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

FAA Approved
Supplemental Airplane Flight Manual

For
Cessna 172N
Serial No. 17267585 to 17271034
Serial No. 17269698 Reg. No. 737VA

The information contained in this Manual is FAA Approved Material, which, along with 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 2400 lbs. and limits flap travel to 30 degrees.

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

FAA Approved
for Lawrence A. Herron, Manager
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Log of Revisions

Rev.	Page Affected	FAA Approved	Date
-	All	G M Baker	5/3/91
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SECTION 1. GENERAL

DESCRIPTIVE DATA

MAXIMUM CERTIFICATED WEIGHTS

Ramp,	Normal	2407 lbs.
	Utility	2007 lbs.
Takeoff,	Normal	2400 lbs.
	Utility	2000 lbs.
Landing,	Normal	2400 lbs.
	Utilily	2000 lbs.

SPECIFC LOADINGS

Wing Loading	13.8 lbs./sq. ft.
Power Loading	15.0 lbs./hp.

SECTION 2. LIMITATIONS

AIRSPEED LIMITATIONS

VA	Maneuvering Speed:	
	2400 pounds	99 KIAS
	2000 pounds	92 KIAS
	1600 pounds	82 KIAS
V_fe	Maximim Flap Extend Speed	
	10 deg	110 KIAS
	10 - 30 deg	85 KIAS

FLAP TRAVEL - Limited to 30 Degrees

WEIGHT LIMITS

Maximum Ramp Weight,	Normal	2407 lbs.
	Utility	2007 lbs.
Maximum Takeoff Weight,	Normal	2400 lbs.
	Utility	2000 lbs.
Maximum Landing Weight,	Normal	2400 lbs.
	Utility	2000 lbs.

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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 39.5 aft of datum at 2400 lbs.
Aft: 47.3 inches aft of datum at all weights.
Reference Datum: Lower portion of front face of firewall.

UTILITY CATEGORY

Center of Gravity Range:
Forward: 35.0 inches aft of datum at 1950 lbs. or less, with straight line variation to 35.5 aft of datum at 2000 lbs.
Aft: 40.5 inches aft of datum at all weights.
Reference Datum: Lower portion of front face of firewall.

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SECTION 3. EMERGENCY PROCEDURES

AIRSPEEDS FOR EMERGENCY OPERATION

Engine Failure after Takeoff:	
Wing Flaps Up	65 KIAS
Wing Flaps Down	60 KIAS
Maneuvering Speed:	
2400 lbs.	99 KIAS
2000 lbs.	92 KIAS
1600 lbs.	82 KIAS
Maximum Glide	65 KIAS
Precautionary Landing With Engine Power	60 KIAS
Landing Without Engine Power:	
Wing Flaps Up	65 KIAS
Wing Flaps Down	60 KIAS

All other emergency procedures are the same as the basic airplane with the following exceptions.

EMERGENCY LANDING WITHOUT ENGINE POWER

Wing Flaps -- As REQUIRED (30 deg. recommended)

PRECAUTIONARY LANDING WITH ENGINE POWER

Wing Flaps -- As REQUIRED (30 deg. recommended)

DITCHING

Wing Flaps -- As REQUIRED (30 deg. recommended)

SECTION 4. NORMAL PROCEDURES

SPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum weight of 2400 lbs. and may be used for any lesser weight.

Takeoff:	
Normal, Flaps Up	70 - 80 KIAS
Short Field, Flaps 10 deg, Speed at 50 Feet	56 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	71 KIAS
Best Angle of Climb, Sea Level	60 KIAS
Best Angle of Climb, 10,000 Feet	65 KIAS
Landing Approach:	
Normal Approach, Flaps Up	65 - 75 KIAS
Normal Approach, Flaps 30 deg	60 - 70 KIAS
Short Field Approach, Flaps 30 deg	61 KIAS
Balked Landing:	
Maximum Power, Flaps 20 deg	55 KIAS
Maximum Recommended Turbulent Air Penetration Speed:	
2400 lbs	99 KIAS
Va 2000 lbs	92 KIAS
1600 lbs	82 KIAS
Maximum Demonstrated Crosswind Velocity:	
Takeoff or Landing	15 KNOTS

CHECKLIST PROCEDURES

All procedures are the same as the basic airplane, with the following exceptions:

SHORT FIELD TAKEOFF
- Wing Flaps -- 10 deg.
- Climb Speed -- 56 KIAS (until all obstacles are cleared)

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SECTION 4. continued

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 (30 deg.)
3. Airspeed -- 61 KIAS (until flare)

SECTION 5. PERFORMANCE

STALL SPEEDS

CONDITIONS
Power Off

Notes:
1. Altitude loss during a stall recovery may be as much as 230 feet.
2. KIAS values are approximate.

MOST REARWARD CENTER OF GRAVITY

Weight Lbs	Flap Deflection	Angle of Bank							
		0 Deg		30 Deg		45 Deg		60 Deg	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
2400	UP	42	51	45	55	50	61	59	72
	10 deg	38	48	40	52	45	57	54	68
	30 deg	36	46	38	49	43	55	51	65

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SECTION 5. Continued

MOST FORWARD CENTER OF GRAVITY

Weight Lbs	Flap Deflection	Angle of Bank							
		0 Deg		30 Deg		45 Deg		60 Deg	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
2400	UP	47	52	51	56	56	62	66	74
	10 deg	44	49	47	53	52	58	62	69
	30 deg	41	46	44	49	49	55	58	65

CRUISE PERFORMANCE

For cruise performance at 2400 Lbs. weight, decrease all true air speed values in Fig. 5-7 by approximately 2 percent.

RANGE PROFILE

For cruise at 2400 Lbs. weight, decrease the range shown in Fig 5-8 and Fig 5-9 by approximately 8 percent.

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TAKEOFF DISTANCE SHORT FIELD
MAXIMUM WEIGHT 2400 LBS

CONDITIONS:
Flaps 10 deg.
Full Throttle Prior to Brake Release
Paved, Level, Dry Runway, Zero Wind

NOTES:

1. Short field technique as specified in Section 4.
2. Prior to Takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle , static runup.
3. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2400	51	56	S.L.	795	1460	860	1570	925	1685	995	1810	1065	1945
			1000	875	1605	940	1725	1015	1860	1090	2000	1170	2155
			2000	960	1770	1035	1910	1115	2060	1200	2220	1290	2395
			3000	1055	1960	1140	2120	1230	2295	1325	2480	1425	2685
			4000	1165	2185	1260	2365	1355	2570	1465	2790	1575	3030
			5000	1285	2445	1390	2660	1500	2895	1620	3160	1745	3455
			6000	1425	2755	1540	3015	1665	3300	1800	3620	1940	3990
			7000	1580	3140	1710	3450	1850	3805	2000	4220	---	---
			8000	1755	3615	1905	4015	2060	4480	---	---	---	---
2200	49	54	S.L.	650	1195	700	1280	750	1375	805	1470	865	1575
			1000	710	1310	765	1405	825	1510	885	1615	950	1735
			2000	780	1440	840	1545	905	1660	975	1785	1045	1915
			3000	855	1585	925	1705	995	1835	1070	1975	1150	2130
			4000	945	1750	1020	1890	1100	2040	1180	2200	1270	2375
			5000	1040	1945	1125	2105	1210	2275	1305	2465	1405	2665
			6000	1150	2170	1240	2355	1340	2555	1445	2775	1555	3020
			7000	1270	2440	1375	2655	1485	2890	1605	3155	1730	3450
			8000	1410	2760	1525	3015	1650	3305	1785	3630	1925	4005
2000	46	51	S.L.	525	970	565	1035	605	1110	650	1185	695	1265
			1000	570	1060	615	1135	665	1215	710	1295	765	1385
			2000	625	1160	675	1240	725	1330	780	1425	840	1525
			3000	690	1270	740	1365	800	1465	860	1570	920	1685
			4000	755	1400	815	1500	880	1615	945	1735	1015	1865
			5000	830	1545	900	1660	970	1790	1040	1925	1120	2070
			6000	920	1710	990	1845	1070	1990	1150	2145	1235	2315
			7000	1015	1900	1095	2055	1180	2225	1275	2405	1370	2605
			8000	1125	2125	1215	2305	1310	2500	1410	2715	1520	2950

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MAXIMUM RATE OF CLIMB

WEIGHT LBS	PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM			
			-20°C	0°C	20°C	40°C
2400	S.L.	76	805	745	685	625
	2000	75	695	640	580	525
	4000	74	590	535	480	420
	6000	73	485	430	375	320
	8000	72	380	330	275	220
	10,000	71	275	225	175	---
	12,000	70	175	125	---	---

LANDING DISTANCE - SHORT FIELD

Conditions:
Flaps 30 deg.

Note:
If a landing with flaps up is necessary, increase approach by 7 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	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2400	61	S.L.	510	1235	530	1265	550	1295	570	1325	585	1350
		1000	530	1265	550	1295	570	1325	590	1360	610	1390
		2000	550	1295	570	1330	590	1360	610	1390	630	1425
		3000	570	1330	590	1360	615	1395	635	1430	655	1460
		4000	595	1365	615	1400	635	1430	660	1470	680	1500
		5000	615	1400	640	1435	660	1470	685	1510	705	1540
		6000	640	1435	660	1470	685	1510	710	1550	730	1580
		7000	665	1475	690	1515	710	1550	735	1590	760	1630
		8000	690	1515	715	1555	740	1595	765	1635	790	1675

AVCON

INDUSTRIES, INC.

FUEL AND POWER CHART - LYCOMING MODEL O-360-A, 180 HP ENGINE

Press. Alt. 1000 Feet	Std. Alt. Temp. °F	99 HP—55% Rated Approx. Fuel 7.4 Gal./Hr. RPM & MAN. PRESS.				117 HP—65% Rated Approx. Fuel 8.8 Gal./Hr. RPM & MAN. PRESS.				135 HP—75% Rated Approx. Fuel 10 Gal./Hr. RPM & MAN. PRESS.		
		2100	2200	2300	2400	2100	2200	2300	2400	2200	2300	2400
SL	59	20.9	20.3	19.8	19.3	23.3	22.7	22.1	21.5	25.1	24.5	23.9
1	55	20.7	20.1	19.6	19.1	23.1	22.4	21.8	21.3	24.8	24.2	23.6
2	52	20.4	19.8	19.3	18.8	22.8	22.1	21.6	21.0	24.6	24.0	23.4
3	48	20.2	19.6	19.1	18.6	22.5	21.9	21.3	20.8	24.3	23.7	23.2
4	45	19.9	19.3	18.9	18.4	22.3	21.6	21.1	20.6	24.0	23.5	22.9
5	41	19.7	19.1	18.7	18.2	22.0	21.4	20.9	20.3	23.8	23.2	22.7
6	38	19.5	18.9	18.4	18.0	21.8	21.1	20.6	20.1	.....	23.0	22.5
7	34	19.3	18.7	18.2	17.8	21.5	20.9	20.4	19.9	.....	.....	22.2
8	31	19.0	18.4	18.0	17.6	21.3	20.7	20.2	19.7			
9	27	18.8	18.2	17.8	17.4	.....	20.4	20.0	19.5			
10	23	18.6	18.0	17.6	17.2	.....	.....	19.8	19.3			
11	19	18.4	17.8	17.4	17.0	.....	.....	.....	19.1			
12	16	18.2	17.6	17.2	16.8							
13	12	.....	17.4	17.0	16.7							
14	9	.....	.....	16.8	16.5							
15	5	.....	.....	.....	16.3							

To maintain constant power, correct manifold pressure approximately 0.17" Hg for each 10° F. variation in carburetor air temperature from standard altitude temperature. Add manifold pressure for air temperatures above standard; subtract for temperatures below standard.