

6. OPERATIONAL DATA

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5. OPERATING LIMITATIONS

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Your Sonex or Waix exceeds the requirements of airworthiness set forth by Sonex, Ltd. as submitted to the FAA.

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The airplane is approved for day VFR operation only.

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Your aircraft must be operated in accordance with all FAA-approved markings, placards and check lists in the airplane. If there is any contradiction to FAA approved markings, placards, etc., in this section, it is to be disregarded.

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Airspeed Limitations

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The following calibrated airspeed (CAS) limitations must be observed:

Never Exceed Speed (Vne), smooth air, dive or glide..... 197 MPH
Maximum Flap Extension Speed 100 MPH
Maximum Structural Cruise (Vc)..... 136 MPH
Placard Maneuvering Speed (Va) 125 MPH

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Maneuvers - Utility Category

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When operating in the Utility category, no aerobatic maneuvers - including intentional spins - are permitted. In the Utility category the following gross weight and maximum flight load factors apply:

Gross Weight, 80 hp: 1100 lbs.
Gross Weight, 120 hp: 1150 lbs.
Flight Load Factors:..... 4.4 Gs positive (Max.)
2.2 Gs negative (Max.)

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Maneuvers - Aerobatic Category

When operating the Sonex in the Aerobatic category, no aerobatic maneuvers are approved except those listed below. In the Aerobatic category the following gross weight and flight load factors apply:

Gross Weight: 950 lbs.
Flight Load Factors:..... 6.0 Gs positive (Max.)
3.0 Gs negative (Max.)

While executing these maneuvers, do not use abrupt control inputs:

Chandelles	Lazy Eights
Steep Turns	Spins
Loops	Aileron Rolls
Barrel Rolls	Stalls (except whip stalls)

Aerobatics that may impose high loads must not be attempted. Bear in

RATE of CLIMB at GROSS WEIGHT

Best Rate (Vy)

Best Angle (Vx)

Rate of Climb

mind in flight maneuvers that the airplane is clean in aerodynamic design and will build up speed quickly with the nose down. Proper speed control is essential for execution of any maneuver, and care must be exercised to avoid excessive speed which, in turn, can impose excessive loads. In the execution of all maneuvers, avoid abrupt use of controls.

Airspeed Indicator Markings

The following is a list of the calibrated airspeed markings (CAS) you must use on the Sonex:

Red Line (Never Exceed Speed) 197 MPH
Yellow Arc (Caution Range)..... 136-197 MPH
Green Arc (Normal Operating Range)..... 46-136 MPH
White Arc (Flap Extension Range)..... 40-100 MPH

Engine Instrument Markings

Engine operating parameters must be obtained from the engine manufacturer's specifications. Fuel quantity to be determined during fuel calibration.

Oil Temperature:

Normal Operating Range..... 120-200
Maximum Allowable

Oil Pressure:

Minimum Idling..... 36
Normal Operating Range..... 45-60
Maximum..... 76

Fuel Quantity Indicator:

Maximum..... 15
No Take-off..... 4 Gallons

Tachometer:

Maximum..... 3300

Cylinder Head Temperature:

Normal Operating Range..... 200-356
Maximum Continuous 356-396 5 min
Maximum Allowable 396

Exhaust Gas Temperature:

Maximum Allowable < 2850 = 1325
> 2850 = 1250

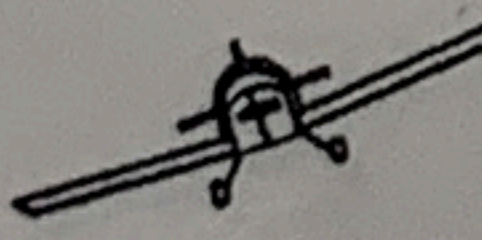
6. OPERATIONAL DATA

The following operational data charts must be completed for your particular aircraft during the flight test restriction period. Variations in engine size, propeller diameter, pitch, and manufacturer, cowl, baffles, type of finish, and weight will all significantly affect the performance of your aircraft. **All measurements must be corrected for a Standard Day.** The completed charts will aid your future flight planning.

**AIRSPPEED
CORRECTION
TABLE - MPH**

IAS	CAS
50	
60	
70	
80	
90	
100	
110	
120	
130	
140	
150	
160	
170	
180	
190	

STALL SPEEDS - POWER OFF, MPH IAS

Gross Wt. Condition	Angle of Bank			
	 0°	 20°	 40°	 60°
1100 lbs w/80 hp 1150 lbs w/120 hp				
0° Flaps	42	45	48	50
10° Flaps	40	41	43	45
30° Flaps	35	38	40	43

RATE of CLIMB at GROSS WEIGHT

Elevation and Temperature	Best Rate (Vy)		Best Angle (Vx)	
	IAS MPH	Rate of Climb Ft./Min.	IAS MPH	Rate of Climb Ft./Min.
Sea Level @ 59° F	100	1200	85	1400
2500 Ft. @ 50° F	100	1000	85	1000
5000 Ft. @ 41° F	100	900	85	800

1. Gross Weight: 1100 lbs. w/80 hp; 1150 lbs. w/120 hp
2. Full Throttle
3. For hot weather, decrease rate of climb 15ft./min. for each 10°F above standard day temperature for the particular altitude.

**TAKE-OFF DISTANCE from HARD SURFACE
at GROSS WEIGHT**

Elevation and Temperature	Head Wind Knots	IAS MPH	Ground Run (Feet)	To Clear 50 Ft. Obs. (Feet)
Sea Level @ 59° F	6	50	400	800
2500 Ft. @ 50° F	6	55	600	1000
5000 Ft. @ 41° F	6	60	700	1200

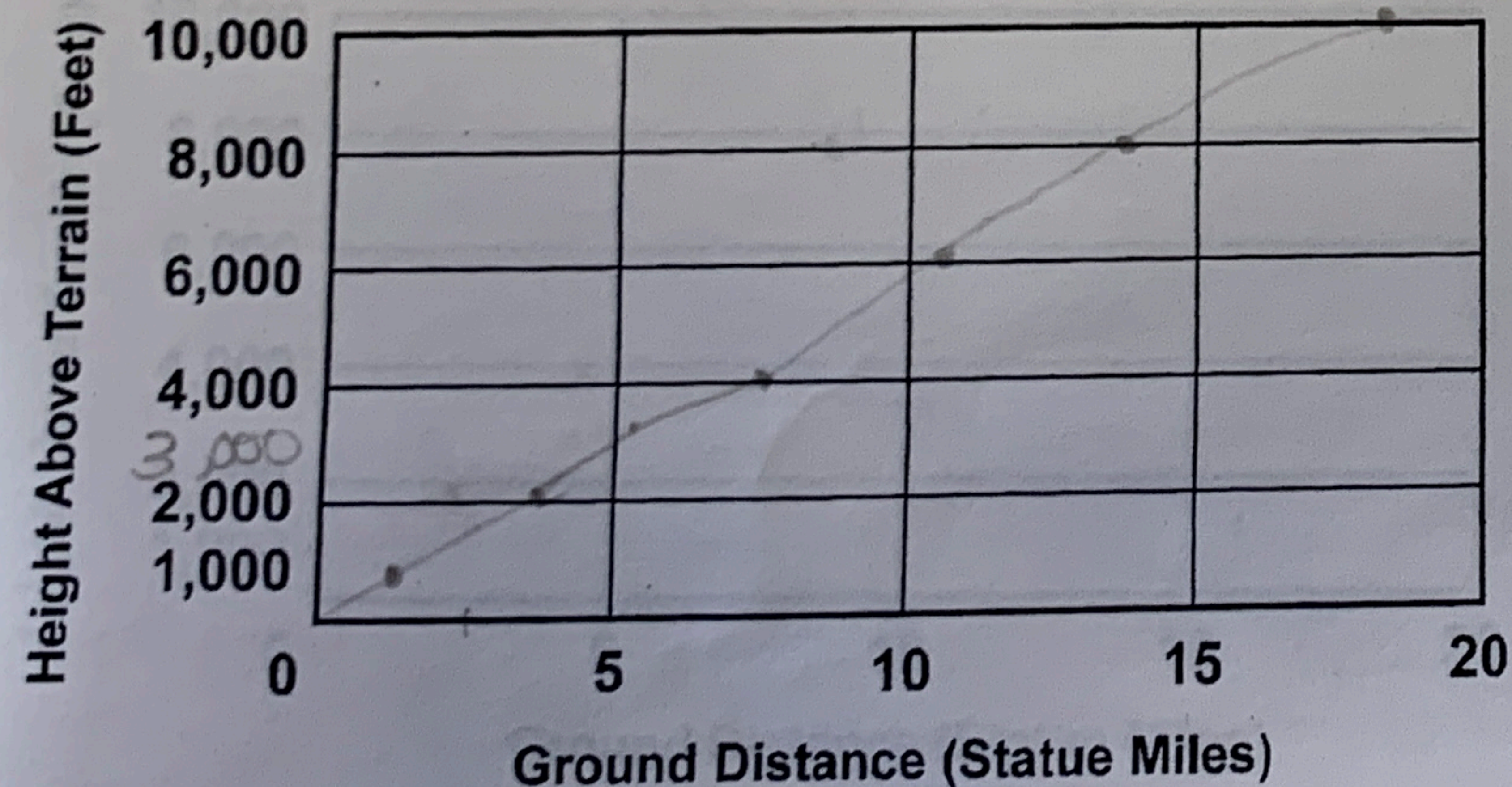
1. Gross Weight: 1100 lbs. w/80 hp; 1150 lbs. w/120 hp
2. Full Throttle
3. Increase the distance 10% for each 35° F increase in temperature above standard day temperature for the particular altitude.
4. For operation on dry grass runway, increase distances (both ground run and "To Clear 50 Ft. Obs") by 7% of the "To Clear 50 Ft. Obs" figure.
5. Figures for clean, level, hard surface runway.

LANDING DISTANCE - POWER OFF, NO WIND, FULL FLAPS, HARD SURFACE at GROSS

Elevation and Temperature	Approach Speed IAS - MPH	Ground Roll (Feet)	Total to Clear 50 Ft. Obs. (Feet)
Sea Level @ 59° F	65	450	600
2500 Ft. @ 50° F	67	500	700
5000 Ft. @ 41° F	70	600	900

1. Gross Weight: 1100 lbs. w/80 hp; 1150 lbs. w/120 hp
2. Decrease the distances shown by 10% for each 4 knots of head wind.
3. Increase the distances shown by 10% for each 60° F increase in temperature above standard day temperature for the particular altitude.
4. For operation on a dry, grass runway, increase distances (both ground run and "To Clear 50 Ft. Obs") by 7% of the "To Clear 50 Ft. Obs" figure.
5. Figures for clean, level, hard surface runway.

MAXIMUM GLIDE at 65 MPH IAS, PROPELLER WINDMILLING, ZERO WIND



CRUISE PERFORMANCE with FULL FUEL (_____ Gallons)

Alt. (Feet)	RPM	% BHP	TAS MPH	Gal. / Hour	Endurance (Hours)	Range (Miles)
2500	3400					
	3300					
	3200					
	3100					
	3000					
	2900					
	2800					
	2700					
5000	3400					
	3300					
	3200					
	3100					
	3000					
	2900					
	2800					
	2700					
8500	3400					
	3300					
	3200					
	3100					
	3000					
	2900					
	2800					
	2700					
	2600					

1. Maximum cruise is normally limited to 75% power. See engine manual.
2. In the above calculations of endurance in hours and range in miles, no allowances were made for take-off or reserve.