SPECIFICATIONS

POWER PLANT

Engines:

Jacobs

R-755-A2M, R-755-A2M1 engines eligible for installation with short mount (Grumman Dwg. No. A1681), carburetor air filter box and funnel (Grumman Dwg. No. A1667,) and Grumman (Sensenich) Model J5404/MA96K propeller in accordance with "LIST OF GRUMMAN G-164 DWGS. APPLICABLE TO JACOBS R-755 (SHORT MOUNT) P. P. KITS." Revised 12-2-63.

Left exhaust system in accordance with Grumman ECO's S164-1455, S164-1456 and S164-1457 all dated 4-13-64 is eligible as optional equipment.

Pratt & Whitney

R-985-AN-1, AN-3, -25, -27, -39, -39A, AN14B, T1B2 or T1B3
(One 4½ and one 9th order crankshaft damper)

R-1340-AN-1, -S1H1, -S3H1

Engine Limits:

For all operations:

(a) Jacobs R-755-A2M1 engine with Grumman Propeller
2200 rpm (300 hp)

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

Manifold Pressure (except AN14B)
37.5 in.Hg (Sea Level)
37.0 in.Hg (1500 ft)

Manifold Pressure for AN14B:
36.5 in.Hg (Sea Level)
35.5 in.Hg (3500 ft)
Straight line variation between points

(c) Pratt & Whitney R-1340 engines – all operations
2250 rpm (600 hp)

Manifold Pressure:
36.0 in.Hg (Sea Level)
32.5 in.Hg (5000 ft)

Fuel: 87 Octane Minimum Aviation Gasoline with R-985 and R-1340 series powerplants, 80 Octane Minimum with Jacobs engines.

Fuel Pressure: R-1340 only, 3 psi min 6 psi max

Propeller and Propeller Limits:

Grumman Adjustable Propeller

Hubs: 5404, 5404R or J5404
Blades: MA/96K-0 to MA96K-2
Diameter: 96 in. max, 94 in. min for Jacobs engines (Basic diameter 96 in. Dash numbers indicate number of inches removed from basic diameter)

Pitch Settings at 36 in. Sta. Static RPM at maximum permissible throttle setting (No additional tolerance permitted)
(A template is required for pitch measurement at the 36 in. Sta.)

For Jacobs R-755-A2M and -A2M1 engines
15.0° Not over 2090, not under 1990

Hamilton Standard Propeller

Hub: 2D30
Blades: 6101A-12, -13, and -14
Diameter: 108 in. max, 106 in. min

Pitch Settings at 42 in. Sta.
11.75° low, 14° high (2 pos.)
10° low, 16.5° high (constant speed)

Governor: 4A2-1, 1A2-5, 1A2G-5

Hamilton Standard Propeller

Hub: 12D40
Blades: 6101A-12
Diameter: 108 in. max
Constant speed configuration only

Pitch Settings
11° low, 20° high

Power Instruments:

(a) Oil Temperature

Unsafe if indicator exceeds RED LINE
200°F. – R-985 & R-1340 P&W engines
210°F. – Jacobs 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.

R-755-A2M1 Jacobs Engine,–RED LINE at 15 psi minimum pressure and RED LINE at 90 psi maximum pressure with YELLOW precautionary ARC between 15 and 60 psi and GREEN operating ARC between 60 and 90 psi.

(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.

Jacobs R-755-A2M1 engine:
RED LINE at 2200 rpm – do not exceed.

(d) Manifold Pressure:

Pratt & Whitney R-985 engine:
RED LINE at 37.5 in. Hg. – do not exceed (except AN14B, 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 Head 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
Abrupt maneuver speed 117 mph
Power off stall speed at max weight:
4500 lb – 67 mph
3750 lb – 62 mph
Best rate of climb speed 73-75 mph for 300 hp
83-85 mph for 450 hp
90 mph for 600 hp

AIRSPEED CORRECTION CHART								
IAS	50	60	70	80	90	100	115	130
CAS	54.8	64.5	74	83	91.5	101	115.5	130

Airspeed Instrument Markings and Their Significance:

(a) Radial RED LINE marks the never exceed speed, which is the maximum allowable safe airspeed (147 mph CAS)

(b) 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).

(c) GREEN arc denotes normal operating range (63-117 mph CAS).

Flight Load Factors:

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

Maximum Weight and C.G. Range:

R-755-A2M1 Jacobs engines with Grumman Propeller – 3750 lb for sprayer or duster.

C.G. range with above configurations:
(+122.0) to (+124.0) at 3750 lb
(+122.0) to (+125.3) at 2500 lb

R-985 engine with Hamilton Standard Propeller – 4500 lb for sprayer or duster.

C.G. range with above configurations:
(+122.0) to (+124.0) at 4500 lb
(+122.0) to (+125.3) at 2930 lb

R-1340 engine with Hamilton Standard Propeller – 4500 lb for sprayer or duster.

C.G. range with above configuration:

(+122.0) to (+124.0) at 4500 lb
(+120.3) to (+125.3) at 3525 lb

Datum:

(Sta. 0) 99.1 inches ahead of firewall bulkhead.
(This is an imaginary point ahead of the airplane chosen so that all weight and balance calculations will be "+")

Note: It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded.

Dimensions:

300 hp Super Ag-Cat

Wing Span	35 ft 8 in.
Wing Area	326 sq. ft
Length	24 ft 0 in.
Height	10 ft 9 in.
Gross Weight	3750 Pounds
Tire Pressure	23 psi Main (8.50 x 6.00), 35 psi Tail.

450 hp and 600 hp Super Ag-Cat

Wing Span	35 ft 8 in.
Wing Area	326 sq ft
Length	23 ft 4 in. (450 hp); 23 ft 9 5/8 in. (600 hp)
Height	11 ft 0 in.
Gross Weight	4500 Pounds
Tire Pressure	23½ psi Main (8.50 x 10), 45 psi Tail.

Fuel:

Fuel Capacity – 46.0 U.S. Gallons, ALL MODELS

Oil:

Oil Capacity – 7.0 U.S. Gallons, 450 and 600 hp models
5.0 U.S. Gallons, Jacobs engine models

PRE-FLIGHT CHECK LIST

AREA	CHECK FOR FOLLOWING
1. Engine Controls	Magneto switch OFF; Fuel ON; Throttle CLOSED; Mixture Full Lean.
2. Engine	Visual Inspection for: Oil Leaks Fuel Leaks Loose Nuts Loose Spark Plugs Loose Spark Plug Wires Pull prop slowly through compression on all cylinders, compare compression, feel for hydraulic lock. Listen for blow-by in exhaust and intake valves. Listen for dry rocker arm or valve noise.
3. Gas Strainer	Drain and check for water and sediment indication.
4. Oil	Quantity and color.
5. Fuel	Quantity.
6. Tires	Pressure and condition.
7. Brakes	Visual inspection for hydraulic fluid leaks, condition of discs and pucks, cockpit check for proper pedal travel.
8. Fuselage	All panels secured.
9. Wings and Tail	Condition of fixed and movable surfaces, hinges, struts, wing tips. Cockpit check for control surface travel and ease of movement.

10. Rigging	Tautness.
11. Systems	Condition of spray fan.
	Spray fan brake control.
	Spray system for leaks
	Spray system strainer for sediment.
	Spray control valve for ease of movement.
	Close and lock hopper sump sealing door before filling hopper (liquids).
	Dust spreader attachment.
	Inside of dust spreader for caked deposits.
	Dust control gate for ease of movement.
	Dust control gate closed before filling hopper (solids).
	Hopper door locked after filling.

II OPERATING PROCEDURES

Cold Weather Operations

1. The primer should be used to assist in starting: in general, 12-14 ~~2-4~~ strokes of the primer will be required.

2. After engine is running, some roughness may exist probably due to reduced vaporization of the fuel with a resultant lean mixture. Once assured that engine is running at moderate RPM, and about 1 minute after starting, apply carburetor heat.

3. The warm-up should be continued using carburetor heat, and throttle should be gradually advanced from 1,000 RPM to the 1200-1400 RPM range. It is important that the oil should be warmed up without resorting to excessive RPM.

4. Taxiing should be done with enough carburetor heat on to provide satisfactory engine acceleration.

5. Pre-takeoff checks should be made when the oil temperature has risen to at least 100°F. (approx. 40°C)

6. Individual checks of the magnetos should be made with the carburetor heat in the cold position. The magnetos should be checked at approximately 1800 RPM, which is about 65% of maximum power and corresponds to normal cruise power conditions. Normal magneto drop is considered to be 50 to 75 RPM, 100 RPM drop should be considered unsatisfactory. If, during an extended check, misfiring should occur, carburetor heat should be applied to ascertain that the misfiring is not due to carburetor icing, or poor fuel vaporization.

7. Just prior to takeoff, it may be desirable to turn on fuel carburetor heat for a short period to eliminate any accumulated ice. Carburetor heat usage at high engine RPM should be kept to a minimum to reduce the possibility of causing excessive engine temperatures. Carburetor heat should not be used during takeoff or climbout.

8. In cruising flight, carburetor heat should be used only when engine roughness may exist due to possible ice in the carburetor. Only sufficient heat should be used to secure smooth operation.