

CONTROL WHEELS INSTALLATION INSTRUCTIONS

CW-8001

Rev- 2.1 June 23, 2006



CESSNA 150,152,170,172,175,180,185 & 182 (to 1961) 3/4 inch control shaft

Removal of original control wheels. (Reference drawing CW-6001)

Remove the nut and bolt securing the control shaft to the universal joint at the control column behind the instrument panel. Withdraw the shaft from the panel. Remove the two rivets holding the original Cessna control wheel to the shaft by drilling off the heads or tails. Carefully drive the rivet out with a punch. Try not to enlarge the rivet holes. Remove the wheels by twisting on the shaft. Clean the end of the shaft to remove any residual structural epoxy. Check fit the shaft into the new hub to ensure that it can be easily assembled.

Prepare the new control wheels:

- 1) Set the height of the control wheel relative to the control shaft to suit leg clearance requirement or your personal preference. There are four different heights allowing a height range of 2.5 inches.
- 2) Screw the control shaft hub to the control wheel using 4 x MS35207-264 screws. Apply Locktite to each screw, install and torque to 15 inch-pounds.
- 3) Apply Locktite to the inside of the hub and insert the control shaft into the new control hub. Install two bolts MS27309-1-16 to secure the original shaft to the new hub via the original rivet holes. Install MS21042-1032 nuts and tighten. Torque bolts to 2-3 ft-lbs. and allow the Locktite to harden prior to next step.

Re-Install Control Wheels:

Install control wheel shaft through the control shaft guide on the panel and onto the universal joint on the control column. Re-install the nut and bolt and securely tighten. Repeat for the other wheel. Check that the control wheel has full and free motion and that the motion of the control column is not impeded in any way.

CESSNA 177, 182 (1962 On), 205, 206, 207 & 210

1.25" diameter control shaft.

Removal of original control wheels. (Reference drawing CW-6002)

Remove plastic cover from rear of wheel with a screwdriver or the edge of a knife. The cover is held in place with a formed detent in the plastic. Slide the cover up the shaft to gain access to the three screws located 120 degrees apart around the shaft, these screws secure the wheel to the control shaft. Remove the three screws and remove the original control wheel by withdrawing out of the end of the control shaft. Disconnect the ribbon cables and remove the original control wheels.

Prepare the new control wheels:

- 1) Set the height of the control wheel relative to the control shaft to suit leg clearance requirement or your personal preference. There are four different heights allowing a height range of 2.5 inches.
- 2) Screw the control shaft hub to the control wheel using 4 x MS35207-264 screws. Apply locktite to each screw, install and torque to 15 inch-pounds.
- 3) Apply Locktite to the inside of the hub and insert the control shaft into the new control hub. Install two bolts MS27309-1-16 to secure the original shaft to the new hub via the original rivet holes. Install MS21042-1032 nuts and tighten. Torque bolts to 3-2 ft-lbs. Allow the Locktite to harden prior to next step.

Re-installation of control wheels.

Reference drawing CW-6002

Re-install the control wheels onto the control shafts and re-install the three attaching screws. Add a drop of Locktite (Blue) to the three screw threads. Tighten securely. Repeat procedure for the other wheel.

Wiring Access:

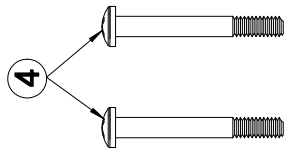
The switch plate can be removed from each grip to facilitate the installation of switches and wiring. Remove the two #4-40 screws from each plate and the switch plate can be removed. Carefully drill necessary switch holes to install switches. Wiring can be fed down the control wheel grip and out the bottom to be secured in the rear of the wheel. A coiled cord can be secured to the rear of the wheel using the four available #6-32 holes or unused mounting holes. The wiring can also be fed through the control shaft and exit near the universal joint of the control column.

CESSNA AIRCRAFT MODEL 150, 152, 170, 172, 175, 180, 185, 182(TO 1962), 210(TO 1962)
 SEE MODEL APPLICABILITY LIST

CESSNA AIRCRAFT WITH 3/4" SHAFT

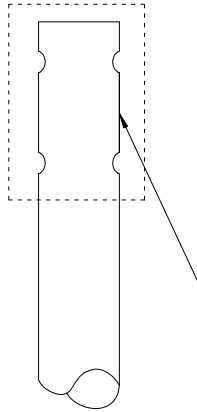
REV.	DATE	DESCRIPTION	ENGR.
1	2/28/98	AS ISSUED	TBH

CONTROL SHAFT MOUNTING SCREWS

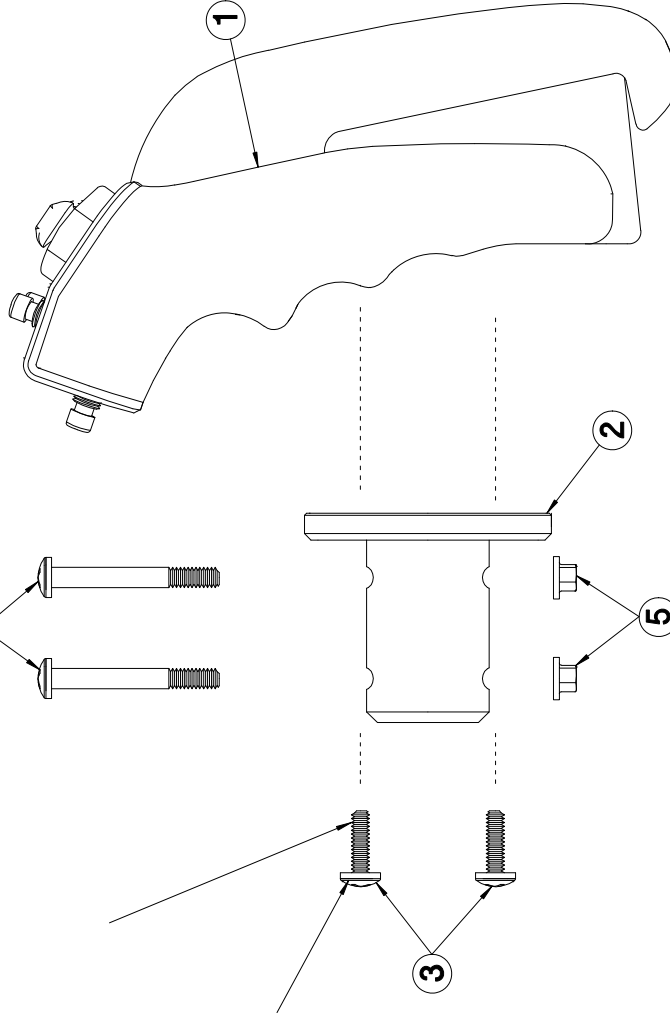


APPLY LOCKTITE ON THREADS

SCREW MS35207-264 4 PLACES



APPLY LOCKTITE ON SHAFT



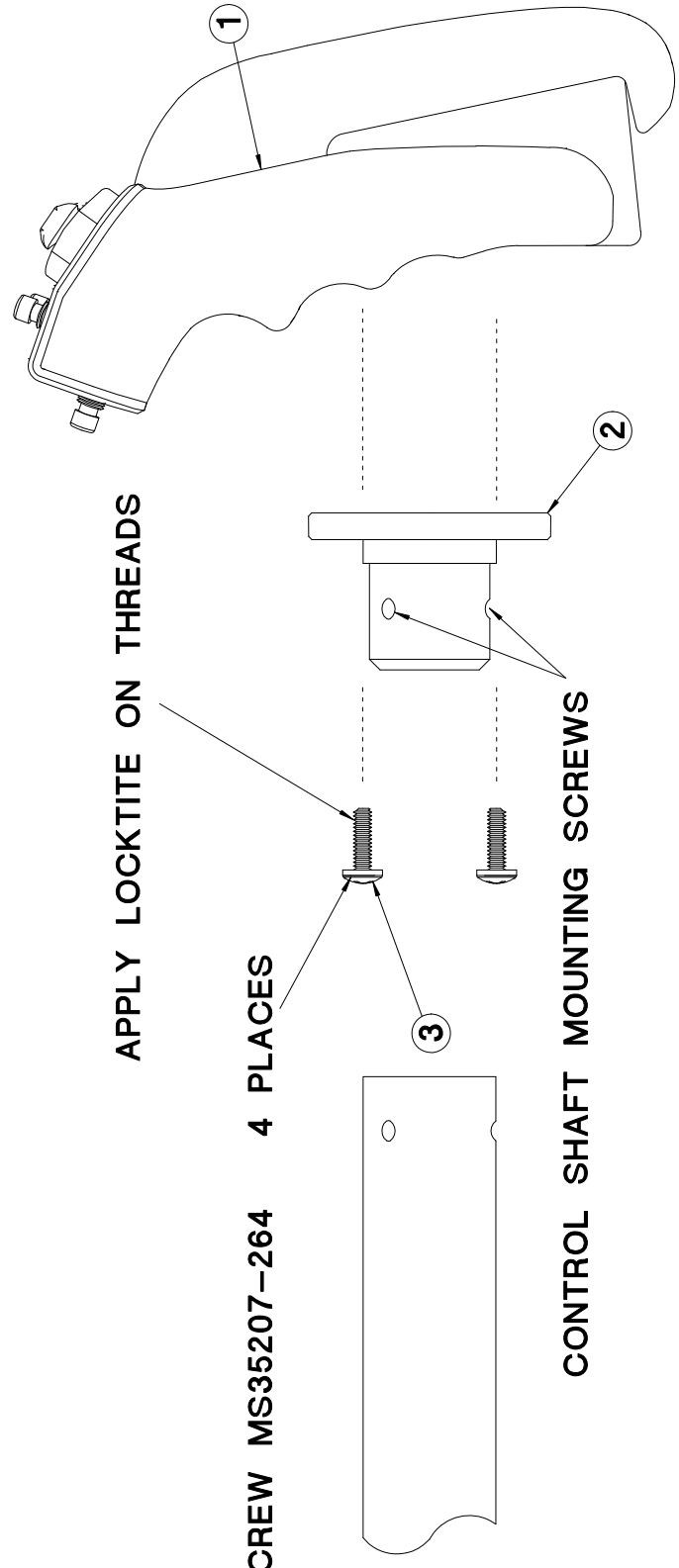
NOTES:

- 1 SELECT HEIGHT POSITION FOR THE CONTROL SHAFT HUB
- 2 VERIFY THE ORIENTATION OF THE CONTROL SHAFT MOUNTING SCREWS
- 3 PLACE SMALL QTY OF LOCKTITE ON THE SCREW THREADS AND INSTALL THROUGH MOUNTING HOLES AND INTO THE CONTROL WHEEL.
- 4 TORQUE EACH SCREW TO APPROX. 15 INCH-LBS
- 5 ALLOW SEVERAL HOURS FOR LOCKTITE TO HARDEN
- 6 APPLY SMEAR OF LOCKTITE ON CONTROL SHAFT PRIOR TO ASSEMBLING ONTO CONTROL SHAFT.

5	2	NUT, 10-32	MS21042-3	N/A
4	2	SCREW, MS27035-1-20		N/A
3	4	SCREWS, MS35207-264		N/A
2	1	SHAFT HUB ATTACH	CW-002	
1	1	AVION CONTROL WHEEL, CESSNA	CW-001	
		PART/MATERIAL DESCRIPTION	MATL/PART NO.	MATL/REQ.
DRAWN BY	ME10	1 NOV 92		
T BURWARD-HOY		1 NOV 92		
ENGINEER/CHECKER				
RELEASE TO PROD.				
TITLE				
		HUB INSTALLATION		
		3/4" DIA SHAFT		
		RESEARCH CORPORATION		
		8022 W. MAUDE AVE. SUITE 102		
		SUNNYVALE CA 94085		
SUPERSEDES DRWG.		SHEET	1	OF
		SCALE	NONE	
				CW-6001

**CESSNA AIRCRAFT MODEL 182(1963-ON), 177, 205, 210(1960-ON), 206, 207
CESSNA AIRCRAFT WITH 1.25" SHAFT (SEE MODEL APPLICABILITY LIST)**

REV.	DATE	DESCRIPTION	ENGR.
1	2/26/98	AS ISSUED	TBH



SCREW MS35207-264 4 PLACES

NOTES:

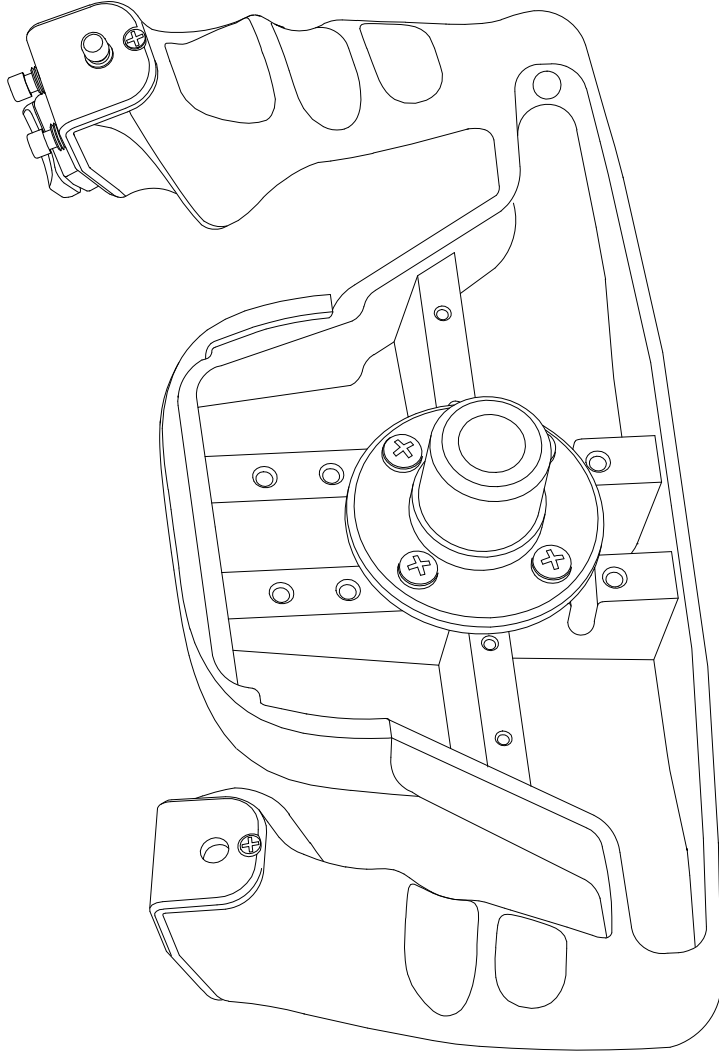
- 1 SELECT HEIGHT POSITION FOR THE CONTROL SHAFT HUB
- 2 VERIFY THE ORIENTATION OF THE CONTROL SHAFT MOUNTING SCREWS
- 3 PLACE SMALL QTY OF LOCKTITE ON THE SCREW THREADS AND INSTALL THROUGH MOUNTING HOLES AND INTO THE CONTROL WHEEL.
- 4 TORQUE EACH SCREW TO APPROX. 15 INCH-LBS
- 5 ALLOW SEVERAL HOURS FOR LOCKTITE TO HARDEN


3	4	SCREWS, MS35207-264	N/A
2	1	SHAFT HUB ATTACH	CW-003
1	1	AVION CONTROL WHEEL, CESSNA	CW-001
ITEM	QTY.	PART/MATERIAL DESCRIPTION	MATL./PART NO.
DRAWN BY	ME10	DATE	1 NOV 92
ENGINEER/CHECKER	T BURWARD-HOY	DATE	1 NOV 92
RELEASE TO PROD.		TITLE	HUB INSTALLATION 1.250" DIA SHAFT
SUPERSEDES DRAWG.		SCALE	NONE
		SHEET	1
		OF	1

AVION
RESEARCH CORPORATION
1022 W. MAUDE AVE. SUITE 802
SUNNYVALE CA 94088

CW-6002

REV.	DATE	DESCRIPTION	ENGR.
1	11/1/92	AS ISSUED	TBH



1	1	AVION CONTROL WHEEL, CESSNA	QQ-A-601
ITEM	QTY.	PART/MATERIAL DESCRIPTION	MATL./PART NO.
DRAWN BY		ME10	1 NOV 92
DATE		1 NOV 92	
ENGINEER/CHECKER		T BURWARD-HOY	
TITLE		CONTROL WHEEL	
RELEASE TO PROD.		NONE	
SUPERSEDES DRAWG.		SCALE	1 1
		SHEET	OF
			CW-6003
		 AVION RESEARCH CORPORATION 2022 W. MAUDE AVE. SUITE 102 SUNNYVALE CA 94086	

INSTRUCTIONS FOR CONTINUING AIRWORTHINESS

14 CFR part 25, section 25.1529

Maintenance Requirements.

“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 and operators scheduled maintenance program”

1. Maintenance manual information, if any, is contained in Control Wheel Installation Instructions CW-8001 and should be placed in the operators appropriate Airplane Maintenance Manual.
2. There are no LRU’s associated with modifications made under this STC.
3. All wiring diagram changes, where applicable, are contained within the Control Wheel Installation Manual CW-8001 and should be placed into the aircraft operators Wiring Diagram Manuals.
4. Scheduled Maintenance Program tasks to be added to the aircraft operators Airplane Maintenance Program are as follows,
 - a. Lubricate the control shaft bearing with light lubricant every 100 hours of operation.
 - b. Check the tightness of the control wheel hub mounting screws at each annual inspection
 - c. Conduct a general inspection of the control wheel for system integrity, security, wear, chafing etc. at each annual inspection.

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

Number SA00709LA

This Certificate issued to Trevor Burward-Hoy
10384 Dempster Avenue
Cupertino, California 95014

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

Original Product Type Certificate Number: * *See Attached FAA Approved Model List (AML) No. SA00709LA for list of approved
Make: * aircraft models and applicable airworthiness regulations.
Model: *

Description of Type Design Change: Installation of Control Wheel in accordance with FAA approved Avion Research Corporation Master Drawing List No. CW-ML001, Revision 3, dated August 26, 1999, or later FAA approved revisions.

Limitations and Conditions: NOTE: This installation includes provisions only for a push to talk (PTT) switch. Before returning an aircraft modified by this STC to service, separate FAA approval of the PTT switch is required.

Approval of this change in type design applies to the aircraft models listed on AML No. SA00709LA only. This approval should not be extended to aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the relationship between this change and any previously approved modifications, including changes in type design will not introduce any adverse effect upon the airworthiness of the aircraft. (Continued)

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: March 6, 2000

Date reissued: May 14, 2002

Date of issuance: May 26, 2000

Date amended:



By direction of the Administrator

James J. ...

Acting Manager, Technical & Administrative
Support Staff 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.

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

Number SA00709LA

Limitations and Conditions: (Continued)

A copy of this Certificate and FAA Approved Model List (AML) No. SA00709LA, dated May 16, 2000, or later FAA Approved revision, must be maintained as part of the permanent records of the modified aircraft. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

- E N D -

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

FAA APPROVED MODEL LIST (AML) NO. SA00709LA
 AVION RESEARCH CORPORATION FOR
 INSTALLATION OF CONTROL WHEELS IN CESSNA AIRCRAFT

ISSUE DATE: May 16, 2000
 REISSUED: May 14, 2002

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					REPORT NO.	REV. NO. AND DATE		
1	Cessna	150, 150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K, A150K, 150L, A150L, 150M, A50M, 152, A152	5A2	CAR Part 3	CW-8001	Revision 1, Dated 2/26/98	N/A	
2	Cessna	170, 170A, 170B	A-799	CAR Part 3	CW-8001	Revision 1, Dated 2/26/98	N/A	
3	Cessna	172, 172A, 172B, 72C, 172D, 172E, 172F (USAF T-41A), 172G, 172H (USAF T-41A), 172I, 172J, 172K, 172L, 172M, 172N, 172P, 172Q, 172R, 172S	3A12	CAR Part 3	CW-8001	Revision 1, Dated 2/26/98	N/A	
4	Cessna	P172D, R172E (USAF T-41B, USAF T-41C & -41D), R172F (USAF T-41D), R172G (USAF T-41C & -41D), R172H (USAF T-41D), R172J, R172K, 172RG, 175, 175A, 175B, 175C	3A17	FAR Part 23	CW-8001	Revision 1, Dated 2/26/98	N/A	

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS	AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
5	Cessna	177, 177A, 177B	A13CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
6	Cessna	177RG	A20CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
7	Cessna	182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182S, R182, T182, TR182	3A13	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	
8	Cessna	180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	
9	Cessna	185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	3A24	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	
10	Cessna	206, P206, P206A, P206B, P206C, P206D, P206E, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, TP206A, TP206B, TP206C, TP206D, TP206E, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G, T206H, 206H	A4CE	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	
11	Cessna	207, 207A, T207, T207A	A16CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS	AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
12	Cessna	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 (205), 210-5A (205A)	3A21	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
13	Cessna	F172D, F172E, F172F, F172G, F172H, F172K, F172L, F172M, F172N, F172P	A4EU	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
14	Cessna	T303	A34CE	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	
15	Cessna	310, 310A (USAF U-3A), 310B, 310C, 310D, 310E (USAF-U-3B), 310F, 310G, 310H, E310H, 310I, 310J, E310J-1, 310K, 310L, 310N, 310P, T310P, 310Q, T310Q, 310R, T310R	3A10	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
16	Cessna	320, 320-1, 320A, 320B, 320C, 320D, 320E, 320F, 335, 340, 340A	3A25	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
17	Cessna	336	AZCE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
18	Cessna	401, 401A, 401B, 402, 402A, 402B, 402C, 411, 411A, 414, 414A, 421, 421A, 421B, 421C, 425	A7CE	CAR Part 3	CW-8001 Revision 1, Dated 2/26/98	N/A	

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS	AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
19	Cessna	404, 406	A25CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
20	Cessna	441	A28CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
21	Cessna	500, 550, S550, 552, 560, 560XL	A22CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
22	Cessna	501, 551	A27CE	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	
23	Cessna	525	A1WI	FAR Part 23	CW-8001 Revision 1, Dated 2/26/98	N/A	

FAA APPROVED:

ACTING MANAGER, TECHNICAL & ADMINISTRATIVE
SUPPORT STAFF, LOS ANGELES AIRCRAFT
CERTIFICATION OFFICE