

DOCUMENT NO. SDR-1070

MODEL G-44A

DATE July 18, 1952



# LOCKHEED AIRCRAFT SERVICE

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION  
BURBANK, CALIFORNIA

## TITLE

CAA APPROVED  
AIRPLANE OPERATING MANUAL  
FOR THE  
GRUMMAN G-44A "WIDGEON"  
WITH  
LYCOMING G0435-C2 ENGINES



PREPARED BY P. Lewis

APPROVED

*Morton J. Brown*

Morton J. Brown  
Chief, Aircraft Engr. Branch  
Region Six

PAGES \_\_\_\_\_ NUMBER PICTURES \_\_\_\_\_

Date

*July 22, 1952*

## REVISIONS

DATE	REV. BY	PAGES AFFECTED	REMARKS







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SECTION I

OPERATING LIMITATIONS

(Compliance with the operating limitations given in this section is required by law.)

A. WEIGHT LIMITS

1. Landplane Operation

- a. Maximum takeoff weight - 5000 lb.
- b. Maximum landing weight - 5000 lb.

2. Seaplane Operation

- a. Maximum takeoff weight - 4700 lb.
- b. Maximum landing weight - 4700 lb.

B. CENTER OF GRAVITY LIMITS

(Inches aft of datum, which is the wing center section leading edge.)

1. For all weights

- a. Most forward C.G. limit + 14.8 in.
- b. Most rearward C.G. limit + 22.5 in.

C. POWER PLANT AND PROPELLER LIMITATIONS

The airplane is equipped with two Lycoming G0-435-C2 engines and two Hartzell 12X20-9/9333 C full feathering propellers.

1. Temperature Limitations

- a. Maximum permissible cylinder head temperature
- b. Maximum permissible oil-in temperature

ENGINE SPEC SAYS  
 ↓  
 + 296° C 475° F  
 + 274° C (525° F)  
 + 107° C (225° F)

2. Engine Ratings (full throttle)

- a. Takeoff (2 min.) 3400 RPM 260 BHP
- b. Maximum Continuous 2900 RPM 235 BHP



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C. Cont.

3. Propeller Restrictions

- a. The propeller installed (Hartzell 9333C-0) is restricted against continuous operation in the following engine speed ranges:

1675 to 2160 rpm  
2900 to 3200 rpm

- b. If modified by cutting off the blade tips to give a diameter of 90 in. in place of the original 93 in. these restrictions no longer apply and the propeller may be operated continuously at any engine speed.

D. AIRSPPEED LIMITS

- |                          |                          |
|--------------------------|--------------------------|
| 1. Level flight or climb | 175 mph (152 knots) TIAS |
| 2. Glide or Dive         | 210 mph (183 knots) TIAS |
| 3. Flaps Extended        | 104 mph (90 knots) TIAS  |

E - Prop ops



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SECTION II

PERFORMANCE DATA

A. SINGLE ENGINE CLIMB

- a. The following curve shows the rate of climb (or descent) with one engine inoperative, corresponding propeller feathered, as a function of altitude.
- b. IT IS IMPOSSIBLE TO RE-START AN ENGINE ONCE THE PROPELLER IS FEATHERED, SINCE UNFEATHERING CAN ONLY BE DONE ON THE GROUND.
- c. Single-engine flight should be carried on at 105 MPH TIAS. This speed will permit a very gradual rate of descent above 3000 feet and a reasonable climb at altitudes below 1500 feet.



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	<u>Weight</u>	<u>Arm</u>
<b>Propellers and Propeller Accessories</b>		
5. 2 Hartzell Controllable Propellers, Hubs HC-12 x 20 -9C, Blades 9333C Propeller Governor - Hartzell C137	79 7	- 42 - 1
<b>Engine and Engine Accessories - Fuel &amp; Oil Systems</b>		
106. Two Oil Coolers (U-6005-DV-5) 5 in. diameter	24	- 1
110. Two Hydraulic Pumps		
a. One Engine Driven (Pesco 1P-349-P-2)	4	/ 1
b. One Hand (Electrol 190)	3	- 15
112. Four Fuel Pumps		
a. Two Engine Driven (Thompson TFD 900-1)		- 0.5
b. Two Boost Pumps (Thompson TFD 900-1)		/ 10
114. Two Starters (Eclipse 397-50 type E-80)	39	/ 1.5
<b>Landing Gear and Floats</b>		
206. 7.50-10 Wheels and Brakes, Goodrich 735A (Assem. No. G-3-175A) with 7.50-10. 6-ply HD Tires	80	/ 6
207. 10 in. Tail Wheel (Goodrich B-3-127A) with 10.5 in. 6-ply Streamline Tire	5	/164
<b>Electrical and Radio Equipment</b>		
108. Battery - 38 amp-hr (Exide 6TS-9L)		
109. Landing Light (Grimes ST-250)	4	/ 35
201. Radio Equipment		
b. Alternate Receiver and Transmitter (Lear T30-RBCC) Dynamotor and Antenna Reel	36	- 1
d. VHF Transmitter T-11A	3.4	- 70
e. VHF Receiver R-15	8.3	- 60
f. Receiver BC-1023A		-133
g. Auto Radio Comp. Amplifier ARC-10	8.4	- 57
h. Link Radio Transmitter 33.26 megs		/ 16
i. Servo Actuator 126-B	6.0	- 52
j. VHF Antenna A-12	0.5	/133
203. Extra Landing Light (Grimes ST-250)	4	/ 35
303. Generator (Leece-Neville E-7A) 50 amp.		/ 2



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Interior Equipment

	<u>Weight</u>	<u>ARM</u>
400. Control Column (Grumman Dwg. 122850)		
a. Single Arm (Throw-over type wheel)	3	- 22
401. a. CAA Approved Operating Manual		

Miscellaneous

111.a. Anchor and rope	19	- 87
b. Bilge pump and hose	6	- 87
c. Pyrene Fire Extinguisher	7	/ 112
d. Passenger Seats (2)	42	/ 52
e. Auxiliary Seat (1)	10	/ 19
f. Vacuum Pump (Pesco B-6)		/ 4



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FUEL TABLE

GAL.	WEIGHT	MOMENT/100
10	60	+ 13
20	120	+ 25
30	180	+ 33
40	240	+ 50
50	300	+ 63
60	360	+ 76
70	420	+ 88
80	480	+ 101
90	540	+ 113
100	600	+ 126
108	648	+ 136

OIL TABLE

GAL.	WEIGHT	MOMENT/100
1	7.5	- 1
2	15.0	- 2
3	22.5	- 3
4	30.0	- 4
5	37.5	- 5
6	45.0	- 5

CREW & PASSENGER TABLE

SEAT	WEIGHT	MOMENT/100
Co-Pilot	170	- 10
Auxiliary	170	+ 32
L.H.Aft	170	+ 88
R.H.Aft	170	+ 88

BAGGAGE TABLE

WEIGHT	NOSE COMPT. MOMENT/100	AFT CABIN COMPT. MOMENT/100
5	- 3	+ 5
10	- 5	+ 9
20	- 10	+ 18
30		+ 27
40		+ 36
50		+ 45
60		+ 54
70		+ 63
80		+ 72
90		+ 81
100		+ 90
200		+ 180
300		+ 270
400		+ 360



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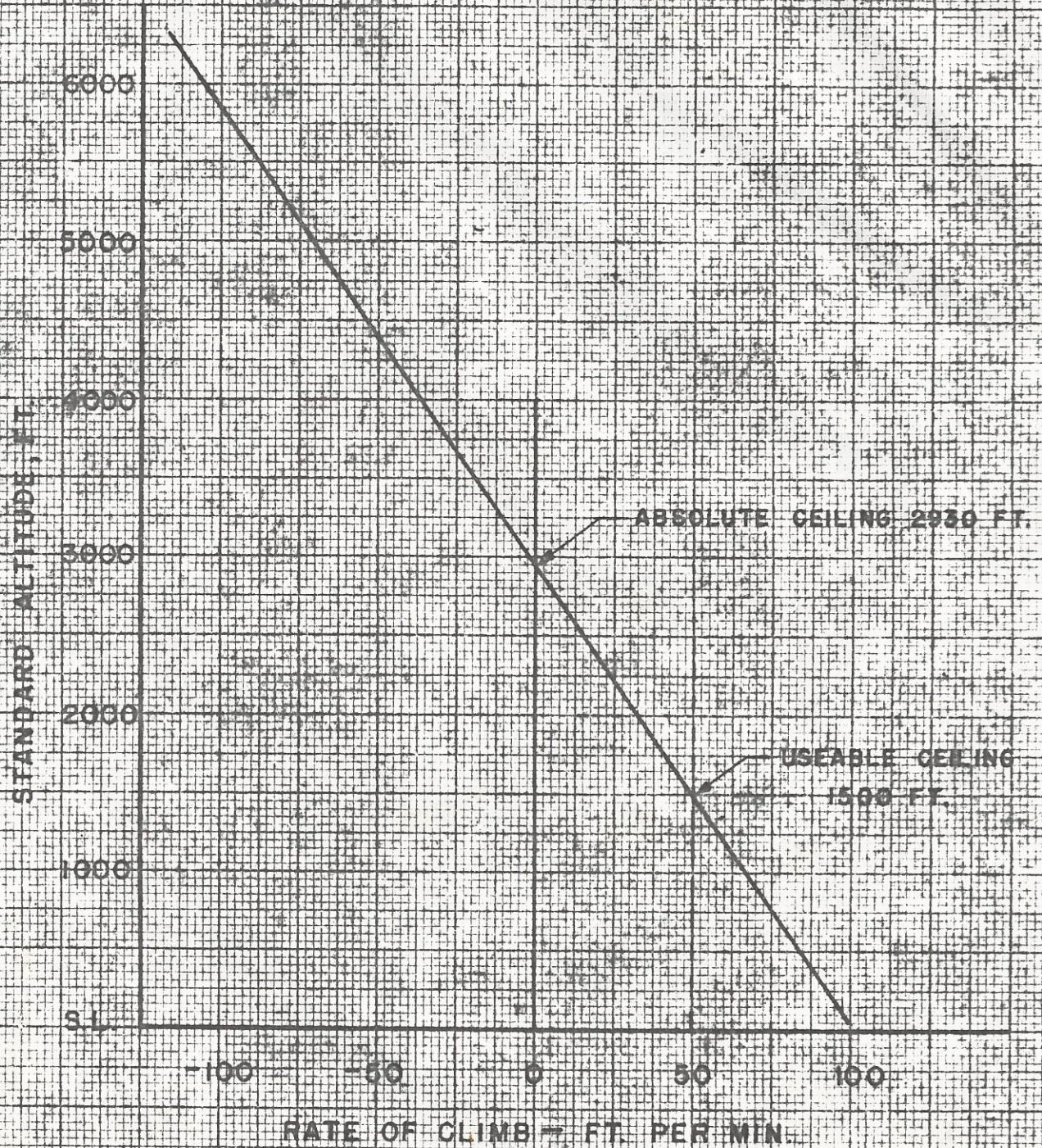
CENTER OF GRAVITY TABLE

GROSS WEIGHT	C.G. IN INCHES									
	14.8	15.0	16	18	18	19	20	21	22	22.5
3700	548	555	592	629	666	703	740	777	814	833
50	555	563	600	638	675	713	750	788	825	844
3800	563	570	608	646	684	722	760	798	836	855
50	570	578	616	655	693	732	770	809	847	866
3900	577	585	624	663	702	741	780	819	858	878
50	585	593	632	672	711	751	790	830	869	889
4000	592	600	640	680	720	760	800	840	880	900
50	599	608	648	689	729	770	810	851	891	911
4100	607	615	656	697	738	779	820	861	902	923
50	614	623	664	706	747	789	830	872	913	934
4200	622	630	672	714	756	798	840	882	924	945
50	629	638	680	723	765	808	850	893	935	956
4300	636	645	688	731	774	817	860	903	946	968
50	644	653	696	740	783	827	870	914	957	979
4400	651	660	704	748	792	836	880	924	968	990
50	659	668	712	757	801	846	890	935	979	1001
4500	666	675	720	765	810	855	900	945	990	1013
50	673	683	728	774	819	865	910	956	1001	1024
4600	681	690	736	782	828	874	920	966	1012	1035
50	688	698	744	791	837	884	930	977	1023	1046
4700	696	705	752	799	846	893	940	987	1034	1058
50	703	713	760	808	855	903	950	998	1045	1069
4800	710	720	768	816	864	912	960	1008	1056	1080
50	718	728	776	825	873	922	970	1019	1067	1091
4900	725	735	784	833	882	931	980	1029	1078	1103
50	733	743	792	842	891	941	990	1040	1089	1114
5000	740	750	800	850	900	950	1000	1050	1100	1125



### RATE OF CLIMB

GRUMMAN "WIDGEON" G-44A MODIFIED BY  
INSTALLATION OF GO 435-C2 ENGINES.  
ONE ENGINE FEATHERED.  
OPERATING ENGINE AT 2900 RPM - FULL THROTTLE  
GEAR UP - FLAPS UP  
GROSS WEIGHT - 5000 LBS.  
TRUE INDICATED AIRSPEED 105 MPH





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	<u>WEIGHT</u>	<u>ARM</u>	<u>MOMENT</u>
<b>Minimum Flying Weight Condition</b>			
Weight Empty	3,724	∠ 14.82	∠ 55,190
Pilot	170	- 6.0	- 1,020
Oil - 6 gal.	42	- 12.0	- 504
Fuel - 40 gal.	240	∠ 21.0	∠ 5,040
Sub-Total	4,176	∠ 14.06	∠ 58,706
Minimum Ballast or Cargo in Aft Cabin	42	∠ 90.0	∠ 3,780
Minimum Flying Weight	4,218	∠ 14.81	∠ 62,486
<b>Most Forward C.G. Loading Condition</b>			
Weight Empty	3,724	∠ 14.82	∠ 55,190
Pilot & Co-Pilot	340	- 6.0	- 2,040
Oil - 6 gal.	42	- 12.0	- 504
Fuel - 108 gal.	648	∠ 21.0	∠ 13,608
Bow Compartment Stowage	20	- 50.0	- 1,000
Sub-Total	4,774	∠ 13.67	∠ 65,254
Minimum Ballast or Cargo in Aft Cabin	72	∠ 90.0	∠ 6,480
Takeoff Gross Weight	4,846	∠ 14.80	∠ 71,734
<b>Most Aft C.G. Loading Condition</b>			
Weight Empty	3,724	∠ 14.82	∠ 55,190
Pilot	170	- 6.0	- 1,020
Oil - 6 gal.	42	- 12.0	- 504
Fuel - 108 gal.	648	∠ 21.0	∠ 13,608
Baggage in Aft Cabin Stowage Compartment	400	∠ 90.0	∠ 36,000
Takeoff Gross Weight	4,984	∠ 20.72	∠ 103,274

Note: From the above calculations it is apparent that when the airplane is flown without passengers or with one passenger in the co-pilot seat, the forward C.G. limit is exceeded and ballast or cargo must be carried in the aft cabin stowage compartment.