

AEROTRONICS, INC.
 LOGAN FIELD
 BILLINGS, MT 59105

PHONE (406) 259-5006
 FAX (406) 252-4369

FAA CERTIFIED STATION NH2R031L

AIRCRAFT WEIGHT & BALANCE SUPPLEMENT AND INSTALLED EQUIPMENT DATA

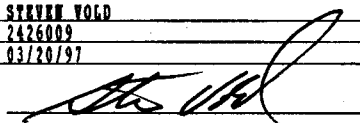
CUSTOMER NAME MANHATTAN FLYING TIGERS, INC.

AIRCRAFT MAKE <u>CESSNA</u>		AIRCRAFT MODEL <u>172M</u>			
REGISTRATION # <u>N80830</u>		INSTALLATION W/O <u>7M127</u>			
MANUFACTURER	UNIT	DESCRIPTION	WEIGHT	ARM	MOMENT
1. REMOVED:					0
2. ARNAV	R-21	LORAN C	-4.8	12.0	-57.6
3. ARNAV		LORAN C ANTENNA	-1	92.0	-92
4. INSTALLED:					0
5. TRIMBLE	TWL-1000DC	GPS	3	12.0	36
6.					0
7.					0
8.					0
9.					0
10.					0
11.					0
12.					0
13.					0
14.					0
15.					0
16.					0
17.					0
18.					0
19.					0
20.					0
EQUIPMENT CHANGE TOTAL WEIGHT & MOMENT			-2.8		-113.6
PREVIOUS AIRCRAFT EMPTY WEIGHT & MOMENT			1,475.71		56,540.18
NEW AIRCRAFT EMPTY WEIGHT & MOMENT			1,472.91		56,426.58
NEW R.W.C.G.	38.3095912174				
NEW A.C.G.W.	2550.00				
NEW A.C.E.W.	1472.91				
NEW USEFUL LOAD	1077.09				

REPAIRMAN'S NAME
 CERTIFICATE #
 DATE OF AMENDMENT

STEVEN VOLD
2426009
03/20/97

SIGNATURE



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

Section 9
Supplements

FAA Approved
Supplemental Airplane Flight Manual

For

Cessna 172M & N
Serial No. 17265685 to 17271034
Serial No. 17266704 N 80830

The information contained in this Manual is FAA Approved Material, which, along with the FAA Approved placards and instrument markings, is applicable to the operation of the airplane when modified in accordance with STC SA2196CE, which increases the maximum certificated takeoff weight to 2550 lbs. and limits the flap travel to 30 degrees. The airplane must previously have been modified in accordance with STC SA4428SW which installs a 180hp. Lyc. 0-360 series engine and a fixed pitch propeller.

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

for FAA Approved JM Baker
Manager, Wichita Aircraft
Certification Office
FAA Central Region,
Wichita, KS

FAA Approved
SEPT. 25, 1986
Rev. 2 dated JUL 06 1988

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

Section 9
Supplements

Cessna Model 172M & N

Log of Revisions

Rev.	Pages Affected	Description	FAA Approved	Date
1	1-10	Changed Page Numbers Revised cover sheet Added Engine Models	<i>JM Baker</i>	10/2/87
2	1-10	Added M models Changed name to Air Plains Services Corp.	<i>JM Baker</i>	JUL 06 1988

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Wellington Airport
Wellington, Ks. 67152

Section 9
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SECTION 1. General

DESCRIPTIVE DATA

PAGE 1-3

ENGINE

Engine Model Number: O-360-A2F, A3A, A4A & A4M
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 2700RPM
Maximum Continuous RPM: 2540 RPM

PAGE 1-5

MAXIMUM CERTIFICATED WEIGHTS

Takeoff, Normal	2550lbs.
Utility	2000lbs.
Landing, Normal	2550lbs.
Utility	2000lbs.

SECTION 2. Limitations

FLAP TRAVEL - Limited to 30 deg.

PAGE 2-5 AIRSPEED INDICATOR MARKINGS

Airspeed indicator must be replaced with Cessna P/N C661064-0112, Air Plains Services P/N 172861-2 or remarked as follows:

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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-A2F,A3A,A4A, and A4M
Maximum Power: 180 BHP rating
Maximum Continuous RPM: 2540 RPM

PAGE 2-6 WEIGHT LIMITS

Maximum Takeoff Weight, Normal	2550lbs.
Utility	2000lbs.
Maximum Landing Weight, Normal	2550lbs.
Utility	2000lbs.

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.

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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 35.5 inches aft of
datum at 2000lbs.

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.....68 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

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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
5. Wing Flaps -- 30 deg (on final approach).
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.

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Wellington, Ks. 67152

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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 deg, 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.....73 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 deg.....60-70 KIAS
Short Field Approach, Flaps 30 deg.....62 KIAS

Balked Landing:

Maximum Power, Flaps 20 deg.....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 4-8 ENROUTE CLIMB

Airspeed -- 75-85

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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)

SHORT FIELD LANDING

1. Airspeed -- 65-75 KIAS (flaps up)
2. Wing Flaps -- FULL DOWN (30deg.)
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

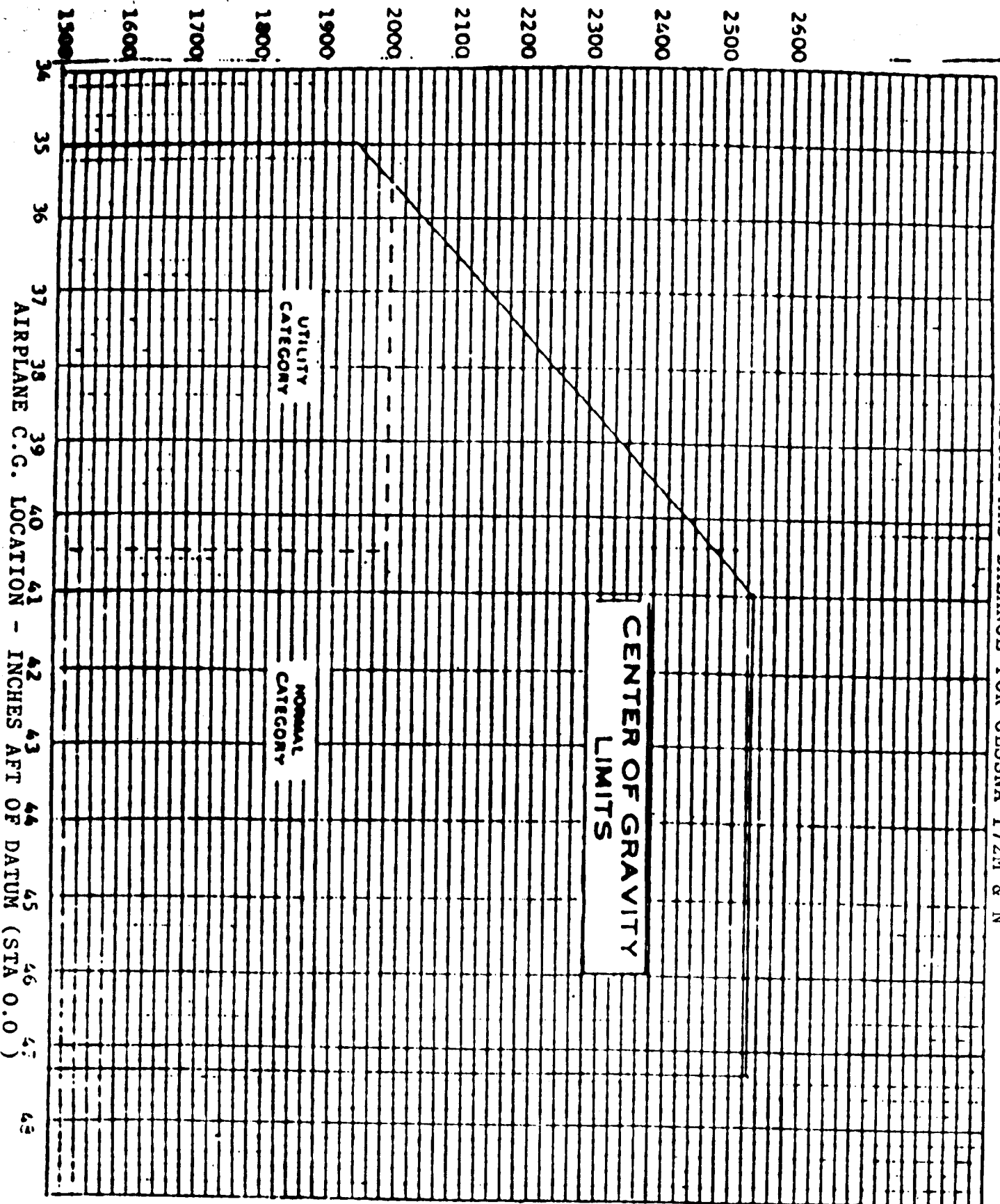
CONDITIONS:
Flaps 30 deg.

NOTES:

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

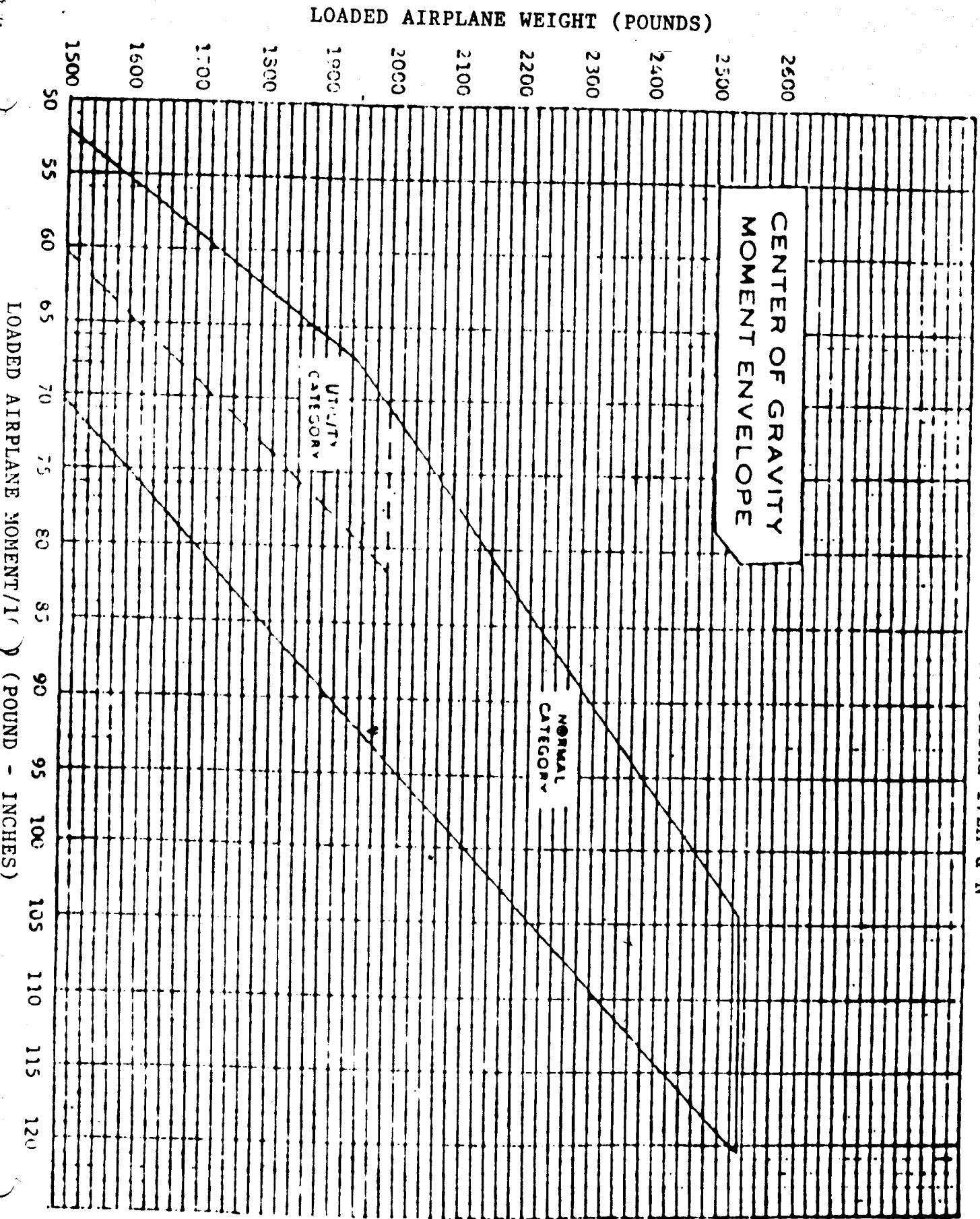
WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
2550	62	S.L.	545	1290	565	1320	585	1350	605	1385	625	1415
		1000	565	1320	585	1350	605	1385	625	1420	650	1450
		2000	585	1355	610	1385	630	1420	650	1455	670	1490
		3000	610	1385	630	1425	655	1460	675	1495	695	1530
		4000	630	1425	655	1460	675	1495	700	1535	725	1570
		5000	655	1460	680	1500	705	1535	725	1575	750	1615
		6000	680	1500	705	1540	730	1580	755	1620	780	1660
		7000	705	1545	730	1585	760	1625	785	1665	810	1705
8000	735	1585	760	1630	790	1670	815	1715	840	1755		

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34 35 36 37 38 39 40 41 42 43 44 45 46 45
AIRPLANE C.G. LOCATION - INCHES AFT OF DATUM (STA 0.0)

Air Plains Services Corp.
Weight and Balance for Cessna 172M & N



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2500
2600

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

Number SA4428SW

This certificate, issued to Mike Kelley Aircraft Inc.
Box 541
Wellington, Kansas 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: 172I, 172K, 172L, 172M, 172N

Description of Type Design Change: Installation of Lycoming O-360-A2F -A3A and O-360-A4A or -A4M engines and McCauley 1A170/CFA-76-60 propeller or Lycoming O-360-A4A or -A4M engines and Sensenich 76EM8S propeller in accordance with Drawing 1727601, Sheets 1 through 4, Sheet 4, Rev. C dated July 22, 1981, and Installation Instructions revised January 7, 1980, or Drawing List No. 1727600 dated August 15, 1985, or later "FAA Approved" revisions. Airplane Flight Manual Supplement for Cessna Model 172N (S/Ns 17271035 and on) dated August 27, 1985, or later "FAA Approved" revisions is also required.

Limitations and Conditions: Limitations and Conditions Cessna Model 172I must be placarded: Flight with a pilot only requires 10 pounds of ballast at Station 95 (baggage compartment). Sensenich 76EM8S propeller limited to solid crankshaft Lycoming O-360-A4 series engines only. 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 these 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: June 26, 1984

Date of issuance: July 24, 1981

Date amended: August 27, 1985



By direction of the Administrator

Robert A. Gambrell, Jr.
(Signature)

Robert A. Gambrell, Jr., Manager
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.

This certificate may be transferred in accordance with FAR 21.47.

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

Number SA910CE

This certificate, issued to Horton STOL-Craft, Inc.
Wellington Municipal Airport
Wellington, Kansas 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: 172 and 172Q Landplane
172A through 172P Landplane
and Floatplane

Description of Type Design Change:

Installation of wing leading edge cuffs, drooped tips, stall fences and aileron gap seals per drawings and data called out on STOL-Craft Drawing List #1 with an FAA approval date of May 7, 1973, or later.

Limitations and Conditions: 1. Airplane Flight Manual Supplement dated May 31, 1985, is required equipment for the Cessna 172Q Airplane when this modification is installed. 2. 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 that airplane. 3. Delete all references to intentional spins from the utility category placard, and adjacent to it add a new placard which reads "INTENTIONAL SPINS PROHIBITED."

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: April 4, 1973

Date reissued: May 16, 1977

Date of issuance: May 29, 1973

Date amended: June 25, 1974, February 18, 1982,
April 7, 1982, June 3, 1985

By direction of the Administrator

Robert A. Gambrill, Jr.
(Signature)

Robert A. Gambrill, Jr., Manager
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.

