AVION RESEARCH

Worldwide Suppliers of Certified Instrument Panels

CONTROL WHEELS INSTALLATION INSTRUCTIONS

CW-8001

Rev- 2.1 June 23, 2006

CESSNA 150,152,170,172,175,180,185 & 182 (to 1961)

REMOVAL OF ORIGINAL CONTROL WHEELS:

Reference drawing CW-6001

1) **Remove the nut and bolt at the universal joint end of the control shaft behind the instrument panel.**
2) **Withdraw the control wheel and shaft through the panel and remove from the aircraft.**
3) **Repeat steps 1-2 for the other wheel.**
4) **Remove the two rivets that secure the control wheel to the control shaft, ensuring that the rivet holes are not enlarged. The holes should be round and no larger than .210 diameter.**
5) **Remove the shaft from the original wheel.**

ASSEMBLY OF NEW CONTROL WHEELS:

Reference drawing CW-6002

1) **Bolt hub to backing plate using 4 x MS35207-265 and elastic stop nuts 4 x MS20365-1032A. 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 giving a height range of 2.5 “.**

2) **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 step 3.**
3) **Screw backing plate to control wheel using 6 x MS27309-1-10 and securely tighten.**

INSTALLATION OF “PUSH TO TALK” SWITCH:

Solder PTT wires to the two tabs of the switch marked “NO” to create a normally open circuit. Install heat shrink tubing over the soldered connections. Pass ends of wire through control wheel drilling and withdraw from lower edge of control wheel. Install heat shrink tubing as wire abrasion protection where the wire bends 90 degrees to pass out of the grip. Place a drop of RTV sealant on the barrel of the switch and slide into the hole pressing down until the bezel is flush with the top surface of the wheel. Gently pull out excessive cable and slack from the wires and place a small quantity to RTV on the wire to secure it where it passes out of the grip.

RE-INSTALLATION OF THE CONTROL WHEELS:\

Reference drawing CW-6001 and CW-6002

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. The PTT wire should be wired into the radio circuit in a accordance with accepted and approved practices in avionics industry.

CESSNA 177, 182 (1962 0n), 205, 206, 207 & 210

1.25" diameter control shaft.

Removal of original control wheels.

Reference drawing CW-6003

1) 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. Slide the cover up the shaft to gain access to the three screws located 120 degrees apart around the shaft, securing the wheel to the control shaft. Remove the three screws and remove the original wheel by withdrawing out of the end of the control shaft.

Assembly of new control wheels

Reference drawing CW-6003

1) Bolt hub to backing plate using 4 x MS35207-265 and elastic stop nuts 4 x MS20365-1032A Set the height of the control wheel relative to the control shaft to suit leg clearance requrements or your personal preference. There are four different heights giving a height range of 2.5 ".

2) Screw backing plate to control wheel using 6 x MS27309-1-10 and securely tighten.

Installation of "PTT" switch:

Solder PTT wires to the two tabs of the switch marked "NO" to create a normally open circuit. Install heat shrink tubing over the soldered connections. Pass ends of wire through control wheel drilling and withdraw from lower edge of control wheel. Install heat shrink tubing as wire abrasion protection where the wire bends 90 degrees to pass out of the grip. Place a drop of RTV sealant on the barrel of the switch and slide into the drilling pressing down until the bezel is flush with the top surface of the wheel. Gently pull out excessive cable and slack from the wires and place a small quantity to RTV on the wire to secure it where it passes out of the grip.

Re-installation of control wheels.

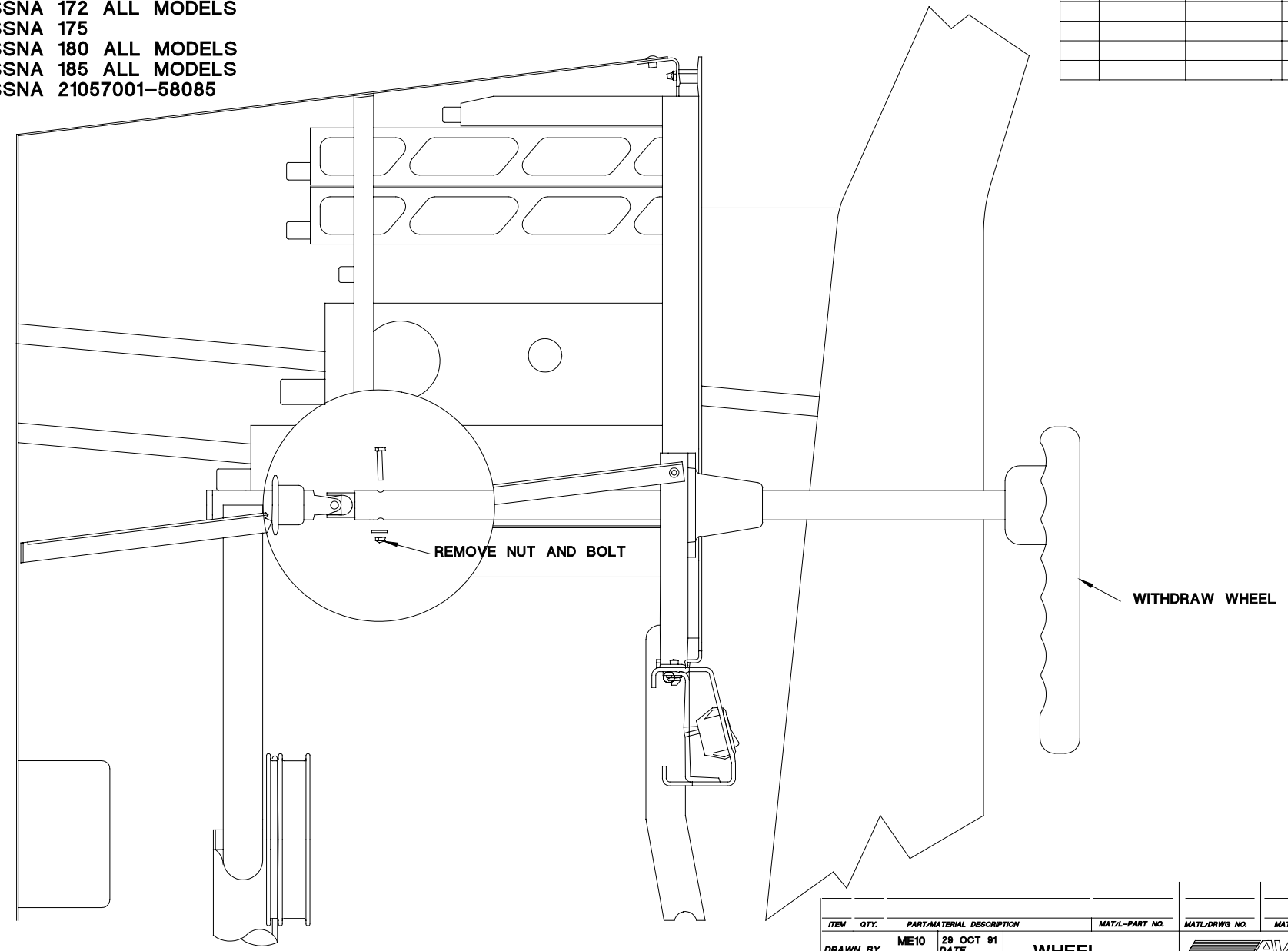
Reference drawing CW-6003

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 threats. Tighten securely. Re-install the plastic cover over the hub (if installed.) Repeat procedure for the other wheel.

We are always looking for ways to ensure that your experience with our products and Company meet the highest standards. We would appreciate your comments.

CESSNA 18233000–82535989
CESSNA 172 ALL MODELS
CESSNA 175
CESSNA 180 ALL MODELS
CESSNA 185 ALL MODELS
CESSNA 21057001–58085

REV	DATE	DESCRIPTION	ENGR.
1	JAN 4,1994	AS ISSUED	

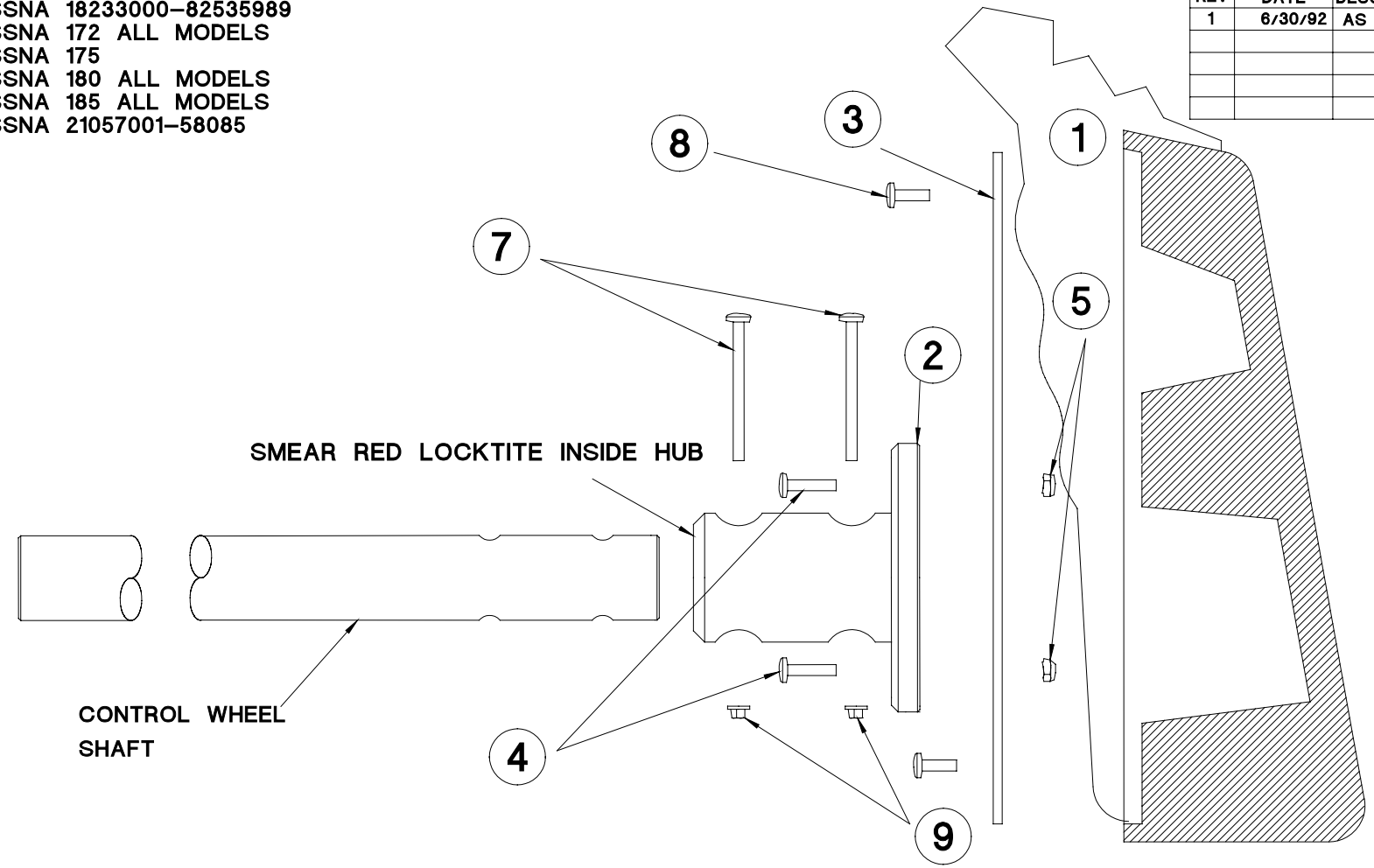


ITEM	QTY.	PART/MATERIAL DESCRIPTION	MAT'L–PART NO.	MATL/DRWG NO.	MATL/SPEC.

DRAWN BY ME10	29 OCT 91 DATE	WHEEL INSTALLATION	AVION RESEARCH CORPORATION
ENGINEER/CHECKER T BURWARD–HOY	29 OCT 91	TITLE	1022 W. MAUDE AVE. SUITE 102 SUNNYVALE CA 94086
RELEASE TO PROD.		1:1 SCALE	SHEET 1 OF 1
SUPERSEDES DRWG.			CW–6001

CESSNA 18233000–82535989
CESSNA 172 ALL MODELS
CESSNA 175
CESSNA 180 ALL MODELS
CESSNA 185 ALL MODELS
CESSNA 21057001–58085

REV	DATE	DESCRIPTION	ENGR.
1	6/30/92	AS ISSUED	



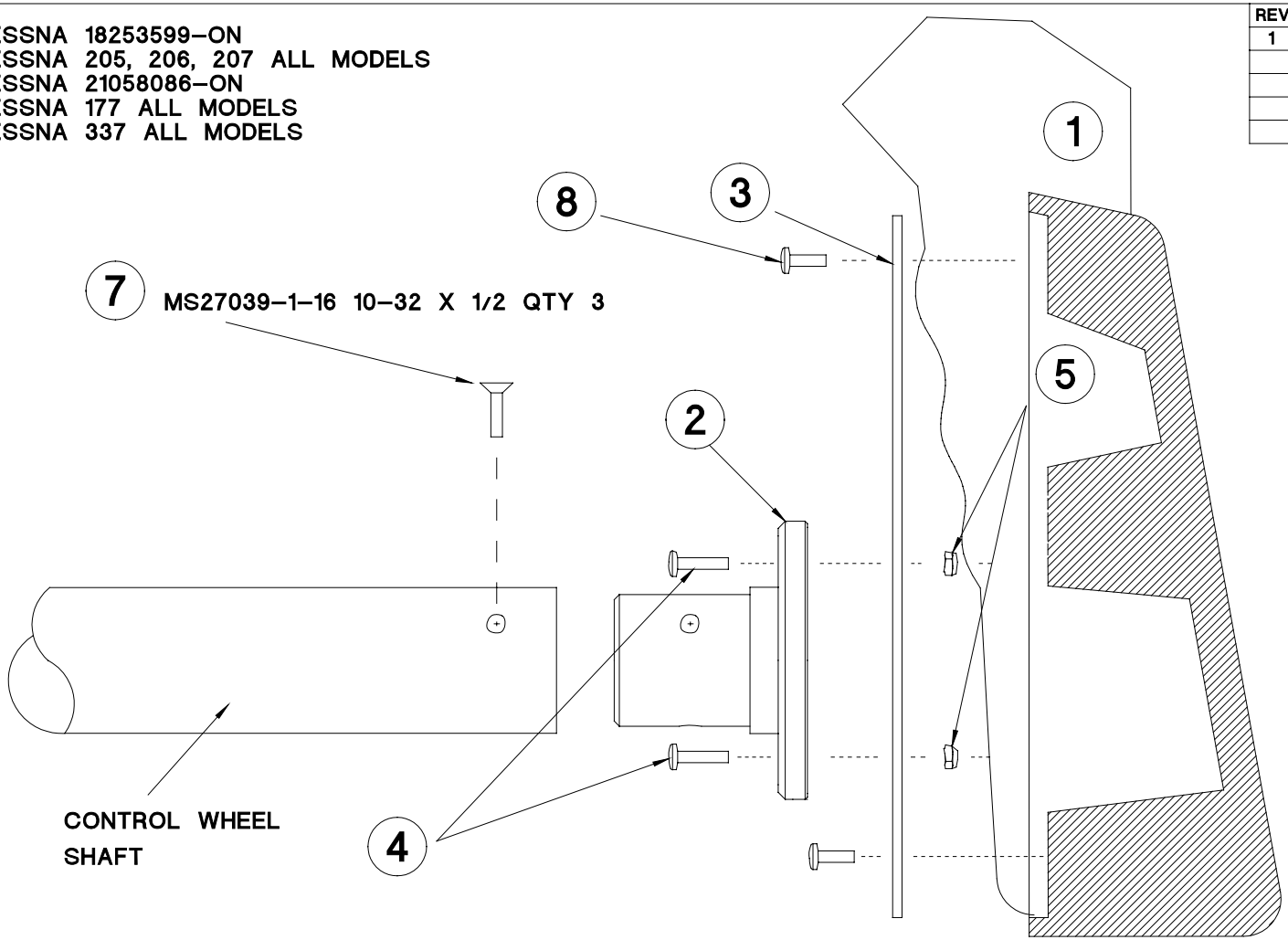
ITEM	QTY.	PART/MATERIAL DESCRIPTION	MAT'L–PART NO.	MAT'L/SPEC.
9	2	NUT	MS21042–1032	
8	6	SCREW 10–32	MS27039–1–07	
7	2	SCREW 10–32	MS27039–1–16	
6				
5	4	NUT, 10–32	MS203655–1032	
4	4	BOLT, PAN 10–32	MS35207–265	
3	1	BACK PLATE CW103		
2	1	HUB CW102		
1	1	CONTROL WHEEL CW–101		

DRAWN BY	ME10	30 JUNE 1992	WHEEL SHAFT ASSEMBLY
ENGINEER/CHECKER	T BURWARD–HOY	30 JUNE 1992	AVION RESEARCH CORPORATION
RELEASE TO PROD.			1022 W. MAUDE AVE. SUITE 102 SUNNYVALE CA 94086
SUPERSEDES DRWG.		1:1 SCALE	SHEET 1 OF 1 — CW–6002

Avion Research, Inc. 265 Sobrante Way Suite G Sunnyvale, CA 94086

CESSNA 18253599–ON
CESSNA 205, 206, 207 ALL MODELS
CESSNA 21058086–ON
CESSNA 177 ALL MODELS
CESSNA 337 ALL MODELS

REV	DATE	DESCRIPTION	ENGR.
1	6/30/92	AS ISSUED	



ITEM	QTY.	PART/MATERIAL DESCRIPTION	MAT'L–PART NO.	MATL/SPEC.
8	6	SCREW 10–32	MS27039–1–07	
7	3	SCREW 10–32	MS24693–S272	
6				
5	4	NUT, 10–32	MS203655–1032	
4	4	BOLT, PAN 10–32	MS35207–265	
3	1	BACK PLATE CW102		
2	1	HUB CW104		
1	1	CONTROL WHEEL CW101		

DRAWN BY	ME10	30 JUNE 1992	WHEEL SHAFT ASSEMBLY
ENGINEER/CHECKER	T BURWARD–HOY	30 JUNE 1992	
RELEASE TO PROD.			PART #
SUPERSEDES DRWG.			SCALE 1:1 SHEET 1 OF 1

AVION RESEARCH CORPORATION
1022 W. MAUDE AVE. SUITE 102
SUNNYVALE CA 94086

CW–6003

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 aircraft models and applicable airworthiness regulations.

Make: *

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 of issuance: May 26, 2000

Date reissued: May 14, 2002

Date amended:

By direction of the Administrator

(Signature)

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.

This certificate may be transferred in accordance with FAR 21.47.

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 -

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	A2CE	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