



**FAA Approved  
Supplemental Airplane Flight Manual**

**DOCUMENT NUMBER 172055**

**For**

**Cessna 172M**

**Serial No. 17260759 to 17265684**

**Serial No. \_\_\_\_\_ Reg. # \_\_\_\_\_**

The information contained in this flight 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 2196CE, 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 ATS SA4428SW which installs a 180HP Lycoming O-360 series and a fixed pitch propeller.

for FAA Approved  \_\_\_\_\_  
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## LOG OF REVISIONS

Revision	Pages	Description	Approved	Date
Orig	1-8	New Issue	G.M.B.	7/6/88
1	3, 4	Added O-360-A4N	B.L.S.	3/21/90
2	All	Added Document Number Moved Table of Contents Corrected Max Continuous RPM Reformatted Added Propeller Information Corrected Static RPM Added Power Plant Instrument Markings Added Fuel Consumption Chart Reworked Charts Add Section 7	<i>DM Baker</i>	<i>2/3/2012</i>

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## **SECTION 1: GENERAL**

### **DESCRIPTIVE DATA**

#### **ENGINE**

Engine Model Number: O-360-A2F, A3A, A4A, A4M, and A4N  
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: 2700 RPM

#### **NOTE**

Static RPM Limits: 2250 to 2450 RPM

#### **PROPELLERS:**

**Sensenich Propellers approved on installations using the O-360-A4 series engines only**

Propeller Manufacturer: Sensenich Corporation

Propeller Model Number: 76EM8S14-0-60

Number of Blades: 2.

Propeller Diameter: Maximum..... 76 inches.

Minimum:..... 76 inches.

Pitch Range: 62" to 56"

Propeller Manufacturer: Sensenich Corporation.

Propeller Model Number: 76EM8S-0-60 (when using MKA3.5 prop spacer).

Number of Blades: 2.

Propeller Diameter: Maximum:..... 76 inches.

Minimum: ..... 76 inches.

Pitch Range: 62" to 56"

**Approved on all approved engine installations:**

Propeller Manufacturer: McCauley Accessory Division.

Propeller Model Number: 1A170/CFA  
1A170E/CFA

Number of Blades: 2.

Propeller Diameter: Maximum:.....76 inches.  
Minimum: .....74.5 inches.

Propeller Type: Fixed Pitch

Pitch Range: 60" to 56"

**Approved on installations using the O-360-A4A, -A4M, -A4N, and A3A engines only:**

Propeller Manufacturer: McCauley Accessory Division.

Propeller Model Number: 1A170/JFA

Number of Blades: 2.

Propeller Diameter: Maximum:.....76 inches.  
Minimum: .....74.5 inches.

Propeller Type: Fixed Pitch

Pitch Range: 60" to 56"

**MAXIMUM CERTIFICATED WEIGHTS**

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

## **SECTION 2: LIMITATIONS**

### **AIRPEED INDICATOR MARKINGS**

Air Plains Services PN: 172861 or 172861-2 or existing airspeed indicator, marked as follows:

<b>MARKING</b>	<b>MPH CAS VALUE OR RANGE</b>
White Arc .....	56-100 mph
Green Arc .....	64-145 mph
Yellow Arc.....	145-182 mph
Red Line .....	182 mph

### **AIRPEED LIMITATIONS**

VA	Maneuvering Speed: 2550 Pounds.....	112 MPH CAS
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### **POWER PLANT LIMITATIONS**

Engine Model Number: O-360-A2F, A3A, A4A, A4M and A4N  
 Maximum Power: 180 BHP rating  
 Maximum Continuous RPM: 2700 RPM

### **WEIGHT LIMITS**

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

**FLAP TRAVEL** - Limited to 30°

## **CENTER OF GRAVITY LIMITS - NORMAL CATEGORY**

Center of Gravity Range:

Forward: 35 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.

## **UTILITY CATEGORY**

Center of Gravity:

Forward: 35 inches aft of datum at 1950 lbs. or less, with straight line variation to 35.5 inches aft of datum at 2000 lbs.

Aft: 40.5 inches aft of datum at all weights.

## **FLIGHT LOAD FACTORS**

### **NORMAL CATEGORY**

Flight Load Factors (Maximum Takeoff Weight – 2550 lbs.):

Flaps Up..... +3.8g, -1.52g

Flaps Down ..... +3.5g

## **SECTION 3: EMERGENCY PROCEDURES**

### **AIRSPEEDS FOR EMERGENCY OPERATIONS**

Engine Failure After Takeoff:	
Wing Flaps Up.....	79-88 MPH IAS
Wing Flaps Down.....	71-83 MPH IAS
Maneuvering Speed:	
2550 lbs.....	112 MPH IAS
2150 lbs.....	109 MPH IAS
1750 lbs.....	98 MPH IAS
Maximum Glide:	
2550 lbs.....	78 MPH IAS
Precautionary Landing With Engine Power.....	75 MPH IAS
Landing Without Engine Power:	
Wing Flaps Up.....	79-88 MPH IAS
Wing Flaps Down.....	71-83 MPH IAS

### **DITCHING**

If no power is available, approach at 76 MPH IAS with flaps at 30°.

### **FLIGHT IN ICING CONDITIONS**

Approach at 92 to 104 MPH IAS, depending on the accumulation.



## **SECTION 4: NORMAL PROCEDURES**

### **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.

##### Takeoff:

Normal Climb Out..... 86-98 MPH IAS  
Short Field Takeoff, Flaps 10°, Speed at 50 ft..... 66 MPH IAS

##### Enroute Climb, Flaps Up:

Normal Sea Level..... 86-98 MPH IAS  
Normal, 10,000 Feet ..... 81-92 MPH IAS  
Best Rate of Climb, Sea Level ..... 84 MPH IAS  
Best Rate of Climb, 10,000 Feet ..... 86 MPH IAS  
Best Angle of Climb, Sea level ..... 71 MPH IAS

##### Landing Approach:

Normal Approach, Flaps Up ..... 75-86 MPH IAS  
Normal Approach, Flaps 30° ..... 69-81 MPH IAS

##### Balked Landing:

Maximum Power, Flaps 20° ..... 69 MPH IAS

##### Maximum Recommended - Turbulent Air penetration Speed:

2550 lbs..... 112 MPH IAS  
2150 lbs..... 109 MPH IAS  
1750 lbs..... 98 MPH IAS

## SECTION 5: PERFORMANCE

### LANDING DISTANCE - SHORT FIELD

#### CONDITIONS

Flaps Down 30°

If a landing with flaps up is necessary, increase approach speed by 10 mph IAS and allow for 35% longer distance.

			0°C		10°C		20°C		30°C		40°C	
WEIGHT LBS	SPEED AT 50 FT IAS	PRESS ALT FT.	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	71	S.L.	545	1290	565	1320	585	1350	605	1380	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

## CRUISE FUEL CONSUMPTION (Not FAA Approved)

Conditions:  
2550 Pounds  
Recommended Lean Mixture

		20°C Below Standard Temp.		Standard Temperature		20°C Above Standard Temp.	
Press. Alt Feet	RPM	% BHP	GPH	% BHP	GPH	% BHP	GPH
<b>2000</b>	<b>2550</b>	---	---	<b>76</b>	<b>10.2</b>	<b>72</b>	<b>9.6</b>
	2500	77	10.3	72	9.6	68	9.1
	2400	69	9.2	64	8.7	61	8.3
	2300	61	8.3	58	7.9	55	7.6
	2200	55	7.5	52	7.2	49	6.9
	2100	49	6.8	46	6.6	43	6.3
<b>4000</b>	<b>2600</b>	---	---	<b>76</b>	<b>10.2</b>	<b>72</b>	<b>9.6</b>
	2500	73	9.7	68	9.2	65	8.7
	2400	65	8.8	62	8.3	58	8.0
	2300	58	8.0	55	7.6	52	7.3
	2200	52	7.3	49	6.9	47	6.6
	2100	46	6.6	44	6.3	41	6.1
<b>6000</b>	<b>2650</b>	---	---	<b>76</b>	<b>10.1</b>	<b>72</b>	<b>9.6</b>
	2600	77	10.3	72	9.6	68	9.1
	2500	69	9.3	65	8.8	62	8.4
	2400	62	8.4	59	8.0	56	7.6
	2300	56	7.7	53	7.3	50	7.0
	2200	50	7.0	47	6.7	44	6.4
<b>8000</b>	<b>2700</b>	---	---	<b>76</b>	<b>10.1</b>	<b>71</b>	<b>9.5</b>
	2600	73	9.8	69	9.2	65	8.7
	2500	66	8.8	62	8.4	59	8.0
	2400	59	8.1	56	7.7	53	7.3
	2300	53	7.4	50	7.0	47	6.7
	2200	47	6.7	45	6.4	42	6.1
<b>10,000</b>	<b>2700</b>	<b>77</b>	<b>10.2</b>	<b>72</b>	<b>9.6</b>	<b>68</b>	<b>9.1</b>
	2600	69	9.3	65	8.8	62	8.4
	2500	63	8.5	59	8.1	56	7.7
	2400	57	7.8	53	7.4	50	7.0
	2300	51	7.1	48	6.8	45	6.5
	2200	45	6.4	42	6.1	39	5.8
<b>12,000</b>	<b>2700</b>	<b>69</b>	<b>9.3</b>	<b>65</b>	<b>8.8</b>	<b>62</b>	<b>8.4</b>
	2600	66	8.9	62	8.4	59	8.0
	2500	60	8.2	56	7.7	53	7.4
	2400	54	7.5	51	7.1	48	6.7
	2300	48	6.8	45	6.5	42	6.2
	2200	42	6.1	39	5.8	36	5.5

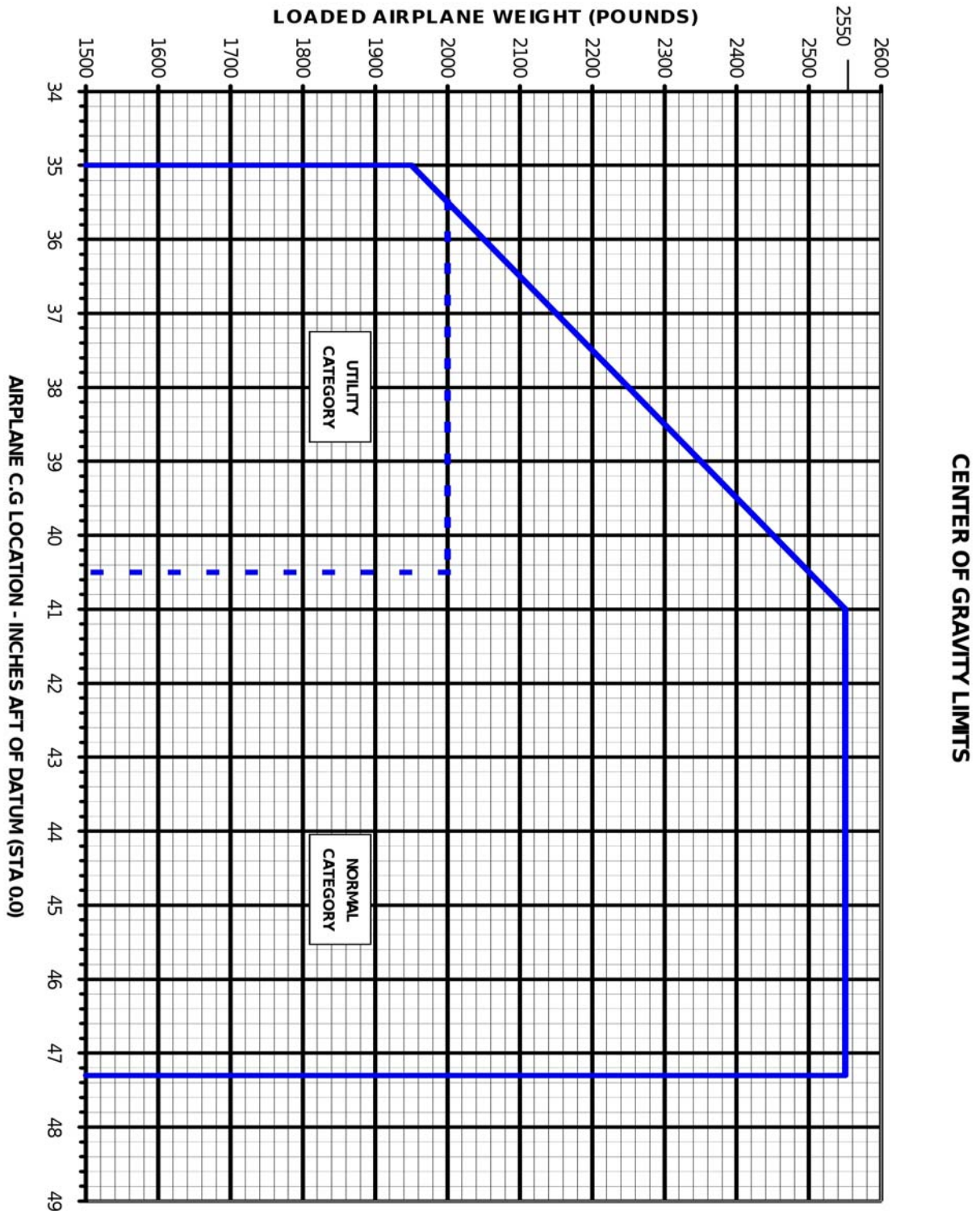
## **RANGE PROFILE**

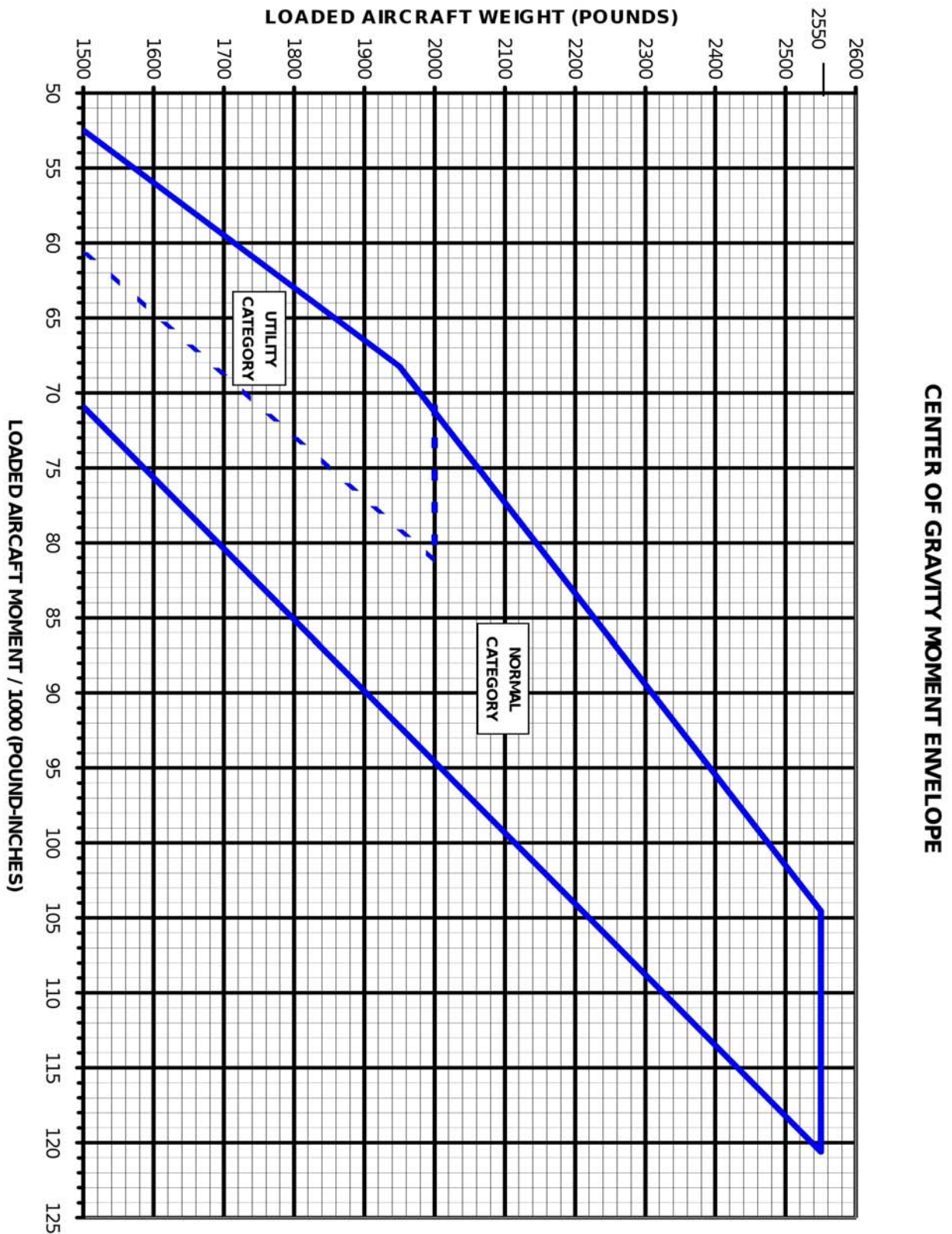
Compute range based on the available fuel load on the aircraft, altitude, ground speed and engine fuel consumption.

## **ENDURANCE PROFILE**

Compute endurance based on the available fuel load on the aircraft and engine fuel consumption.

## SECTION 6: WEIGHT AND BALANCE





## **SECTION 7: SERVICING REQUIREMENTS**

To operate at the 2550 gross weight, the aircraft must be equipped with 6 or more ply tires on both the main wheels and nose wheel on all models.

- Tire Pressure should be:
  - ◆ Nose Gear ..... 45 psi
  - ◆ Main Gear..... 38 psi