

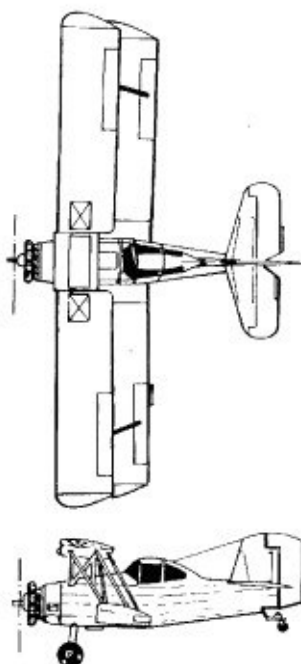
GRUMMAN

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Ag-Cat

PILOT'S HANDBOOK



MODELS: G-164 A/450, G-164 A/600, G-164 B/450, G-164B/525

GRUMMAN AMERICAN AVIATION CORPORATION
Savannah, Georgia

SPECIFICATIONS

POWER PLANT

Engines:

Pratt & Whitney

R-985

AN-1, AN-3, -25, -27, -39,
-39A, AN14B, T182 or T183
(One 4th and one 9th order
crankshaft damper)

R-1340

AN-1, -S1H1, -S3H1

Engine Limits

For all operations:

- (a) Pratt & Whitney R-985 series
powerplants — all operations
2300 rpm (450 hp)

Manifold Pressure (except AN14B)
37.5 in. Hg (Sea Level)

Manifold Pressure for AN14B:
36.5 in. Hg. (Sea Level)

- (b) Pratt & Whitney R-1340 engines —
Maximum 5 min.
2250 rpm (600 hp)

Manifold Pressure:
36.0 in. Hg (Sea Level)

Maximum Continuous Power Setting
2200 rpm (550 hp)

Manifold Pressure
34.0 in. Hg (Sea Level)

Fuel:

87 Octane Minimum Aviation Gasoline
with R-985 and R-1340 series power-
plants.

Capacity (standard) — 46.0 U.S. Gallons (Usable)
(optional) — 64.0 U.S. Gallons (Usable)
(optional) — 80.0 U.S. Gallons (Usable)

Oil:

Oil Capacity — 8.7 U.S. Gallons

Propeller and Propeller Limits:

R-985 Propeller

Hub: 2D30
 Blades: AG-100-2
 Diameter: 106 in. max. 2% CUTOFF PERMITTED
 Pitch Settings at 42 in. Sta: 10° low, 16.5° high
 Governor: 4A2-1, 1A2-5, 1A2G-5

R-1340 Propeller

Hub: 12D40
 Blades: AG-100-2
 Diameter: 106 in. max. 2% CUTOFF PERMITTED
 Pitch Settings: 11° low, 20° high
 Governor: 1M12, 3A-A28-021

Power Instruments:

(a) Oil Temperature

Unsafe if indicator exceeds RED LINE
 200°F. — R-985 P&W engine
 200°F. — R-1340 P&W engine

(b) Oil Pressure:

R-985 P&W engine — RED LINE AT 50 psi minimum pressure
 RED LINE at 100 psi maximum pressure with GREEN
 operating ARC between.

R-1340 P&W engine — RED LINE at 70 psi minimum pressure
 RED LINE at 90 psi maximum pressure with GREEN
 operating ARC between.

(c) Tachometer:

Pratt & Whitney R-985 engine:
 RED LINE at 2300 rpm — do not exceed.

Pratt & Whitney R-1340 engine:
 RED LINE at 2250 rpm — do not exceed.

(d) Manifold Pressure:

Pratt & Whitney R-985 engine:
 RED LINE at 37.5 in. Hg. — do not exceed
 (except AN148, RED LINE at 36.5 in. Hg, do
 not exceed).

Pratt & Whitney R-1340 engine:
 RED LINE at 36.0 in. Hg — do not exceed.

(e) Cylinder Heat Temperature:

Pratt & Whitney R-985 engine:
 RED LINE at 550°F. — do not exceed.

Pratt & Whitney R-1340 engine:
 RED LINE at 500°F. — do not exceed.

Airspeed Limits (mph, CAS):

Never exceed speed 147 mph @4500 lbs.
 Abrupt maneuver speed 117 mph @4500 lbs.

		A450	A600	B450	B525
Power off stall speed at	4500 lbs.	67 mph	68 mph	60 mph	60 mph
Power off stall speed at	6075 lbs.	78 mph	79 mph	70 mph	70 mph
Best rate of climb speed		83 mph	90 mph	83 mph	83 mph

AIRSPEED CORRECTION CHART

IAS		50	60	70	80	90	100	115	130
CAS	A Model	55.0	64.5	74	83	91.5	101	115.5	130
	B Model	51.3	61.6	71.9	82.2	92.6	101.9	118.3	133.8

Airspeed Instrument Markings and Their Significance:

- Radial RED LINE marks the never exceed speed, which is the maximum allowable safe airspeed (147 mph CAS) @4500 lbs.
- YELLOW arc on indicator denotes range of speeds in which operations should be conducted with caution, and only in smooth air (117-147 mph CAS) @4500 lbs.
- GREEN arc denotes normal operating range (63-117 mph CAS) @ 4500 lbs.

Flight Load Factors @ 4500 lbs:

Maximum positive load factor +4.2g
 Maximum negative load factor -1.0g

DIMENSIONS

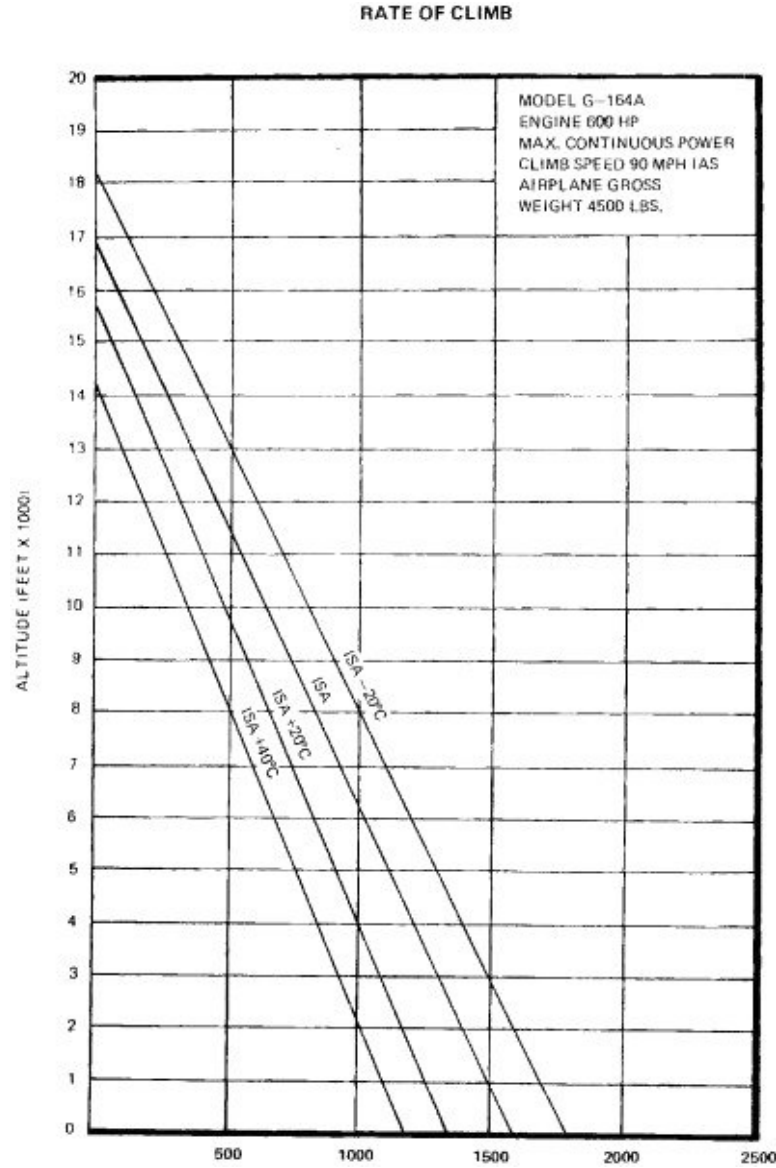
	"A" Model	"B" Model
450 hp and 600 hp		
Wing Span	35 ft. 11 in.	42 ft. 3 in.
Wing Area	328 sq. ft.	392 sq. ft.
Length (ground altitude)	24 ft. 4 in.	25 ft. 11 in.
Height (ground altitude)	10 ft. 10 in.	11 ft. 0 in.
Gross Weight (design)	4500 pounds	
(operational) CAM 8	6075 pounds	
Tire Pressure	32 psi — Main	
	45 psi — Tail	

Maximum Weight:

Guidelines presented in the Civil Aviation Manual 8 (CAM 8) under which the Ag-Cat was designed and certified, offers operational information for Agricultural Aircraft. Any aircraft being employed in agricultural missions, can be operated in the restricted (special) category as defined in CAM 8.

CAM 8.10-4 (b)(1) states in part, "It is not required that a maximum (total) weight be established as an operating limitation for agricultural aircraft". In CAM 8, Appendix A, Section 7, (7-10) and Figure 7-1, the FAA offers guidelines for agricultural weight increases which, taking the Ag-Cats design load factor of 4.2g into account, establish a 1.35 factor to increase the design gross weight of 4500 lbs. to the recommended weight of 6075 lbs.

G-164A 600 HP TAKEOFF DATA										
HARD SURFACE RUNWAY										
GROSS WEIGHT POUNDS	IAS AT 50' MPH	ISA °C	SEA LEVEL		2000 FT.		4000 FT.		6000 FT.	
			GROUND RUN	TOTAL TO CLEAR 50' OBS.	GROUND RUN	TOTAL TO CLEAR 50' OBS.	GROUND RUN	TOTAL TO CLEAR 50' OBS.	GROUND RUN	TOTAL TO CLEAR 50' OBS.
4500	77	-30	490	900	570	1045	670	1220	790	1425
		-20	525	960	615	1120	725	1305	855	1525
		-10	565	1025	660	1195	780	1395	920	1630
		+0	605	1090	710	1270	835	1485	985	1740
		+10	645	1155	760	1350	895	1580	1060	1855
6075	82	+20	690	1225	810	1430	955	1675	1130	1970
		+30	735	1295	865	1515	1020	1775	1205	2090
		-30	875	1725	1035	1950	1225	2200	1425	2660
		-20	940	1875	1120	2100	1320	2470	1540	2840
		-10	1000	1925	1200	2200	1420	2700	1670	2960
		+0	1080	2070	1285	2325	1520	2800	1780	3300
		+10	1170	2175	1385	2600	1630	2940	1915	3500
		+20	1260	2300	1480	2785	1750	3250	2050	3700
		+30	1345	2485	1580	2875	1875	3480	2200	3875



CRUISE PERFORMANCE

G-164A 600 HP (WITH R-1340 ENGINE @ 4500 LB.)

Altitude Feet	% Norm. Rated Power	B.H.P.	R.P.M.	Manifold Pressure (In. Hg.)	Gallons Per Hour	TAS (MPH)	46 Gallons		64 Gallons		80 Gallons	
							Endurance Hours	Range Statute Miles	Endurance Hours	Range Statute Miles	Endurance Hours	Range Statute Miles
S.L.	75	450	2000	31.2	35.6	130.0	1.29	168	1.79	234	2.25	292
	67	400	2000	28.9	32.1	125.0	1.43	179	1.99	249	2.49	312
	60	360	1900	28.3	29.0	120.0	1.59	191	2.21	265	2.76	331
	50	300	1800	26.4	24.8	112.5	1.85	208	2.58	290	3.23	363
2500'	75	434	2000	29.7	34.5	131.7	1.33	176	1.86	244	2.32	306
	67	386	1900	28.5	30.7	126.5	1.50	190	2.09	264	2.61	330
	60	347	1800	27.5	27.8	123.4	1.66	204	2.31	285	2.88	356
	50	288	1800	25.0	24.3	115.0	1.89	218	2.63	303	3.29	379
5000'	75	417	2000	28.2	33.3	132.5	1.38	183	1.92	255	2.40	318
	67	371	1900	26.8	29.7	127.1	1.55	197	2.15	274	2.69	342
	60	334	1900	25.2	27.2	122.8	1.69	208	2.35	289	2.94	361
	50	278	1800	23.5	23.6	118.5	1.95	231	2.71	321	3.38	401

G-164A 600 HP LANDING DATA				
LANDING DISTANCE ON HARD SURFACE RUNWAY ZERO WIND - 4500 LBS - 75 MPH IAS AT 50'				
ALTITUDE TEMPERATURE	SEA LEVEL 15°C	2000' 11°C	4000' 7°C	6000' 3°C
GROUND RUN TOTAL DISTANCE FROM 50'	756' 1358'	854' 1534'	919' 1651'	991' 1780'

CHECK LIST

AG-CAT

BEFORE STARTING

1. PREFLIGHT - Fuel, Oil, Prop, (Pull Through)
Tires, Aircraft General Condition
2. Seats and Belts - ADJUSTED
3. Brakes - ON
4. Controls - FREE
5. FUEL - ON
6. Dispersal Systems - OFF & CLOSED

STARTING ENGINE

1. Primer - AS REQUIRED
2. Mixture - RICH
3. Throttle - OPEN 1/8 INCH
4. Carb. Heat - OFF
5. Master Switch - ON
6. CLEAR PROP
7. Ignition Switch - ON BOTH
8. Starter - PRESS
9. Oil Pressure - CHECK

ENGINE RUNUP

1. Brakes - ON
2. Throttle - SET (1800 RPM)
3. Engine Inst. - CHECK
4. Magneto - CHECK (Max. 100 RPM ea.)
(Max. Difference 50 RPM)
5. Carb. Heat - CHECK

BEFORE TAKEOFF

1. Trim - SET
2. Primer - LOCKED
3. Mixture - RICH
4. Carb Heat - OFF
5. Controls - CHECK
6. Engine Inst. - CHECK
7. Flight Inst. - CHECK & SET
8. Canopy - CHECK

TAKEOFF

1. FULL THROTTLE
2. Raise Tail - 40 MPH

CLIMB

1. FULL THROTTLE
2. NORMAL - 90 MPH

CRUISE

1. Power - AS REQUIRED
2. Lean - AS REQUIRED
3. Fuel Quantity - CHECK

BEFORE LANDING

1. Mixture - RICH
2. Carb. Heat - AS REQUIRED
3. Approach - 75 MPH

AFTER LANDING

1. Carb. Heat - OFF

SHUT DOWN

1. Elec. Equip. - OFF
2. Mixture - IDLE CUTOFF
3. Magnetos - OFF
4. Master Switch - OFF

IMPORTANT

This Check List is designed for convenient use in the cockpit. It should be used only after the pilot has read and become familiar with the engine manufacturer's specific operating instructions.