

TEXTRON LYCOMING OPERATOR'S MANUAL

O-360 and ASSOCIATED MODELS

SECTION 3

e. A proper magneto check is important. A magneto preflight test is useful to determine that both magnetos are functioning properly and that no spark plug is misfiring. Additional factors, other than the ignition system, affect magneto drop-off. They are load-power output, propeller pitch, and mixture strength. The important thing is that the engine runs smoothly because magneto drop-off is affected by the variables listed above. Make the magneto check in accordance with the following procedures:

(1) Fixed Wing Aircraft.

(*Controllable pitch propeller*). With propeller in minimum pitch angle, set the engine to produce 50 - 65% power as indicated by manifold pressure gage. At these settings, the ignition system and spark plugs must work harder because of the greater pressure within the cylinders. Under these conditions, ignition problems, if they exist, will occur. Magneto checks at low power settings will only indicate fuel / air distribution quality.

(*Fixed pitch propeller*). Aircraft that are equipped with fixed pitch propellers, or not equipped with manifold pressure gage, may check magneto drop-off with engine operating at approximately 1800 RPM (2000 RPM maximum).

Switch from both magnetos to one and note drop-off; return to both until engine regains speed and switch to the other magneto and note drop-off. Magneto drop-off at 2000 RPM should not exceed 200 RPM on either magneto; but under some conditions; i.e., field elevations, temperature and carburetor characteristics, a drop in excess of 200 RPM (plus 25 RPM) may be experienced. If engine speed stabilizes and if the engine continues to operate smoothly, the ignition system is operating satisfactorily.

(2) Helicopter.

Raise collective pitch stick to obtain 15 inches manifold pressure at 2000 RPM.

Switch from both magnetos to one and note drop-off; return to both until engine regains speed and switch to the other magneto and note drop-off. Drop-off should not exceed 200 RPM. Drop-off between magnetos should not exceed 50 RPM. A smooth drop-off past normal is usually a sign of a too lean or too rich mixture.

f. Do not operate on a single magneto for too long a period; a few seconds is usually sufficient to check drop-off and to minimize plug fouling.

Air Plains Services, Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

FAA Approved
Airplane Flight Manual
Supplement


For

Cessna 172P
Serial No. 17274010 and Subsequent

Serial No: 17276498 Reg No. N 99709

This Supplement must be attached to the Pilots Operating Handbook and the FAA Approved Airplane Flight Manual when the airplane is modified in accordance with STC SA2196CE which increases max certificated takeoff weight to 2550 lbs. The airplane must previously have been modified with STC SA4428SW. The information contained herein supplements or supersedes the basic Manual only in those areas outlined herein. For limitations, procedures and performance information not contained in this supplement, consult the Pilots Operating Handbook and the basic Airplane Flight Manual.

1. GENERAL
2. LIMITATIONS
3. EMERGENCY PROCEDURES
4. NORMAL PROCEDURES
5. PERFORMANCE
6. WEIGHT AND BALANCE

FAA Approved: 
Manager, Wichita Aircraft
Certification Office
FAA Central Region,
Wichita, Ks.

Oct. 2, 1987
Page 1 Of 10
Document 172057
Rev. 2,
Date February 16, 1999

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Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

Log of Revisions

Rev.	Pages Affected	Description	FAA Approved	Date
		Original	G. M. Baker	10/02/87
1	3&4 1-10	Added 0360A4N 3/21/90 Changed Company Name,	<i>B. J. Jensen</i>	3/21/90
2	All	Revised Weight And Balance Charts Added Doc. Number	<i>[Signature]</i>	2/16/99

FAA Approved
Oct. 2, 1987
Page 2 of 10
Document 172057
Rev. 2
Date February 16, 1999

[Signature]
10/1/99

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P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

SECTION 1. General

The information contained in this Flight Manual Supplement is FAA Approved material, and is applicable to the operation of the airplane in accordance with STC SA2196CE which increases the max. certificated takeoff weight to 2550lbs, when the airplane has previously been modified with STC SA4428SW.

DESCRIPTIVE DATA

PAGE 1-3

ENGINE

Engine Model Number: O-360-A4A,A4M,A4N, A2F & A3A

Engine Type: Normally aspirated, direct drive, air cooled, horizontally opposed, carburetor equipped, four cylinder engine with 360 cu. in. displacement.

Horsepower Rating and Engine Speed: 180 rated BHP at 2700 RPM

Maximum Continuous RPM: 2540-RPM

PAGE 1-5

MAXIMUM CERTIFICATED WEIGHTS

Takeoff, Normal	2550lbs.
Utility	2100lbs.
Landing, Normal	2550lbs.
Utility,	2100lbs.

SECTION 2. Limitations

PAGE 2-5 AIRSPEED INDICATOR MARKINGS

Airspeed indicator must be replaced with Cessna PIN C661064-0112 or remarked as follows:

FAA Approved
Oct. 2, 1987
Page 3 of 10
Document 172057
Rev. 2
Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

PAGE 2-5 AIRSPEED INDICATOR MARKINGS, (cont.)

MARKING	KIAS VALUE OR RANGE
White Arc	40-85
Green Arc	50-127
Yellow Arc	127-158
Red Line	158

PAGE 2-4 AIRSPEED LIMITATIONS

VA Maneuvering Speed:

2550 Pounds	105 KIAS
2150 Pounds	95 KIAS
1750 Pounds	85 KIAS

PAGE-2-5 POWER PLANT LIMITATIONS

Engine Model Number: O-360-A4A, A4M, A4N, A2F & A3A
Maximum Power: 180 BHP rating
Maximum Continuous RPM: 2540 RPM

PAGE 2-6 WEIGHT LIMIT

Maximum Takeoff Weight,	Normal	2550lbs.
	Utility	2100lbs.
Maximum Landing Weight,	Normal	2550lbs.
	Utility	2100lbs.

PAGE 2-7 CENTER OF GRAVITY LIMITS

NORMAL CATEGORY

Center of Gravity Range:

Forward: 35.0 inches aft of datum at 1950 lbs. or less, with straight line variation to 41.0 inches aft of datum at 2550 lbs.

Aft: 47.3 inches aft of datum at all weights.

FAA Approved
Oct. 2, 1987
Page 4 of 10
Document 172057
Rev. 2
Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

PAGE 2-7 CENTER OF GRAVITY LIMITS, (cont.)

UTILITY CATEGORY

Center of Gravity Range:

Forward: 35.0 inches aft of datum at 1950lbs. or less, with straight line variation to 36.5 inches aft of datum at 2100lbs.

Aft: 40.5 inches aft of datum at all weights.

PAGE 2-8 FLIGHT LOAD FACTORS

NORMAL CATEGORY

Flight Load Factors (Maximum Takeoff Weight -2550lbs):

Flaps UP +3.8g, - 1.52g

Flaps Down +3.0g

PAGE 2-12 PLACARDS

10. Near airspeed indicator: MANEUVER SPEED - 105 KIAS

SECTION 3. Emergency Procedures

PAGE 3-3 AIRSPEEDS FOR EMERGENCY OPERATION

Engine Failure after Takeoff:

Wing Flaps Up 70 KIAS

Wing Flaps Down 65 KIAS

Maneuvering Speed:

2550 lbs 105 KIAS

2150 lbs 95 KIAS

1750 lbs 85 KIAS

Maximum Glide

2550 lbs 65 KIAS

2150 lbs 62 KIAS

1750-lbs 56 KIAS

Precautionary Landing With Engine Power. 65 KIAS

Landing Without Engine Power:

Wing Flaps Up 70 KIAS

Wing Flaps Down 65 KIAS

FAA Approved

Oct. 2, 1987

Page 5 of 10

Document 172057

Rev. 2

Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

PAGE, 3-4 ENGINE FAILURES

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. Airspeed --70 KIAS (flaps UP)
65 KIAS (flaps DOWN)

PAGE 3-4 ENGINE FAILURE DURING FLIGHT

1. Airspeed -- 75 KIAS

PAGE 3-4 FORCED LANDINGS

EMERGENCY LANDING WITHOUT ENGINE POWER

1. Airspeed -- 70 KIAS (flaps UP)
65 KIAS (flaps DOWN)
5. Wing Flaps -- AS REQUIRED (30 deg recommended)

PRECAUTIONARY LANDING WITH ENGINE POWER

2. Airspeed -- 65 KIAS
6. Airspeed -- 65 KIAS

PAGE 3-5 DITCHING

4. Wing Flaps -- 20-30 deg.

NOTE

If no power is available, approach at 70 KIAS with flaps up
or at 65 KIAS with 10 deg flaps.

PAGE 3-7 ICING

INADVERTENT ICING ENCOUNTER

11. Approach at 80 to 90 KIAS depending upon the amount of the
accumulation.

FAA Approved

Oct. 2, 1987

Page 6 of 10

Document 172057

Rev. 2

Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

SECTION 4. Normal Procedures

PAGE 4-3 NORMAL PROCEDURES

SPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum weight of 2550 pounds and may be used for any lesser weight.

Page 4-3

Takeoff

Normal Climb Out 75-85 KIAS
Short Field Takeoff, Flaps 10°, Speed at 50 Feet . 57 KIAS

Enroute Climb, Flaps Up:

Normal, Sea Level 75-85 KIAS
Normal, 10,000 Feet 70-80 KIAS
Best Rate of Climb, Sea Level 76 KIAS
Best Rate of Climb, 10,000 Feet 72 KIAS
Best Angle of Climb, Sea Level 62 KIAS
Best Angle of Climb, 10,000 Feet 67 KIAS

Landing Approach:

Normal Approach, Flaps Up 65-75 KIAS
Normal Approach, Flaps 30° 60-70 KIAS
Short Field Approach, Flaps 30° 62 KIAS

Balked Landing:

Maximum Power, Flaps 20° 60 KIAS

Maximum Recommended Turbulent Air Penetration Speed:

2550 Lbs 105 KIAS
2150 Lbs 95 KIAS
1750 Lbs 85 KIAS

PAGE 4-8 SHORT FIELD TAKEOFF

Climb Speed -- 57 KIAS(until all obstacles are cleared)

PAGE 4-9 ENROUTE CLIMB

Airspeed -- 75-85 KIAS

FAA Approved
Oct. 2, 1987
Page 7 of 10
Document 172057
Rev. 2
Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements

Cessna Model 172P

PAGE 4-9 LANDING

NORMAL LANDING

1. Airspeed -- 65-75 KIAS (flaps UP)
2. Wing Flaps -- AS DESIRED (0-10 deg below 110 KIAS, 10-30 deg. below 85 KIAS).
3. Airspeed -- 60-70 KIAS (flaps DOWN)

PAGE 4-10

SHORT FIELD LANDING

1. Airspeed 65-75 KIAS (flaps UP)
3. Airspeed 62 KIAS (until flare)

BALKED LANDING

5. Wing Flaps --10 deg. (until obstacles are cleared) RETRACT SLOWLY after reaching a safe altitude and 65 KIAS.

Section 5

PAGE 5-21 LANDING DISTANCE - SHORT FIELD

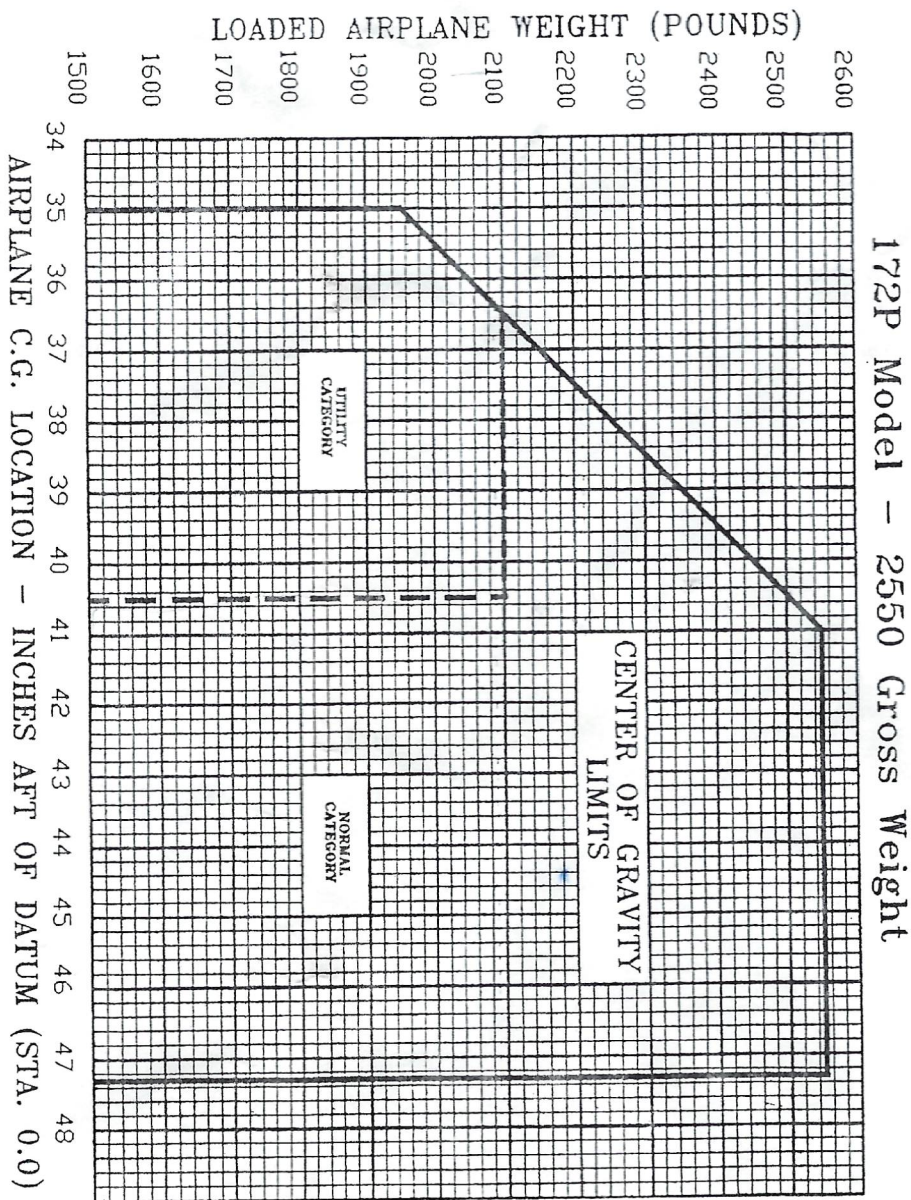
NOTES:

4. If a landing with flaps up is necessary, increase approach speed by 9 KIAS and allow for 35% longer distance.

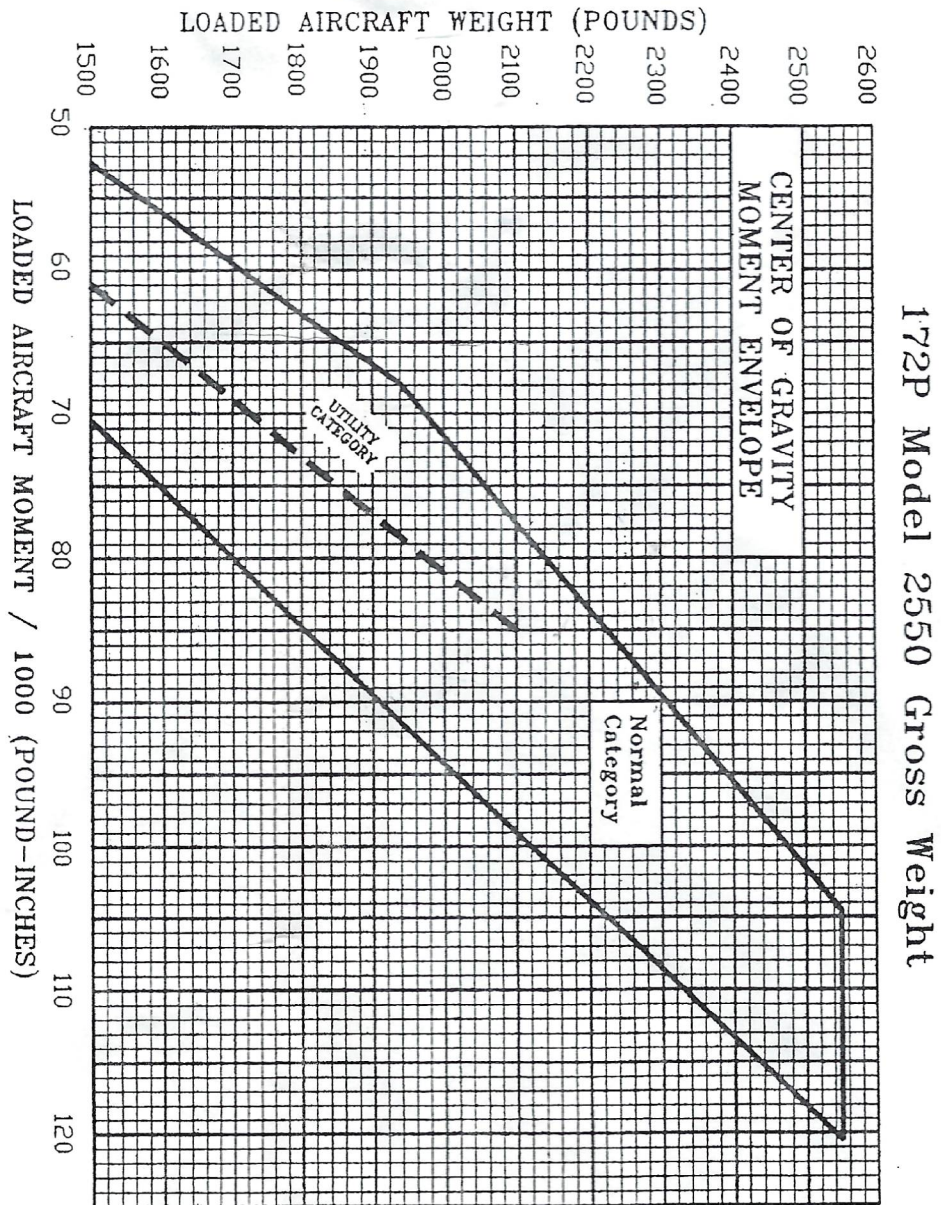
FAA Approved
Oct. 2, 1987
Page 8 of 10
Document 172057
Rev. 2
Date February 16, 1999

Air Plains Services Corp.
P.O. Box 541
Wellington Airport
Wellington, Ks. 67152

Section 9
Supplements



FAA Approved
Oct. 2, 1987
Page 9 of 10
Document 172057
Rev. 2
Date February 16, 1999



180HP CESSNA 172 SKYHAWK
 CRUISE PERFORMANCE
 Standard Temperature

Pressure Altitude Ft.	RPM	% BHP	GPH
2000	2550	76	10.2
	2500	72	9.6
	2400	64	8.7
	2300	58	7.9
	2200	52	7.2
	2100	46	6.6
4000	2600	76	10.2
	2500	68	9.2
	2400	62	8.3
	2300	55	7.6
	2200	49	6.9
	2100	44	6.3
6000	2650	76	10.1
	2500	69	9.2
	2400	62	8.4
	2300	56	7.7
	2200	53	7.3
8000	2700	76	10.1
	2600	69	9.2
	2500	62	8.4
	2400	56	7.7
	2300	53	7.3
	2200	47	6.7
10000	2700	72	9.6
	2600	65	8.8
	2500	59	8.1
	2400	53	7.4
	2300	48	6.8
12000	2650	65	8.8
	2600	62	8.4
	2500	56	7.7
	2400	51	7.1

Supplemental Type Certificate

Number SA4428SW

This certificate issued to Air Plains Services Corp.
P. O. Box 541
Wellington, KS 67152

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 3 of the Civil Air Regulations.

Original Product: Type Certificate Number: 3A12

Make: Cessna

Model: 172D, 172E, 172F (T-41A), 172G, 172H (T-41A), 172I, 172K, 172L, 172M, 172N, 172P

Description of Type Design Change: Installation of Lycoming O-360-A2F, -A3A, and O-360-A4A, -A4M, or -A4N engines and McCauley 1A170/CFA7660 propeller or Lycoming O-360-A4A, -A4M, or -A4N engines and Sensenich 76FM8S propeller in accordance with Drawing List 1727600 Revision 14, dated October 21, 1996, Installation Instructions 172031, Revision 6, dated December 16, 1996 (for 172I through 172P Models), or Installation Instructions 172034 Revision 3 dated October 21, 1996 (for 172D through 172H Models) and Parts list 172032, No Change, dated October 21, 1996 or later "FAA Approved" revisions. Airplane Flight Manual Supplement for airplane serial number 17271035 and on, dated August 27, 1985, or later "FAA Approved" revision is also required. Owners Handbook Supplement for airplane serial numbers 17249545 through 17267584, dated December 23, 1996, or later "FAA Approved" revision is also required.

Limitations and Conditions: Compatibility of this design change with previously approved modifications must be determined by the installer. Cessna 172I must be placarded: "Flight with a pilot only requires 10 pounds of ballast at Station 95 (baggage compartment)." Sensenich 76FM8S propeller limited to solid crankshaft Lycoming O-360-A4 series engines only. 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 change and any of the other previously approved modifications will introduce no adverse effect upon the airworthiness of that airplane.

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 18, 1976

Date reissued: Jun 26, 1984, Nov 10, 1987, Aug 27, 1985

Date of issuance: July 24, 1981

Date amended: Sep 17, 1987, Mar 21, 1990, Mar 31, 1994, Mar 9, 1995, Jan 7, 1997.



By direction of the Administrator

James M. Peterson
(Signature)

James M. Peterson
Associate ACO Mgr., Systems & Propulsion
Wichita 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.

Information contained herein in regard to STC SA4428SW is the property of Air Plains Services, Corp. This document or drawing is authorized only to be used on Aircraft N 99-109 S/N 1721649 and no other. Any other use constitutes fraud.
Signed *James M. Peterson*

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number

SA2196CE

Description of Type Design Change, Continued:

3. 172K (S/N 17257162 through 17259223) and 172L (S/N 17259224 through 17259903 (increase gross weight to 2,500 lbs. per Air Plains Drawings 1728803 (sheet 1 and 2) and 1728806-3; and Installation Instruction 1728806-1 with an FAA approval date of July 12, 1988, or later.
4. 172N increase gross weight to 2,400 lbs. (when STC SA4428SW is not installed) per Mike Kelley Aircraft, Inc. Drawing GW1729105-1 and Installation Instructions 1722400-1, both with an FAA approval date of October 9, 1991, or later.

Limitations and Conditions, Continued:

3. Supplemental Airplane Flight Manual dated September 25, 1986, with Revision 2 dated July 6, 1988, is required equipment for the 172N Serial Numbers 17267585 through 17271034 when this modification is installed.
4. Supplemental Airplane Flight Manual dated September 25, 1986, Revision 2 dated July 6, 1988, is required equipment for the 172M Serial Numbers 17265685 through 17267584 when this modification is installed.
5. Supplemental Airplane Flight Manual dated July 6, 1988, is required equipment for the 172M Serial Numbers 17260759 through 17267684 when this modification is installed.
6. Supplemental Airplane Flight Manual dated July 6, 1988, is required equipment for the 172K and 172L Serial Numbers 17257162 through 17260758 when this modification is installed.
7. Supplemental Airplane Flight Manual dated May 3, 1991, is required equipment for the 172N Serial Numbers 17267585 through 17271034 when modified in accordance with item 4 above.
8. Airplane Flight Manual Supplement dated May 3, 1991, is required equipment for the 172N Serial Numbers 17271035 through 17272884 when modified in accordance with item 4 above.
9. Airplane Flight Manual Supplement dated May 3, 1991, is required equipment for the 172N Serial Numbers 17272885 through 17274009 when modified in accordance with item 4 above.
10. This approval should not be extended to other specific airplanes of this model on which other previously approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of the airplane.

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

PROPRIETARY INFORMATION
Information contained herein in regard to STC SA2196CE is the property of Air Plains Services, Corp. This document used in drawing is authorized only to be used for aircraft and no other. Any other use constitutes fraud.
S/N 17257162 through 17259223
S/N 17259224 through 17259903
D. L. Loman, H. J. Miller