

**INFORMATION
MANUAL**

1980



**MODEL
A188B**

**AG WAGON
AG TRUCK**

SECTION 4
NORMAL PROCEDURES

CESSNA
MODEL A188B

14. Oil Pressure -- CHECK.
15. Radios (if installed) -- ON as required.
16. Flashing Beacon and Navigation Lights -- ON as required.

BEFORE TAKEOFF

1. Brakes -- SET.
2. Canopy Doors -- CLOSED.
3. Flight Controls -- FREE AND CORRECT.
4. Auxiliary Air Vent -- CLOSED.
5. Flight Instruments -- CHECK and SET.
6. Fuel Shutoff Valve -- ON.
7. Fuel Quantity -- CHECK.
8. Mixture -- RICH.
9. Elevator Trim -- SET.
10. Throttle Setting -- 1700 RPM.
 - a. Magnetos -- CHECK (RPM drop should not exceed 150 RPM on either magneto or 50 RPM differential between magnetos).
 - b. Propeller -- CYCLE from high to low RPM; RETURN to high RPM (full forward).
 - c. Engine Instruments -- CHECK.
 - d. Ammeter -- CHECK.
11. Throttle -- 1000 RPM or less.
12. Radios (if installed) -- SET as required.
13. Strobe Lights (if installed) -- AS DESIRED.
14. Air Conditioner (if installed) -- OFF.
15. Quadrant Friction Lock -- ADJUST.

TAKEOFF

NORMAL TAKEOFF

1. Tail Wheel Lock -- AS DESIRED.
2. Wing Flaps -- 0° to 10°.
3. Power -- FULL THROTTLE and 2850 RPM.
4. Mixture -- RICH (Lean for field elevation per fuel flow placard above 3000 feet).
5. Elevator Control -- LIFT TAIL WHEEL and assume level flight attitude for best acceleration.
6. Climb Speed -- 85 to 95 MIAS until all obstacles are cleared.
7. Wing Flaps -- RETRACT after obstacles are cleared.
8. Power -- FULL THROTTLE and 2700 RPM.

CESSNA
MODEL A188B

SECTION 4
NORMAL PROCEDURES

SHORT FIELD TAKEOFF

1. Tail Wheel Lock - AS DESIRED.
2. Wing Flaps -- 10°.
3. Brakes -- APPLY.
4. Power -- FULL THROTTLE and 2850 RPM.
5. Mixture -- LEAN FOR FIELD ELEVATION.
6. Brakes -- RELEASE.
7. Elevator Control -- LIFT TAIL WHEEL and assume level flight attitude for best acceleration.
8. Climb Speed -- 77 MIAS until all obstacles are cleared (Ag Wagon).
79 MIAS until all obstacles are cleared (Ag Truck).
9. Wing Flaps -- RETRACT after obstacles are cleared.
10. Power -- FULL THROTTLE and 2700 RPM.

MAXIMUM PERFORMANCE CLIMB

1. Airspeed -- 92 MIAS (sea level) to 84 MIAS (8000 feet).
2. Power -- FULL THROTTLE and 2700 RPM.
3. Mixture -- LEAN for altitude per fuel flow placard.
4. Air Conditioner (if installed) -- OFF.

CRUISE

1. Power -- 15-25 INCHES Hg and 2200-2550 RPM.
2. Elevator Trim -- ADJUST.
3. Mixture -- LEAN.
4. Air Conditioner (if installed) -- AS DESIRED.

BEFORE LANDING

1. Seat, Belt and Shoulder Harness -- ADJUST.
2. Mixture -- RICH.
3. Propeller -- HIGH RPM.
4. Quadrant Friction Lock -- ADJUST to prevent creeping.
5. Air Conditioner (if installed) -- OFF.

Since alternate intake air is unfiltered, the alternate air control should be pushed full in (closed) during all ground operations.

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller tips and the horizontal stabilizer.

BEFORE TAKEOFF

MAGNETO CHECK

The magneto check should be made at 1700 RPM with the propeller in low pitch. RPM drop should not exceed 150 RPM on either magneto or show greater than 50 RPM differential between magnetos. If there is a doubt concerning the operation of the ignition system, RPM checks at a higher engine speed will usually confirm whether an ignition deficiency exists.

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

ALTERNATOR CHECK

Prior to flights where verification of proper alternator and voltage regulator operation is essential (such as night flights), a positive verification can be made by loading the electrical system momentarily (3 to 5 seconds) with the landing light during the engine runup. The ammeter will remain within a needle width of zero if the alternator and voltage regulator are operating properly.

TAIL WHEEL LOCK

All normal category flight operations must be conducted with the tail wheel lock engaged. However, when the airplane is in the restricted category configuration, takeoffs may be conducted with the tail wheel lock engaged or disengaged. Tail wheel steering of 24°, left and right, is available with the tail wheel lock disengaged. Engaging the lock limits the steering to 2.5° left and right.

Takeoffs will normally be conducted with the tail wheel lock disengaged to get maximum steering in the early part of the takeoff run. Speeds are usually low enough in this regime to preclude tail wheel shimmy under even the most unfavorable combination of rough field conditions and maximum weight.

TAKEOFF

POWER CHECK

It is important to check takeoff power early in the takeoff run. Any sign of rough engine operation or sluggish engine acceleration is good cause for discontinuing the takeoff.

Full power runups over loose gravel are especially harmful to the propeller tips and stabilizer leading edge. When takeoffs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it.

After full power is applied, adjust the throttle friction lock clockwise to prevent the throttle from creeping from a maximum power position. Similar friction lock adjustments should be made as required in other flight conditions to maintain a fixed throttle setting.

For maximum engine power, the mixture should be adjusted during the initial takeoff roll to the fuel flow corresponding to the field elevation. The power increase is significant above 3000 feet and this procedure always should be employed for field elevations greater than 5000 feet above sea level.

WING FLAP SETTINGS

Optimum takeoff performance at heavy weights is obtained by using 10° wing flaps. The airplane will accelerate more quickly to flying speed in a level attitude. Maximum performance takeoff data is tabulated in Section 5 for various weights.

CROSSWIND TAKEOFF

Takeoffs into strong crosswinds normally are performed with the minimum flap setting necessary for the field length, to minimize the drift angle immediately after takeoff. With the ailerons partially deflected into the wind, the airplane is accelerated to a speed slightly higher than normal, and then pulled off abruptly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

noted that in all cases the judgment and skill of the pilot will become a large factor in properly interpreting the most suitable operating limitations of this airplane.

As a general guide, the following five areas should be considered when operating in this restricted category.

When the airplane is operated within these restrictions, it is expected that satisfactory performance can be obtained from the airplane. It must be stressed, however, that the judgment of the operator coupled with his own experience will provide the most useful guideline for operating the airplane. Good judgment and caution are required at all times.

MAXIMUM WEIGHT

The Ag Wagon and Ag Truck have been demonstrated at weights up to 4000 and 4200 pounds respectively. With the Ag Truck and its 280-gallon (37.4 cu. ft.) hopper, it is possible to exceed the 4200 pound restricted weight by a considerable amount if high density materials are carried in the hopper. The hopper is limited to 1800 pounds maximum, and particular attention is required so that neither the maximum weight of the airplane nor the hopper is exceeded. Takeoff performance at these weights is somewhat limited, and ideal field elevation, runway, and weather conditions are expected to exist in obtaining satisfactory takeoff performance. Operation from rough or soft runways, adverse runway gradients, high outside air temperature, turbulence, etc., may prevent a safe takeoff at high weights. All of these things must be considered by the operator.

SPEED AND LOAD FACTORS

The speed, while operating in the restricted category, is restricted to not more than 121 MIAS. The airplane may be operated at this speed with a maximum flap extension of 5°. At the same time, it is expected that the airplane will not be maneuvered with load factors in excess of 2.5 g's while carrying heavy loads. It is obvious that the margin of strength is reduced at higher weight, and therefore, the operator must take this into account when conducting pull-ups and turn around maneuvers at the end of the field. Operation of the airplane with flap extensions in excess of 5° must be limited to no more than 109 MIAS or 2.0 g's.

Although the airplane is capable of working at speeds from 85 MIAS to 121 MIAS, it is suggested that a speed of 95 MIAS to 115 MIAS be used for very heavy loads. The use of very low airspeeds in combination with heavy loads is not recommended because it reduces the margin of safety.

RUNWAY CONDITIONS

Where the runway is unusually rough, and therefore, subjects the airplane's landing gear and structure to high, sharply accelerated loads, the maximum weight should be restricted. Such operation can exceed the limit load factors for the landing gear and fuselage, and seriously reduce the overall life of the airplane. The adverse effect of soft runways and long grass can only be determined by a series of takeoffs at increasing weights on a trial basis.

TAKEOFF AND CLIMB

Conditions of high temperature, high altitude, rough takeoff surfaces and terrain clearances at the end of the runway should obviously be considered when determining the specific takeoff weight of this airplane. As a guide, a takeoff chart is included in Section 5 to show the normally expected takeoff distances for the airplane with the liquid dispersal system installed.

The optimum flap setting for takeoff at the maximum restricted category weight with dispersal equipment installed is 10°. Best acceleration to takeoff speed is attained in a level flight attitude. Rotation for lift-off should be initiated when the airplane becomes light on its main wheels. Flaps should be retracted after obstacles are cleared and before a power reduction.

Takeoffs and landings may be made with the tail wheel locked or unlocked, the use of the lock being left to the individual pilot's preference. However, if there is a strong crosswind, it is advisable to takeoff with the tail wheel unlocked. At high weights and low speeds at the start of the takeoff run, a more positive directional control of the airplane can be maintained with the tail wheel unlocked and held on the ground during the takeoff roll. It will be helpful to lock the tail wheel when landing on a rough field, in a strong crosswind, and at a high weight. In these conditions, an unlocked tail wheel could be deflected at touchdown, and it could shimmy during the landing roll.

LANDING WEIGHT

The landing gear is designed for a maximum landing weight of 3300 pounds. It is normally expected that all landings will be made at or below this weight figure. If a landing at a higher weight is required, caution should be exercised to prevent overstressing the landing gear.

AIRSPEED CALIBRATION

FLAPS UP	MIAS	60	70	80	90	100	110	120	130
	MCAS	56	66	77	87	97	108	118	128
FLAPS 10°	MIAS	60	70	80	90	100	110	---	---
	MCAS	56	67	77	87	97	108	----	----
FLAPS 20°	MIAS	60	70	80	90	100	110	---	---
	MCAS	56	67	77	87	97	107	---	---

Figure 5-1. Airspeed Calibration

STALL SPEEDS

CONDITIONS:
Power Off

NOTES:

- Altitude loss during a stall recovery may be as much as 300 feet.
- MIAS values are approximate.

WEIGHT LBS	FLAP DEFLECTION	ANGLE OF BANK							
		0°		30°		45°		60°	
		MIAS	MCAS	MIAS	MCAS	MIAS	MCAS	MIAS	MCAS
* 4200	UP	73	69	78	74	87	82	103	98
	10°	71	67	76	72	84	80	100	95
	20°	69	65	74	70	82	77	98	92
** 4000	UP	71	67	76	72	84	80	100	95
	10°	69	65	74	70	82	77	98	92
	20°	67	63	72	68	80	75	95	89

* Ag Truck Maximum Weight.

** Ag Wagon Maximum Weight.

Figure 5-2. Stall Speeds

TAKEOFF DISTANCE
LIQUID DISPERSAL SYSTEM INSTALLED

CONDITIONS:

Flaps 10°
2850 RPM, Full Throttle, and Mixture Set at
Placard Fuel Flow Prior to Brake Release
Paved, Level, Dry Runway
Zero Wind

SHORT FIELD

MIXTURE SETTING

PRESS ALT

GPH

S.L.	24
2000	23
4000	22
6000	21

NOTES:

- Short field technique as specified in Section 4.
- Decrease distances 10% for each 10 knots headwind. For operation with tailwinds up to 5 knots, increase distances by 10% for each 2.5 knots.
- For operation on a dry grass runway, increase distances by 20% of "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED MIAS		PRESS ALT FT	60°F		80°F		100°F	
	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
*4200	77	79	S.L.	1365	2180	1485	2400	1615	2655
			1000	1500	2450	1635	2715	1780	3035
			2000	1655	2780	1805	3115	1965	3530
			3000	1830	3210	1995	3650	2175	4235
			4000	2025	3790	2210	4435	---	---
			5000	2245	4670	---	---	---	---
**4000	75	77	S.L.	1210	1895	1315	2075	1430	2280
			1000	1330	2115	1450	2325	1575	2570
			2000	1465	2375	1595	2630	1735	2930
			3000	1615	2690	1760	3010	1920	3395
			4000	1785	3095	1950	3510	2125	4050
			5000	1980	3640	2160	4235	---	---
3800	73	75	S.L.	1070	1650	1160	1800	1260	1970
			1000	1170	1830	1275	2005	1385	2195
			2000	1290	2040	1400	2240	1525	2475
			3000	1420	2290	1545	2530	1680	2815
			4000	1565	2595	1705	2890	1860	3255
			5000	1730	2975	1890	3360	2060	3855
3600	71	73	S.L.	935	1435	1015	1560	1100	1695
			1000	1025	1580	1110	1725	1205	1880
			2000	1125	1750	1220	1915	1325	2095
			3000	1235	1950	1345	2140	1460	2355
			4000	1360	2185	1480	2410	1610	2675
			5000	1500	2470	1635	2750	1785	3080

* Ag Truck Maximum Weight.

** Ag Wagon Maximum Weight.

* Ag Truck Maximum Weight.

** Ag Wagon Maximum Weight.

Figure 5-3. Takeoff Distance