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

Form App	Form Approved										
OMB No	. 21	20-00	)20								
	Ear	EAA	160	Ont							

Office Identification

		Make				Model						
1. Aircr	aft	CULVER				LCA						
		Serial No. 215				Nationality and Registration Mark N32482						
		Name (As shown	on registration certific	cate)				shown on registra	tion certit	icate)		
. Own	er	ECHO DELTA	<u>-</u>	,		351	1 SI	LVERSIDE RD	STE 1	•		
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h	ave been	made in accordar	ir alteration made to it ice with the requirement correct to the best of i	ents of Pa	art 43	fied in item 4 above ar of the U.S. Federal Avia	nd de ition R	scribed on the rev Regulations and the	erse or at at the info	tachments her rmation	eto	
Date			· · · · · · · · · · · · · · · · · · ·		Sign	ature of Authorized Indi	vidua	<u> </u>				
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	<del></del>	*		7. Ap	prova	for Return To Service	:e		• • • • • • • • • • • • • • • • • • • •	*		
Pursu Admir	ant to th	e authority given po of the Federal Avia	ersons specified belo tion Administration ar	w, the un	it iden	ified in item 4 was insp APPROVED	ected REJ	in the manner pre ECTED	scribed b	y the		
BY	FAA Inspe	Fit. Standards	Manufacturer	x	Insp	ection Authorization	Other (Specify)			120000000000000000000000000000000000000		
	FAA	Designee	Repair Station			on Approved by Transp ada Airworthiness Grou						
Date of	Approva	l or Rejection	Certificate or		Sigr	ature of Authorized Indi	vidua	ALC V		///		
		2005	Designation No.		1			11/1	, /	91		

# BACIL OF BRAKES 337 FORM

#### NOTICE

Revision:	Date:	System:	
1. Removed OEM I Culver LCA, sn 215	Expander tube hydrau 5	ilic brake sysem and Instal	led STC Cleveland Conversion Kit 199-102 on N32482, a
2.Removed origina	l expander tube hydra	iulic brakes, 5.00-4 tires an	nd 4.00 wheels.
Retained original	master brake cylinde	rs and toe pedals.	
Installed Clevelar Drawing 50-76 date	nd Kit 100-102 IAW C ed 5-28-51 with 5,00-5	leveland Product Reference	e Memo 13A released Nov 4 1987 rev A July 1 1995 and
New Cleveland t	orque plates bolted di	irectly on Culver axle flange	es.
Calipers mounted	d forward for clearance	e.	
Landing gear, aft	er new tires installed :	and inflated, were retracted	d to insure wheel well clearance.
Conditioning proc	cedure for linings was	sure proper operation. performed in accordance i	with PRM 13A nage 1
Engineering anal	ysis was made to just	tify choice of Cleveland kit	used. The brake system meets the minimum brake
deceleration requ	irement of 10 ft/sec/s	ec as shown on Cleveland	dwg. 33269.
3.Toe pedal contro	ls were verified adequ	uate for full power run up ar	nd for normal differential braking control.
4 Servicing of fluid	d reservoir was done	at inetallation and should b	e repeated at each annual inspection and at other times if
braking power is de	egraded.	at installation and should b	e repeated at each annual inspection and at other times if
5: Maintenance Ins	structions: As needed	and at each annual inspec	tion.
6: Trouble Shooting necessary for prop	g Information: Inspect er operation.	t reservoir fluid level, calipe	er leakage, wheel bearing lubication, and lining thickness as
7. Removal and re Chapter 9 Section	placement must be do 1 and 2.	one in accordance with Cle	veland Product Reference Memo 73 and 13A and AC 43.13
8: Diagrams of the	installation are not re	quired.	
9. There are no sp	ecial inspection requir	rements	
10. Protective treat	tments is N/A.		
11. Structural faste	eners are N/A		
12. Special tools a	re not required.		
13. Commuter airc	raft is N/A		
14. There are no re	ecomended overhaul	periods.	
15. There are no a	dditional airworthines:	s limitations	
FAA inspector acc by the FAA superc	epts the change by si reding the instructions	gning block 3 and including	SDO with a copy of the revised form 337 and revised ICA. The property of the following statement: <i>Major alterations have been accepted</i> , a maintenance en form 337

US Department
of Tiransportation
Facilitate Aviation

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

Form Approved OMB No. 2120-0020

For FAA Use Only
Office Identification

Federal Aviation
Adversinistration

		Federal Aviation Ad										
	Make CULVER				Model 147A							
, Ajarcraft	Serial No.				Nationalii N3248	y and Registration M	ark	entantiari e e e e e e e e e e e e e e e e e e e	**************************************			
	Name (As shown o	n registration certific	ate)	<del></del>			ation certif	icate)				
. Owner	EDRO DELLA EL		<del>-</del> /		Address (As shown on registration certificate)  3511 SILVERSIBE RD STELLS WILMINGTON DE 19219-4913							
				3. F	or FAA Use Only							
								-				
				4. U	nit Identification			5. Type	[			
Unit	Ma	nke			Model	Serial No	D.	Repair	Alteration			
NRF RAME (As des				scribe	d in Item 1 above) ———				X			
POWERPLANT												
PROPELLER												
APPLIANCE	Туре											
	Manufacturer											
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have bee	· · · · · · · · · · · · · · · · · · ·	e with the requireme	ents of P	art 43	itified in item 4 above an of the U.S. Federal Aviat				reto			
Date OCTOBER 1	9-2335		yan dagi ga (a 3 m da ) dag	Signature of Authorized Individual  EDWARD F BYARS Zam 7817am								
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	he authority given pe r of the Federal Aviat		w, the ur		ntified in item 4 was inspe		rescribed I	by the				
	A Fit. Standards sector	Manufacturer	1 1	Inspection Authorization Other (Specify			(y)					
i 1 i	\ Designee	Repair Station			rson Approved by Transp nada Airworthiness Grou							
Date of Approv	ral or Rejection	Certificate or Designation No		Siç	nature of Authorized Indi	vidual // //		1/				

# BACK OF FABRIC 337 FORM

#### NOTICE

8. Description of Work Accomplished
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 Poly-Fiber covering materials IAW STC SA1008WE on N32482, a Culver
LCA, sn 215. The fabric used was 2.7 oz. All work was performed IAW the Poly-Fiber
Application Manual. A new weight and balance was performed and is dated May 15,
2005.
2003.
TAUD.
END
Additional Sheets Are Attached



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

Form Approved OMB No. 2120-0020

For FAA Use Only

Office Identification

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

fo	reach such	violation (Section	901 Federal Aviation A	ct of 19	19 0.3.C. 1421). Failt 58).	ire to report of	can result in civil pe	enalty not t	to exceed \$1,0	000	
		Make CULVER				Model LCA	* · · · · · · · · · · · · · · · · · · ·				
1. A	ircraft	<u> </u>									
		Serial No. 215				Nationality and Registration Mark					
			n on registration certifi	note l		N32482					
		ECHO DELTA		cate)			s shown on registr				
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	Offic		Make		Model		Serial No	•	Repair	Alteration	
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POW	/ERPLANT										
PRO	PELLER										
		Туре							<del>                                     </del>		
APP	LIANCE										
		Manufacturer									
				•	6. Conformity Statem	ent			<u> </u>	i	
A. A	gency's Nar	ne and Address			B. Kind of Agency			C. Certifi	cate No.		
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	1 RUDDEF NECA SC				Foreign Certifica	ted Mechanic					
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Date			~ ·······	~~	Signature of Authoriz	red Individua	7				
oc.	TOBER 19	2005			EDWARD F BYAR	ıs .	E. J RE	Pan	the		
					proval for Return To						
Pui Adi	rsuant to the ministrator o	e authority given po of the Federal Avia	ersons specified below ition Administration and	/, the uni d is	t identified in item 4 wa $\overline{\mathbb{Q}}$ APPROVED	as inspected □ REJ	in the manner pres	scribed by	the		
BY	FAA I Inspe	It. Standards ctor	Manufacturer	х	Inspection Authoriza	tion	Other (Specify)				
D-+		Designee	Repair Station		Person Approved by Canada Airworthines	Transport s Group					
vate	or Approval	or Rejection	Certificate or Designation No.		Signature of Authoriz	ed Individua	1	27 P.	.71		
0C	TOBER 19	2005	238040196		JOHN R VAN SU	RDAM	A.K.	In.			

## BACK OF ALTENIATOR 377 FORM

#### NOTICE

Revision:	Date:	System:	
1.Installed B&C M	odel 200G Alternator,	B&C Model PMR1-14 Regulator,	OVM-14 over voltage module and 10KuF capicitor o
		r and Regulator in N32482, a Culv	
over voltage modu	ile and 10KuF capicito	or IAW with manufacturer's Drawin	lel 200G Alternator, Model PMR1-14 Regulator, OVM ng 504-500 and Instructions. Wiring was replaced wit 0/9/03) and N72182 (8/27/03). Both aircraft had C-85
Installation was	done prior to and is	reflected in the weight and ba	alance of the aircraft dated May 14, 2005.
Installation was	referenced in engin	e log.	
3. Controls rema	ained unchanged		
4. Servicing info	ormation is n/a		
backlash per Co housing that rota required parts p components req	ontinental service in ates with the gear. I er Continental servi juire no recurrent m	structions. This may be done l The drive gear assembly may ce instructions. Refer to Conti	ss the drive gear assembly should be checked by manual manipulation of the external magnet be serviced in the field by replacement of any inental serice bulletin 95-3A. The associjated finite service life. Minor field adjustment of the if required.
6. Standard or i components.	normal aircraft alter	nator trouble shooting proceds	ures will apply to identify and repair defective
7. For removal	and/or replacement	information: N/A.	
8. Wiring diagra	ams of the installation	on are attached.	
9. There are no	special inspection	requirements.	
10. Protective tr	eatments is n/a		
11. The structur	al fasteners are n/a	· !	
12. Special tool	s are not required.		
13. Commuter A	Aircraft is n/a		
14.Recommend	led overhaul period	is 2000 hours or at engine over	erhaul.
15. There are no	o additional airworth	niness limitations.	
revised ICA. The alterations have	ne FAA inspector ac been accepted by	cepts the change by signing the the FAA superceding the insti	FSDO with a copy of the revised form 337 and block 3 and including the following statement: A ructions for Continued Airworthiness. Once the lentifying the revision, its location, and a date of

514827 2

US Department
of Transportation
Englaral Aviation

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

Form Approved OMB No. 2120-0020

For FAA Use Only

Office Identification

Federal Aviation Administration							Omec iden			
and disposition	on of this form. This		law (49	U.S.C	pendix B, and AC 43.9- C. 1421). Failure to repor					
	Make CULTER Serial No.				Model LCA  Nationality and Registration Mark N32482					
I. Aircraft										
2. Owner	Name (As shown on registration certificate)			Address (As shown on registration certiform 3511 STIMERSIDE ROUSED 19519-1961				· ·	**************************************	
	<u> </u>			3. Fo	r FAA Use Only					
				4. Ur	nit Identification			5. Type		
Unit		/ake			Model	Seria	ıl No.	Repair	Alteration	
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AIRFRAME			(As desc	cribed	in Item 1 above)					
POWERPLANT	T-85-			12		 				
PROPELLER										
APPLIANCE	Type Manufacturer								7	
			6	Con	formity Statement	<u> </u>			<u>!</u>	
A Agency's Na	ame and Address			<del>~~~~</del>	ind of Agency		C. Ce	rtificate No.		
EDWARD F BYARS 401 BUDDER RIDGE SENETA SC 19676						./4828	89438			
have bee	en made in accordar		ents of Pa	art 43 (	ified in item 4 above and of the U.S. Federal Aviati				reto	
Date				Sign	ature of Authorized Indiv					
OUTOBER (	m jewy			ED	WARD F BYAKS	Sh-	て手ど	Sign		
			7. <b>A</b> p	prova	Il for Return To Service		. A			
		ersons specified belo ition Administration ar			tified in item 4 was insper APPROVED	cted in the mann REJECTED	er prescribed	t by the		
	A Fit. Standards pector	Manufacturer	Х	Insp	ection Authorization	Other (Sp	ecify)			
	A Designee	Repair Station			son Approved by Transpo ada Airworthiness Group					
Date of Appro	val or Rejection	Certificate or Designation No U3H04019€		1 *	nature of Authorized Indiv OHN R VAN SUREAM	ndual //	Van	ll_		

# BACK OF STARTER 337 FORM

#### NOTICE

8. Description of Work Accomplished (If more space is required attach additional sheets: Identify with aircraft nationality and redistration mark and date work completed)
installed a bac model bc 320-1 starter lavy STC SE SE0014599I on N32482, a
Culver LCA, sn 215. The engine is a Continental C-85-12, sn 20186-6-12. All work
was performed IAW the B&C document #FK501-3 rev E dated February 19, 2003.
Wiring was replaced with new of same gauge. A new weight and balance was
performed and is dated May 15, 2005.
END
Additional Sheets Are Attached



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

Form Approved OMB No. 2120-0020

For FAA Use Onty

Office Identification

, Aircraft	Make CULVER Serial No.										
	Serial No.						Model LCA				
. Owner		Serial No.				Nationality and Registration Mark				· · · · · · · · · · · · · · · · · · ·	
. Owner	215				N32482						
. Owner	Name (As shown on registration certificate)				Address (As shown on registration certificate)						
	ECHO DELTA LTD				3511 SILVERSIDE RD STE 10 WILMINGTOON DE 19819-4902						
				3. F	or FAA Use Only	<i>y</i>				****	
requireme	ints and Is appr	fled herein compli- oved only for the a person authoriz	above o	descr	Ibed aircraft,	worthines subject	is to		***************************************		
	2005 ate	/ My ly Sign		I FA	Solution Solution	O-FIP	<u>-</u> 3				
	T		<del></del>	4. U	nit Identification	1			5. Type		
Unit		Make			Model		Serial No	i.	Repair	Alteration	
IRFRAME	(As described in Item 1 above)							х			
OWERPLANT	Т										
ROPELLER											
	Туре			<del></del>			**************************************				
APPLIANCE	Manufacturer	- Antonio de la compansión de la compans									
			(	6. Cor	formity Stateme	ent				<u> </u>	
I. Agency's Na	ame and Address			B. K	ind of Agency			C. Certif	ficate No.		
E DWARD F	BYARS			XU.S. Certificated Mechanic			248 28 9428				
401 RUDDE	ER RIDGE			Foreign Certificated Mechanic			-				
SENECA S				Certificated Repair Station				-			
have bee	en made in accorda	or atteration made to it ince with the requireme correct to the best of r	ents of Pa	art 43	Manufacturer ified in item 4 at of the U.S. Feder	bove and ral Aviation	described on the real Regulations and the	verse or at lat the info	tachments her mation	eto	
Date				Sign	ature of Authorize	ed Individu					
October 1	9, 2005			Ed	ward F. Bya	rs	Show	5 31	Bugari		
And the second s				~~	l for Return To						
Pursuant to t Administrato	he authority given p r of the Federal Avi	persons specified below ation Administration an	w, the un id is	it iden	tified in item 4 wa x APPROVED	as inspecte	ed in the manner pre EJECTED	escribed b	y the		
	A Fit. Standards pector	Manufacturer	Х	Insp	ection Authorizat	orization Other (Specif		)		·····	
	\ Designee	Repair Station			Person Approved by Transport Canada Airworthiness Group						
Date of Approv	ral or Rejection	Certificate or Designation No.		Sigr	ature of Authoriz	ed Individ	Jai ARV	1 0	,		

## BACK OF STROBE 337 FORM

#### 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.

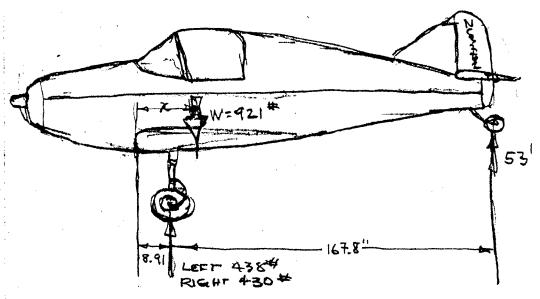
A/C Make: Culver	attach additional sheets. Identify with Model: LCA S/N 215	aircraft nationality and registration mark and date work completed.) Reg. # N32482
Revision:		System:
1.Installed Aeroflash		156-0017 in N32482, a Culver LCA, sn 215.
102-000/A inside at	ottom of fuselage on Alumino Station 52. A 10 amp Switch en unit and 12V bus.	um access panel at station +52 and attached Power Supply pn /Circuit Breaker was installed on instrument panel labeled
All work was perforn forth in AC43.13-1B throughout.	ned IAW Aeroflash instruction chapter 11 Sections 3,and 4.	ns 130-0071 dated 12-1-88 and in accordance with practices set. Shielded wiring sized per AC43.13-1B table 11-3 was utilized
to the shope light wa	as maximized to eliminate RF is chosen to be out of line of :	A Chapter 4 were followed. Antenna placement distance relative. I. The installation meets FAR 23.1301, 1309, and 1383. Bottom site of crew vision and to insure that the required "field of
A shadowing test wa "field of coverage" re	as completed in a darkened hequirements of FAR 23.1401.	angar per AC43.13-2A Chapter 4, Section 56. The system met the
A load analysis was maximum aircraft ele	performed. The aircraft elect ectrical and avionics load of 9	rical system capacity (15 amps) ws capable of supporting the amps.
(RFI). The units wo	em check was performed on	entry in the aircraft log was made to reflect the installation. An all comunication and navigation units to check for interference ufacturers specifications. The strobe light installation did not
Installations were m which was placed in	ade prior to and are reflected the aircraft and an entry of s	in the weight and balance of aircraft dated May 14, 2005 a copy ame made in the aircraft log.
3. Control: a separa load analysis confirr electrical equipment	ned that the amperage drawr	nounted on panel between the unit and the 12v bus. An electrican by the unit is well within the alternator capacity with all other
4 Servicing requires power supply are av	s removal of access panel on ailable therein.	bottom of fuselage forward of trailing edge of wing. Light and
5.Maintenance Instr be required at that ti	uctions: Test for proper opera me or any prior time that imp	ation is required at each annual inspection. Parts replacement m roper operation is observed.
6.Trouble shooting i	nformation is n/a.	
7.Removal and repla	acement of components must	t be IAW manufacturer's instructions 130-0071 dated 12-1-88.
	stallations are not required.	
	cial inspection requirements.	
10. Protective treatn		
11. The structural fa		
	··	

X Additional Sheets Are Attached

# WEIGHT & BALANCE CULVER CADET

NC 32482 SERIAL #215

5-14



TOTAL WEIGHT 921 #
(ENITY WEIGHT)

CG LIMITS: FOWARD +15" REAR +19.5"

GROSS WEIGHT 1305 # EMPTY WEIGHT 921 # USEFUL LOOD 384 #

I CERTIFY ABOVE CORRECT:

Showed 7. Poyons MAY 14, 2005

EDWARD FBYARS ASP 248.28-9428

# U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

FOR FAA USE ONLY
OFFICE IDENTIFICATION

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

for instru	MAKE	or this form.		MODEL				
	Culve	r		LCA				
." ATRCRAF	SERIAL NO.	The second secon		NATIONALITY AND REGISTRATION MARK USA N 32482				
	215			J.J			ate)	
a week	NAME (As shown o	n regist <del>rat</del> ion certificat	•)	ADDRESS (As shown on registration certificate) 475 W. Hillside				
. OWNER	Babbitt,	Joyce A.		Barri	ngton, I	11.60	010	
	A STATE OF THE STA		3. FC	DR FAA USE ONLY				
		A (141)	INCUT	CICATION				TYPI
		4. UNII	IUENTI	FICATION	SERIAL	10		A
UNIT	*	AKE		MODEL	manager of the second of the		REPAIR	^
AIRFRAME	•••••	······································	s describ	ped in item 1 above)				-
POWERPL	ANT Contin	ental	C-	-85-12F	20126-6-12			
PROPELLE	R					25. Annual Spinistering (Spinish		+
	TYPE							
APPLIAN	CE MANUFACTURER				5			
			6. (0	NFORMITY STATEMENT		1 6 6	RTIFICAT	5 N
	A. AGENCY'S NAME	AND ADDRESS		B. KIND OF AGI		<u> </u>	KIIIICAI	<u> </u>
Richard James Hardin P.O. Box 1303				FOREIGN CERTIFICATED MECHANIC			481445572	
Gunnison, Co. 81230			-	CERTIFICATED REPAIR STATIO				
2774	chiments hereto have t	wen made in accords	INCE WILL	he unit(s) identified in ite th the requirements of Pare i correct to the best of my	A 3 CH 1116 C. 1671	described Federal Av	on the re- ation Re-	ver: gula
DATE M	ay 13, 1991			SIGNATURE OF AUTHORIZE	aide	21		
Pursus	nt to the authority_giv	en persons specified	below,	the unit identified in item	was inspected	in the mar	ner preso	ribe
	FAA PLT. STANDARDS INSPECTOR	MANUFACTURER	T	and 19 APPROVED [	OTHER (Specify)	and the second s	والمراجع المراجع المرا	
8Y -	FAA DESIGNEE	REPAIR STATION		CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR				

# NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. A 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. Aircraft and engine to fly on unleaded automotive gasoline, 87 minimum antimock index, per ASTM Specification D-+39, in accordance with Supplemental Type Certificate numbers SA913GL and SE634GL.

## **ENGINEERING ANALYSIS**

## For APPLICATION OF CLEVELAND BRAKE KIT No. 199-102 to CULVER LCA

This "Cleveland" brake kit is manufactured by Parker Hannifin Corp, Aircraft Wheel & Brake Division and is TSO Approved under TSO-C26.

Detailed specifications of kit No. 199-102 are given in Cleveland Engineering Drawing No. 50-76 dated 5-28-51. From that drawing it is determined that each wheel of the kit has a Kinetic Energy Capacity of 117,500 ft-lb.

Also from the drawing the relationship is given to determine the Kinetic Energy of an aircraft for a normal deceleration rate of 10 ft per sec per sec.

$$KE = \underbrace{0.0443 \times W \times V \times V}_{N}$$

Where: KE= Kinetic Energy per wheel-brake assembly (ft-lb)

W= Design Landing weight (lbs.)

V= Aircraft Speed (kts), Poweroff stall speed in

Landing configuration

N= Number of wheels with brakes

The Culver LCA specifications are: W= 1305 lbs.; V=32kts.; and N= 2.

Therefore, using the above relationship, the required KE for each Culver brake is 29,600 ft-lb.

The 117,500 ft-lb KE available with the chosen kit is more that adequate.

Based on the above analysis it is my professional opinion that the Cleveland kit referenced above is satisfactory for use on the 1305 pound gross weight Culver LCA.

Respectively submitted,

Date: July 7, 2005

Edward F. Byars, PhD Reg. Prof. Eng. SC #1312 A & P No. 248-28-9428