

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

KEEP WITH AIRCRAFT RECORDS

Number SA2067NM

This certificate, issued to

BAS, Inc.
P.O. Box 190
13319 419th Street East
Eatonville, WA 98328

Reg. # N.3212T
AO Ser. # 17700512
B.A.S. Inc. Ser. #
1. 11058
2. 11059

*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:

Make:

Model:

*See attached FAA Approved
Model List (AML) No. SA2067NM for
list of approved airplane models and
applicable airworthiness regulations.

Description of the Type Design Change: Installation of BAS, Inc. TSO Shoulder Harness and BAS Inc. Harness System in accordance with the appropriate BAS Report listed on FAA AML SA2067NM, dated November 29, 2000, or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this certificate and FAA Approved Model List (AML) No. SA2067NM must be maintained as part of the permanent records for the modified aircraft.

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

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

Date of application: December 22, 1982

Date received: April 15, 1986

Date of issuance: June 2, 1983

Date amended: April 4, 1984, August 18, 1989
November 29, 2000



By direction of the Administrator

Adrian J. ...
(Signature)

Acting Manager, Seattle Aircraft
Certification Office

(Title)

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

This certificate may be transferred in accordance with FAR 21.47.

BASING
FOR
TSO SHOULDER HARNESS INSTALLATION

ISSUE DATE: APRIL 4, 1994

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED SHOULDER HARNESS REPORT REVISION	ALT. REVISION DATE
1	Cessna	170 through D	A-799	CAR 03V CAR 21B only	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
2	Cessna	172 through Q	JA12	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
3	Cessna	172RG	JA17	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
4	Cessna	P172D	JA17	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
5	Cessna	R172E through R172K	JA17	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
6	Cessna	175 through C	JA17	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
7	Cessna	180 through K	JA6	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
8	Cessna	182 through R	JA13	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
9	Cessna	R182, T182	JA13	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
10	Cessna	T182	JA13	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
11	Cessna	185 through E	JA24	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
12	Cessna	A185E, A185F	JA24	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
13	Cessna	210 through 201F	JA21	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
14	Cessna	T210F	JA21	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
15	Cessna	P210H & R	JA21	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
16	Cessna	210.5 (205)	JA21	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
17	Cessna	210.5A (205A)	JA21	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
18	Cessna	206	JA4CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
19	Cessna	P206 through E	JA4CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
20	Cessna	TP206A through E	JA4CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000

21	Cessna	US66 through G	AA6CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
22	Cessna	TP206A through G	AA6CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
23	Cessna	177 through B	A13CE	FAA 23	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
24	Cessna	177RG	AA6CE	FAA 23	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
25	Cessna	Reims-Cessna	AA6EU	CAR 10	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
26	Cessna	FR172E through FR172K	A18EU	FAA 21.29 (CAR 3)	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
27	Cessna	FR182P, FR182Q, FR182	AA6EU	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
28	Cessna	FR177RG	A18EU	FAA 23	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
29	Cessna	199, 199 through D	A-799	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
30	Cessna	336	AA6CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
31	Cessna	337, 337A, M337B	AA6CE	CAR 3	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000
32	Cessna	337B, 337C, 337D, 337E, 337F, 337G, 337H, 337I, 337J, 337K, 337L, 337M, 337N, 337P, 337Q, 337R, 337S, 337T, 337U, 337V, 337W, 337X, 337Y, 337Z	AA6CE	FAA 23	Revision E, dated 11/29/2000, or later FAA Approved Revision	11/29/2000

FAA Approved

Acting Manager, Seattle Aircraft
Certification Office

Amended: August 31, 1994, September 7, 1994
June 6, 1996, November 23, 2000

IMPORTANT DOCUMENTS
KEEP WITH AIRCRAFT RECORDS

B.A.S., INC INSTALLATION INSTRUCTIONS

INERTIA REEL HARNESS CESSNA CARDINAL 177
MARCH 31, 1989

1. The 177 has had many small changes throughout its life. This is why you as a mechanic must determine if things don't look right and either call me or return the kit for a full refund.
2. Early pre 1971 models had 3.5" lightening holes in the carry-through spar as opposed to the later models 3" lightening holes. These holes must be measured to insure that the correct kit is ordered.
3. In the mid 1970's fuel vent lines were installed in the area forward of the carry-through spar. These lines cross from the bottom of one tank to the top of the other. So far, in my experience, these lines have not proved to be a problem because the harness comes out between them. (Refer to Cardinal Installation Photo Sheet)

To check for these lines, remove center headliner console cover and cabin light cover and look aft. If the 3/8" vent lines or other objects are in the area, remove the front half of the headliner and attach moldings. This only takes about 15 minutes and allows easy access for installing the reel assemblies. It's also a good time to do a corrosion check.

CAUTION IF THE VENT LINES OR ANYTHING ELSE WILL NOT ALLOW THE HARNESS SYSTEM TO BE INSTALLED ABSOLUTELY PROPERLY, IN AN AIRWORTHY MANNER, RECONNECT CENTER VENT LINE CLAMP, REINSTALL HEADLINER AND RETURN SHOULDER HARNESS KIT FOR FULL REFUND.

In the event you discover a problem I would appreciate a photo. If you find any everything is OK, continue with step 1.

INSTRUCTIONS

1. Remove inspection panel behind carry-through spar, look at carry-through spar and locate the second from the center lightning hole on each side of the spar center line (refer to drawing). These holes should be directly behind pilot and co-pilot. Check to see that no lines or wires travel through these holes which can not be moved to the top of the hole and the lines or wires are not larger than 1/2" for spars with 3" holes and 3/4" for spars with 3 1/2" holes. This is to allow for the inertia reel mounting bracket. The 2" Aeroduct in front of the spar can be moved up and forward. You may have to remove the Coroseal cord or tie wrap that holds the Aeroduct to the spar for added slack.
- 2A. Aircraft Without Vent Lines. If there is room to install reel mounts continue on to step 3 below
- 2B. Aircraft With Vent Lines. (Front half of the headliner removed) Disconnect the center vent line clamp so that you can spread the fuel lines apart. Slip the reel and mounting bracket between lines and install on the carry-through spar as per step number 4.

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After the reel assemblies have been installed, reconnect the fuel vent line clamp. Refer to the Cardinal Installation Photo Sheet and mark and cut holes in headliner as per step number 3. Reinstall headliner by fitting the buckle and belts through the small preliminary hole cut in the headliner. Finish attaching moldings, etc. Finish cutting hole to fit and carry on with steps 5,6 and 7.

3. Locate exact center line of carry-through spar and mark at the forward edge of the headliner where it curves around front bottom edge of carry-through spar. Masking tape may be used in these locations for easier clean up. From this mark, measure outboard 8 1/2" and make light pencil mark. Now measure upward 2 1/4" from center of front radius as shown in the drawing and photo. This is the center for the 2 1/4" by 4" hole as shown in the drawing. At this point insert a long needle or sharpened welding rod through the plastic headliner. The needle should be in the exact vertical center of the lightening hole and if laid fore and aft, horizontally, it should be approximately 1/2" to 3/4" above bottom of the lightening hole (depending on the hole size being 3" or 3 1/2").

If these measurements look pretty close, mark out a horizontal hole 4" long and 2 1/4" high with the needle hole as the center. Now use a sharp knife or razor blade to cut out a hole approximately 1/2" in from the lines. **NOTE: LOOK THROUGH THIS HOLE TO MAKE SURE THE 3 1/2" HOLE IN THE SPAR IS IN ALIGNMENT WITH THE MARKS AND ADJUST MARKS IF NECESSARY.** Finish cutting out the 2 1/4" by 4" hole. This is a good time to inspect the front face of the carry-through spar. Clean any corrosion off and paint the area if necessary. Also make slack in the Aeroduct if necessary (refer to instruction #1).

4. Install reel and bracket assembly through the 2 1/4" by 4" hole by putting the top of the rectangular mounting bracket in first, then twist up and push the rest of the reel in through the hole. **NOTE: WHILE INSTALLING THIS PART, REACH UP THROUGH THE INSPECTION HOLE AND THROUGH THE SPAR HOLE TO PUSH THE AERODUCT UP AND FORWARD.**
- 4A. Now hold mounting bracket over hold in spar and install bolts, washers and back up plate (PN 1B-177) in through rear inspection hole and place over back side of the hole with holes closest together at the bottom (refer to drawing). Install bolts into nut plates on PN 1A-177 mounting bracket finger tight. Align the belt guides in front so that they are horizontal and level. Tighten mounting bolts, but do not over torque, 15 to 20 inch pounds is sufficient.
5. Fit dress plates over belt with split towards the top and tuck up into position (refer to drawing). Trim if and where necessary. When the dress plate looks right, mark the two attachment holes with a pencil or an awl and install tinnerman nuts, trim headliner if necessary to slip nuts over hole locations. Re-position dress plate and install with #6 sheet metal screws. Reinstall rear inspection cover.
6. Remove old lap belts and attach new lap belts in the same manner. **NOTE: CESSNA USES A 1/4" BOLT THROUGH A SHORT LENGTH OF 3/8" TUBING THAT GOES THROUGH THE HOLE IN THE BELT END FITTING. SEE PARTS MANUAL IF PARTS ARE MISSING OR WORN.**
7. Fill out logs and send in FAA Form 337. Revise the weight and balance. Weight difference between the lap belt only and the BAS, Inc. Inertia Reel Shoulder Harness System is 3 1/2 pounds total for both front seats. If the BAS, Inc. system replaces a Cessna shoulder harness, figure weight of actual parts. The additional weight is centered at Fuselage Station 110.00.

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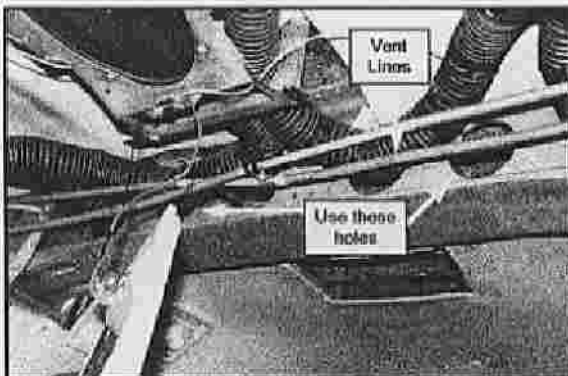


Photo No. 1 Installation Item No. 2B



Photo No. 4 Installation Item No. 4

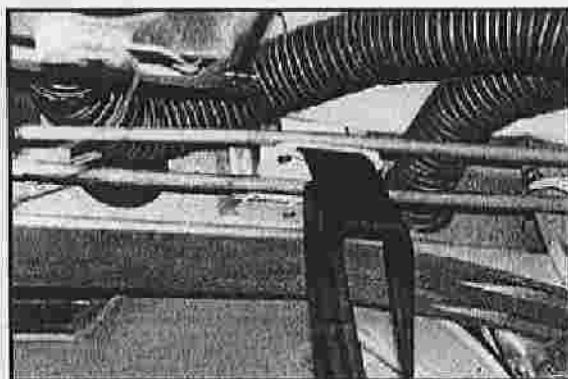


Photo No. 2 Aircraft With Vent Lines

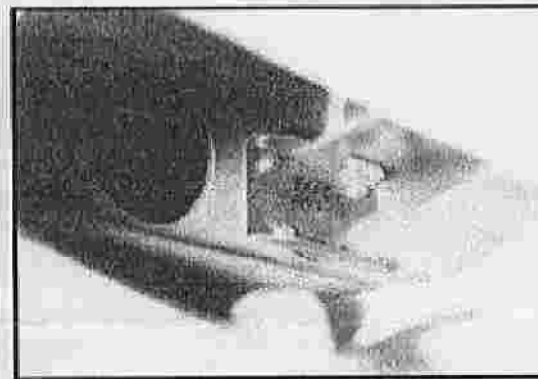


Photo No. 5 Installation Item No. 4A

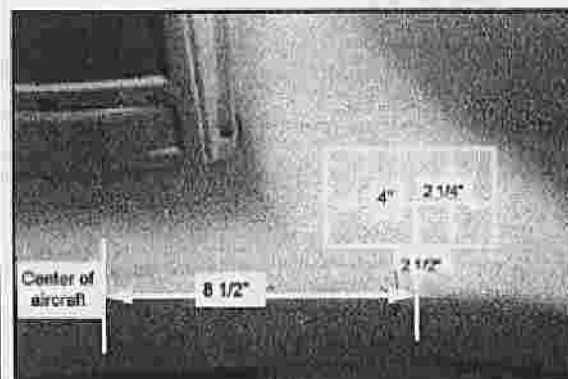


Photo No. 3 Installation Item No. 3

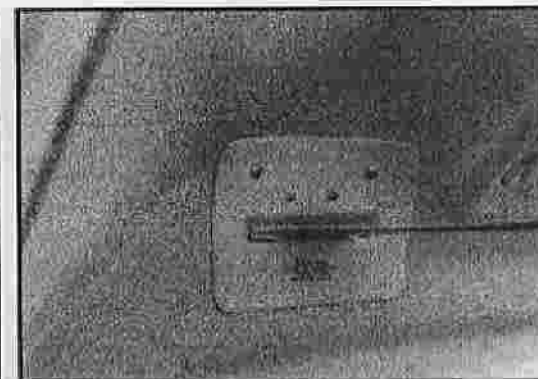
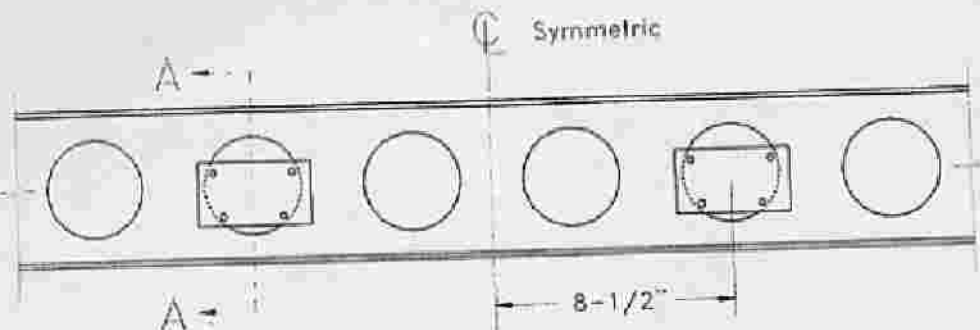
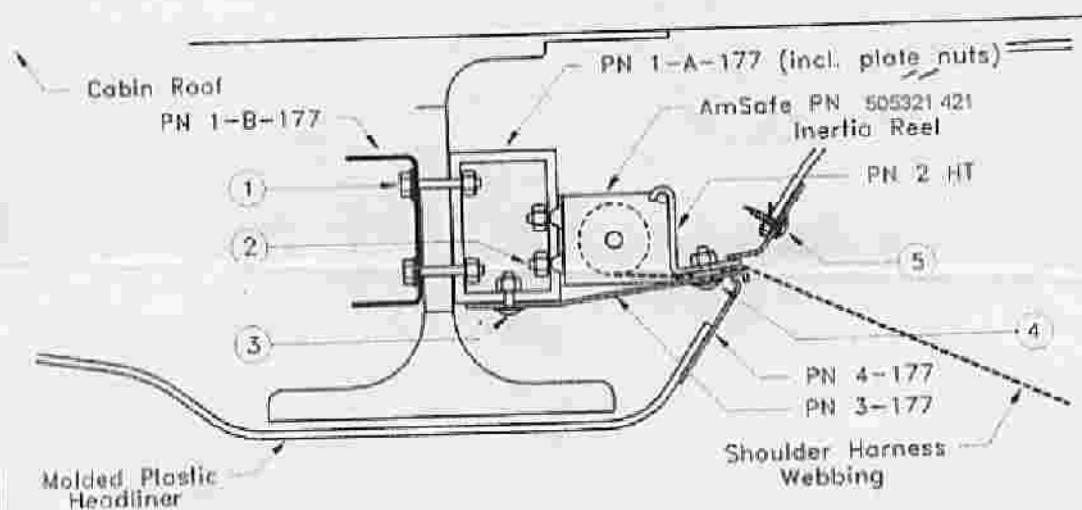


Photo No. 6 Installation Item No. 5

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Carry-Through Spar (Looking forward)



Hardware

- ① 4 ea. AN3-6A Bolt
4 ea. AN960-10 Washer
- ② 4 ea. MS24694-S50 Screw
4 ea. NAS679-A3W Nut
- ③ 1 ea. AN525-10R7 Screw
1 ea. NAS679-A3W Nut

- ④ 2 ea. NAS679-A3W Nut
2 ea. AN525-10R7 Screw
2 ea. Plastic Spacer
- ⑤ 2 ea. S1021A6-8 Screw
2 ea. A1784-6Z-1 Tinnerman Nut

NO SCALE

Section A-A

Figure No. 1-177

Installation

Rev. B November 1, 2005

BAS Incorporated

STC SA 2067NM

IMPORTANT DOCUMENTS
KEEP WITH AIRCRAFT RECORDS

B.A.S., INC. INERTIAL REEL SHOULDER HARNESS SYSTEM

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

1. **Introduction:**
These ICA pertain to the inertia reel shoulder harness system installed in the 2 forward seating positions.
2. **Description:**
The shoulder harness system consists of an inertia reel mounted to the aircraft cabin roof above and behind each seat a "Y" shaped shoulder harness, a lap belt with mating buckle and associated bracketry and hardware to attach the system to the aircraft.
3. **Special control or operation information:**
See Owner's Manual Supplement, Report 1302, for proper placement of harness.
4. **Servicing information:**
There is no regular servicing required for the shoulder harness system beyond normal cleaning. Refer to AmSafe website for cleaning instructions: [www.amsafeaviation.com]
There is no regular servicing of the attachment hardware required.
5. **Maintenance instructions:**
Maintenance of the inertia reel and harness is limited to cleaning. The attachment hardware and bracketry should be inspected as part of the annual inspection of the aircraft for deformation or cracking of the bracketry and that the hardware is secure (see AC 43.13-1B, 9-8-98, Paragraph 5-15). Check the attachment bracketry and hardware for corrosion per AC 43.13-1B, 9-8-98, Chapter 6. Any bent, broken, damaged or corroded parts must be replaced.
6. **Troubleshooting:** N/A
7. **Removal and replacement information:**
Refer to BAS Installation Instructions, used during original installation, for removal and replacement information on the inertia reel. These should be included as part of the maintenance records of the aircraft, but may also be obtained from BAS, Inc. If the reel is removed, ensure that all of the components such as the tension strap (when installed) are properly reattached upon reinstallation of the reel.
8. **Diagrams:** N/A
9. **Special inspection requirements:**
The inertia reel and attachment hardware and bracketry should be inspected for proper operation during annual inspection of the aircraft. The reel should allow for extension of the harness during a slow pull, but should lock up during a quick pull of the harness. Failure of the reel to function properly in either of these conditions is cause for removal and return to AmSafe for repair or replacement.
10. **Application of protective treatments:** N/A

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B.A.S., INC. INERTIAL REEL SHOULDER HARNESS SYSTEM **INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (cont)**

11. Data: N/A

12. List special tools: None

13. For commuter category aircraft: N/A

14. Recommended overhaul periods:

The shoulder harness does not have a fixed overhaul period, but should be inspected and replaced on condition. Refer to AmSafe website for removal and replacement information on the shoulder harness system.

15. Airworthiness Limitation Section:

There are no limitations on the operation of the aircraft due to the installation of the shoulder harness system.

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

16. Revisions:

These Instructions for Continued Airworthiness have been reviewed and accepted by the FAA. In the event a revision is required, BAS, Inc. will submit the revision to the FAA for review and approval. The revised ICA will then be posted on the BAS website or contact BAS, Inc. and the revision will be mailed. The revised ICA must become a part of the aircraft records and a logbook entry made noting the revision.

For harness & lap belt maintenance refer to AmSafe Aviation information at

www.amsafeaviation.com

If the AmSafe website is unavailable,
please contact BAS, Inc.

888-255-6566

360-832-6566

360-832-6466 Fax

For the latest revision of ICA refer to BAS information at

www.basinc-aeromod.com

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US Department
of Transportation
Federal Aviation
Administration

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

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification

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

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

3. For FAA Use Only

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

6. Conformity Statement

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

Date 2-23-07	Signature of Authorized Individual
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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 FII Standards Inspector	Manufacturer	☒	Inspection Authorization	Other (Specify)
	FAA Designee	Repair Station		Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection 2-23-07		Certificate or Designation No. 254396757	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.

B. Description of Work Accomplished

Installed BAS Inc. Inertia Reel Shoulder Harness System STC# SA2067NM in accordance with manufacturers install document# 1200 Rev.A. STC, Approved model list, Instructions for Continued Airworthiness and Weight & Balance Revision entered into Aircraft Permanent Records.

----- END -----

[] Additional Sheets Are Attached