CHRISTEN INDUSTRIES, INC

AIRPLANE FLIGHT MANUAL

CHRISTEN A-1

HUSKY

SERIAL # 1011

REGISTRATION # N2881P

FAA APPROVED: George H Meyers III

for MANAGER, DENVER AIRCRAFT
CERTIFICATION OFFICE
NORTHWEST MOUNTAIN REGION
FEDERAL AVIATION ADMINISTRATION

DATE: May 1, 1987

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MODEL A-1 AIRPLANE

REVISION LETTER	PAGES AFFECTED	DESCRIPTION OF CHANGE	APPROVAL AND DATE
A	Cover, i,3,7, 18, 19, 21	Correct Data	Acting Manager, Denver Aircraft Certif. Office June 24, 1987
B	i, 4 of 22	Correct Placards	Manager Modifications Boeing Field, Seattle July 22, 1987
C	i, 6 of 22	Add Priming Procedure to STARTING ENGINE	Supervisor, Denver Aircraft Cert. Fld. Off. February 19, 1988
D	1, 7 of 22	Add Suction Gauge Check to Normal Procedures	Supervisor, Denver Aircraft Cert., Fld.Off June 3, 1988
E	i,ii,3,4 of 22, Add pages 4A, 4B of 22	Add (KOEL), and IFR to Operating Placard.	Supervisor, Denver Aircraft Cert., Fld.Off September 19, 1988
F	i,1,18,19,20 of 22 Add 18A 19A, 20A	Change Propeller Minimum Diameter, Add Perfomance Data	Manager, Modification Branch, Seattle, WA October 14, 1988
G	i, ii, iii, 1 of 26 thru 26 of 26	Remove Airspeed System Calibration Curve & Renumber Pages	Supervisor, Denver Aircraft Cert., Fld. Off April 20, 1989

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SECTION I OPERATING LIMITATIONS

A. AIRSPEEDS

Airspeed Limitations	IAS
1. Maximum flap operation (Vfe) (Do not exceed in any operation with flaps extended.)	73 MPH
2. Maximum structural cruising speed (Vno) (Do not exceed this speed except in smooth air, and then only with caution.)	119 MPH
3. Never exceed speed (Vne) (Do not exceed this speed in any operation.)	152 MPH

Airspeed Indicator Markings	IAS
1. Flap extended speed (white arc) from stall speed	44 MPH
To maximum flap extended speed	73 MPH
2. Normal operating range (green arc) from stall speed	50 MPH
To maximum normal operating speed	119 MPH
3. Caution range (yellow arc) from maximum normal operating speed	119 MPH
To never exceed speed (red radial)	152 MPH
4. Never exceed speed (red radial)	152 MPH

B. POWERPLANT LIMITS

For Lycoming O-360-C1G engine and Hartzell HC-C2YK-1BF/F7666A propeller. Propeller minimum diameter is 72 inches. Propeller maximum diameter is 76 inches.

1. Propeller Pitch Settings		High Pitch 29° $\pm$ 1.0° Low Pitch 13° + 0°,-0.5°
2. Maximum Continuous Power		180 H.P. at 2700 RPM
3. Normal Operating Power		135 H.P. at 2400 RPM
4. Minimum Fuel Grade		100/100LL Octane
5. Oil Pressure		
Minimum (red radial)		25 PSI
Caution Range (yellow arc)	from	25 PSI
	to	60 PSI
Normal Range (green arc)	from	60 PSI
	to	90 PSI

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SECTION I

B. POWERPLANT LIMITS (continued)

Caution Range (yellow arc)	from	90 PSI
	to	100 PSI
Maximum (red radial)		100 PSI

6. Oil Temperature

Maximum (red radial)		245 Deg. F./118 Deg. C.
Normal range (green arc)	from	100 Deg. F./ 38 Deg. C.
	to	245 Deg. F./118 Deg. C.

7. Tachometer

Recommended idle		700 RPM
Normal Range (green arc)	from	500 RPM
	to	2000 RPM
and	from	2250 RPM
	to	2700 RPM
Red Arc	from	2000 RPM
	to	2250 RPM
DO NOT EXCEED (red line)		2700 RPM

8. Continuous operation between 2000 to 2250 RPM prohibited.

9. Cylinder Head temperature (red radial) 500° F

C. WEIGHTS

1. Maximum Gross Weight (normal category) 1800 LBS

2. Design Empty Weight: dry, no fuel, no oil 1190 LBS

   NOTE: Datum, FS 0.00 is located 60.0 inches forward of wing leading edge

3.	Maximum Oil	2 US GALS	15 LBS
4.	Fuel Capacity	52 US GALS	312 LBS
5.	Pilot		Actual Weight
6.	Passenger		Actual Weight
7.	Baggage, Maximum		50 LBS

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SECTION I

C. WEIGHTS (continued)

8. Design Useful Load 610 LBS.
(See Section V, "Weight and Balance", Model A-1 Airplane for allowable weight and center of gravity combinations and detail loading instructions.)

Weight and Center of Gravity Limits (Normal Category)

1. Most forward Limit
FS 72.5 at 1500 LBS

2. Most forward at Maximum Gross Weight
FS 74.5 at 1800 LBS

3. Most rearward at Maximum Gross Weight or Less
FS 78.4 at 1800 LBS

D. FLIGHT LOAD FACTORS (Normal Category)

1. Positive Flight, Limit, Flaps Up + 3.8
Negative Flight, Limit, Flaps Up - 1.5
Positive Flight, Limit, Flaps Down + 2.0

2. Maneuvers and Entry Speeds: See Section IV

E. FLIGHT LIMITATIONS

This airplane must be operated as a day and night VFR/IFR airplane.
Flight into known icing conditions is prohibited.
Acrobatic Maneuvers, Including Spins Prohibited.

F. USABLE FUEL

Of the 52 US GALS total fuel capacity, 50 gallons are usable during all normal flight conditions.
Unusable Fuel, normal flight: 2 US Gallons.

G. MARKINGS AND PLACARDS

The following placards are installed in the airplane:

1. At fuel selector handle:
"MAIN FUEL SELECTOR"
OFF
ON
50 GALS USABLE

SECTION I

G. MARKINGS AND PLACARDS (continued)

2. Adjacent to airspeed indicator:
"DESIGN MANEUVERING SPEED 94 MPH IAS"
"DEMONSTRATED CROSSWIND VELOCITY 15 MPH"

3. At rear of baggage compartment:
"MAXIMUM BAGGAGE 50 LBS"

4. On left side of cockpit immediately aft of pilot's throttle:

"THE MARKINGS AND PLACARDS INSTALLED ON THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL. OPERATIONS ARE LIMITED TO DAY AND NIGHT VFR AND/OR IFR CONDITIONS. FLIGHT INTO KNOWN ICING CONDITIONS PROHIBITED. ACROBATIC MANEUVERS, INCLUDING SPINS, PROHIBITED"

5. Adjacent to each main fuel filler neck:
"FUEL 100/100LL OCTANE 25 GALS USABLE"

6. On right side panel next to the alternate static source valve:
"OPEN FOR ALTERNATE STATIC AIR"

7. Lower forward instrument panel:
"SOLO FRONT SEAT ONLY"

8. Lower Forward instrument panel
"NO SMOKING"

9. Next to alternate static source valve:
"WHEN USING THE ALTERNATE STATIC AIR SOURCE THE FOLLOWING SHOULD BE ADDED TO THE ALTIMETER READING
70 MPH....20 FT 110 MPH....100 FT
90 MPH....80 FT 130 MPH....120 FT
CLOSE DOOR AND WINDOWS WHEN USING ALTERNATE STATIC AIR"

10. Next to Tachometer: "AVOID CONTINUOUS OPERATION BETWEEN 2000 - 2250 RPM"

H. MAXIMUM PASSENGER SEATING CONFIGURATION

One person rear seat.

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SECTION I

I. KINDS OF OPERATING EQUIPMENT LIST (KOEL)

This airplane may be operated in day or night VFR, day or night IFR, when the appropriate equipment is installed and operable. Flight into known or forcast icing conditions is prohibited.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. Unless the airplane is operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA, the following systems and items of equipment must be installed and operable for the particular kind of operation indicated.

	VFR Day	VFR Night	IFR Day	IFR Night
Electrical Power				
1- Battery	1	1	1	1
2- Alternator	1	1	1	1
3- Ammeter	1	1	1	1
4- Alternator Indicator Lights	1	1	1	1
Flight Controls				
1- Trim Indicator (Elevator)	1	1	1	1
2- Stall Warn Horn	1	1	1	1
Fuel				
1- Fuel Quantity Indicator	2	2	2	2
2- Fuel Primer	1	1	1	1
Lights				
1- Cockpit Map (White)	0	1	0	1
2- Instruments Flood Red (Note)	0	1	0	2
3- Anti-Collision	0	2	0	2
4- Landing Light	0	1	0	1
6- Taxi Light	0	0	0	0
6- Position Lights	0	3	0	3

Note: Two floods one per side required for IFR night.

SECTION I

I. KINDS OF OPERATING EQUIPMENT LIST (KOEL) CONT.

	VFR Day	VFR Night	IFR Day	IFR Night
Navigation				
1- Sensitive Altimeter	1	1	1	1
2- Airspeed	1	1	1	1
3- Magnetic Compass	1	1	1	1
4- Attitude Indicator (Gyro Stabilized)	0	0	1	1
5- Direction Indicator (Gyro Stabilized)	0	0	1	1
6- Turn and Bank or Turn Coordinator	0	0	1	1
7- Vertical Speed Indicator	0	0	1	1
8- VHF Comm	0	0	1	1
9- VHF Nav or LF Nav	0	0	1	1
Vacuum System				
1- Suction Gauge	0	0	1	1
2- Vacuum Pump	0	0	1	1
Engine Indicating				
1- Tachometer	1	1	1	1
2- Manifold Pressure Gauge	1	1	1	1
3- Cylinder Head Temperature Gauge (CHT)	1	1	1	1
Engine Oil				
1- Oil Temperature Indicator	1	1	1	1
2- Oil Pressure Indicator	1	1	1	1

Note 1: The zeros (0) used in the above list mean that the equipment and/or system was not required for type certification for that kind of operation.

Note 2: The above system and equipment list is predicated on a crew of one pilot.

Note 3: Equipment and/or systems in addition to those listed above may be required by operating regulations (FAR Part 135).

Note 4: The above system and equipment list does not include all specific flight instruments and communications/navigation equipments required by the FAR Parts 91 and 135 operating requirements.

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SECTION II NORMAL PROCEDURES

A. AIRPSEEDS

			IAS
1.	Vx	Best angle of climb (sea level)	58 MPH
		Best angle of climb (10000 ft.)	60.5 MPH
2.	Vy	Best rate of climb (sea level)	73 MPH
		Best rate of climb (10000 ft.)	67.5 MPH
3.	Va	Maneuvering speed	94 MPH
4.	Vfe	Maximum speed, flaps extended	73 MPH
5.	Vne	Never exceed speed	152 MPH

6. For best engine cooling while climbing Use 77 MPH at sea level with a straight line variation to 70 MPH at 10,000 ft.

B. PRE-FLIGHT

1.	Visually check aircraft for	General Condition
	a. Fabric	General Condition
	b. Screws and cowl fasteners	Secure
	c. Tires	Proper Inflation
	d. Brakes	Secure
	e. Pitot and static openings	Check for Blockage
	f. Tie-downs (wings-tail)	Disconnect
2.	Visually check fuel level in tanks.	
	a. Clear fuel strainer and tank sumps of possible water and sediment.	
	b. Fuel caps	Secure
	c. Fuel vent openings	Unobstructed
3.	Check control surfaces for	Freedom of Movement and Security
4.	Engine	General Condition & Security
	a. Oil	Check Level
	b. Propeller and spinner	Check for Nicks, Cracks Security and Oil Leaks
	c. Carburetor air inlet	Check for Restrictions
	d. Cowl openings	Check for Restrictions

SECTION II

B. PRE-FLIGHT (continued)

5. In cold weather remove any accumulations of frost, ice, or snow.

6. If night flight is planned, check all lights.

C. BEFORE STARTING ENGINE

1.	Pre-flight	Complete
2.	Seat Belts, Shoulder Harness	Adjust and Lock
3.	Fuel Valve	On
4.	All Electrical Switches	Off
5.	Brakes	Test and Set

D. STARTING ENGINE

1.	Mixture	Rich
2.	Carburetor Heat	Cold
3.	Propeller Control	Full Increase (In)
4.	Master Switch	On
5.	Throttle	Open 1/4 Inch
6.	Prime (Depending on temperature.None required when engine warm)	1 to 6 strokes (Then secure primer)
7.	Propeller Area	Clear
8.	Ignition Switch	Start (Release when engine starts)
9.	Oil Pressure	Check
10.	Alternator Field Switch	On

E. BEFORE TAKE-OFF

1.	Cabin Doors	Latched
2.	Flight Controls	Free and Correct

SECTION II

E. BEFORE TAKE-OFF (continued)

3.	Elevator Trim	1/2 Nose Up (From Neutral)
4.	Fuel Valve	On
5.	Mixture	Full Rich (In)
6.	Brakes	Set
7.	Throttle	1900 RPM
	a. Magnetos (RPM drop should not exceed 150 RPM on either magneto or 50 RPM between, Lean if above 5000')	Check
	b. Carburetor Heat (Check for RPM Drop)	Check
	c. Engine Instruments, Ammeter, and Suction Gauge (When vacuum system inst.) (4-1/2 to 5-1/2"/Hg)	Check
8.	Throttle	1700 RPM
	a. Move propeller control through range and return to:	High RPM
9.	Flight Instruments and Radios	Set
10.	Carburetor Heat	Cold

F. TAKE-OFF

Normal

1.	Wing Flaps	0°
2.	Propeller Control	Full Increase (In)
3.	Throttle	Full Open
4.	Elevator	1/4 Up From Neut. (Hold Tail Low)
5.	Lift-Off	50 to 55 MPH
6.	Climb	68 MPH

Maximum Performance

1.	Wing Flaps	30°

SECTION II

E. TAKE-OFF (continued)

2.	Trim	Adjust (3/4 Nose Up From Neutral)
3.	Propeller Control	Full Increase (In)
4.	Throttle	Full Open
5.	Brakes	Release
6.	Elevator	1/2 Up From Neut. (Hold Tail On Grd.)
7.	Lift Off	44 to 48 MPH
8.	Climb	58 MPH

G. CRUISE

1.	Propeller Control	2250 to 2700 RPM
2.	Throttle	For Desired Manifold Pressure
3.	Mixture a. Move from rich toward lean (pull). b. Continue until engine roughness is noted. c. Enrich until engine runs smoothly and power is regained.	Lean

NOTE: For best economy: 2350 RPM at 20 inches manifold pressure, lean mixture as described in step 3.

H. BEFORE LANDING

1.	Mixture	Rich
2.	Carburetor Heat	On
3.	Throttle (Or as needed for approach)	Close
4.	Flaps	30°
5.	Airspeed	58 MPH

SECTION II

H. BEFORE LANDING (continued)

6.	Propeller Control	Full Increase

NOTE: A spring type trim system is installed, use trim to help reduce up elevator force while landing.

I. BALKED LANDING

1.	Throttle	Open
2.	Propeller	Full Increase (In)
3.	Carburetor Heat	Cold
4.	Flaps	0°
5.	Climb Airspeed (Vx)	58 MPH (Sea Level)

J. LANDING

Normal

1.	Airspeed	58 MPH (Airspeed to 50 ft. obstacle height)
2.	Flaps	30°
3.	Trim	Adjust
4.	Power	Idle (Or As Required)
5.	Touchdown	Tail Wheel First
6.	Landing Roll	Elevator Up (Full Back)
7.	Flaps	0° (After Touchdown)
8.	Brake	Minimum Required

Short Field

1.	Airspeed	50 to 55 MPH
2.	Flaps	30°
3.	Trim	Adjust (Nose Up)

SECTION II

J. LANDING (continued)

4. Power	As Required
5. Touchdown	Tail Wheel First
6. Landing Roll	Elevator Full Back
7. Flaps	0° (After Touchdown) For Maximum Brake Effectiveness
8. Brake	Apply Heavily

Cross Wind

1. Airspeed	55 to 60 MPH
2. Flaps	As Desired (Recommended 30°)
3. Power	As Required
4. Ailerons--Rudder	On Short Final Use Ailerons to Keep Upwind Wing Low, Rudder to Hold Runway Alignment
5. Touchdown	Tail Wheel First (Do Not Touch Down In A Slip)
6. Landing Roll	Use Aileron to keep Upwind Wing Down, Rudder and Brakes (If Needed) for Directional Control
7. Flaps	0°

K. AFTER LANDING

1. Flaps	0°
2. Carburetor Heat	Cold

SECTION II

L. SECURING AIRCRAFT

1.	Brakes	Set
2.	Radios, Electrical	Off
3.	Mixture	Idle Cut Off
4.	Ignition Switch	Off
5.	Master Switch	Off
6.	Secure Aircraft	Tie Down

SECTION III EMERGENCY PROCEDURES

A. ENGINE FAILURE AFTER TAKE-OFF

1. Lower nose to maintain airspeed.
   In most cases, landing should be planned straight ahead.
2. Airspeed — 68 MPH (NO Flaps)
   58 MPH (30° Flaps)
   (30° Flaps Recommended)
3. Mixture — Cut Off
4. Fuel Valve — Off
5. Master Switch — Off

B. ENGINE FAILURE DURING FLIGHT

1. Establish glide at 73 MPH
   While gliding toward a suitable landing area, an effort should be made to identify cause of failure.
   If time permits, proceed as follows:
2. Airspeed — 73 MPH
3. Propeller — Full Increase (In)
4. Carburetor Heat — Hot
5. Fuel Valve — On
6. Mixture — Rich
7. Ignition Switch — Both
   (Or start if propeller is not windmilling)

NOTE: If the engine cannot be restarted, a forced landing without power must be executed.

C. FORCED LANDING WITH NO POWER

1. Airspeed — 68 MPH (NO Flaps)
   58 MPH (30° Flaps)

SECTION III

C. FORCED LANDING WITH NO POWER (continued)

2.	Mixture	Idle Cut-Off
3.	Propeller	Full Decrease (Out)
4.	Fuel Shutoff	Off
5.	Ignition Switch	Off
6.	Wing Flaps	As Required (30° Recommended)
7.	Master Switch	Off
8.	Door	Unlatch
9.	Touch Down	Tail Wheel First
10.	Brakes	Apply Heavily

D. FIRES

1. Engine Fire--Starting

a. Continue cranking in an attempt to start the engine.

b. If start is successful, run engine at 1700 RPM for a few minutes before shutting down to inspect damage.

c. If starting is unsuccessful continue cranking for two to three minutes:
   1. Mixture — Cut Off
   2. Throttle — Full Open
   3. Obtain fire extinguisher

d. When ready to extinguish fire:
   1. Discontinue cranking
   2. Master, Ignition Switch — Off
   3. Fuel Valve — Off

e. Make thorough inspection before conducting another flight.

SECTION III

D. FIRES (continued)

2. Engine Fire On Take-Off

a. Before Lift-Off

1. Throttle	Idle
2. Brakes	Apply Heavily
3. Mixture	Cut-Off
4. Switches (after engine stops)	Off

b. After Lift-Off

1. Throttle	Idle
2. Complete as much of "Fire in Flight" as possible	(D(3))
3. Land As Soon As Possible (Follow Forced Landing With No Power)	

3. Fire In Flight (Engine)

a. Fuel shut off	Off
b. Mixture	Cut Off
c. Switches	Off
d. Cabin Heat	Off
e. Airspeed (that which will provide an incombustable mixture)	
f. Land As Soon As Possible (Using Forced Landing With No Power)	

4. Fire in Flight (Electrical)

The initial indication of an electrical fire is an odor of burning insulation. The following procedure should be used.

a. Master Switch	Off
b. All Radio/Electrical Switches	Off
c. Fire Extinguisher	Activate (If Available)
d. Land	

SECTION III

D. FIRES (continued)

If landing cannot be made immediately and fire appears out and electrical power is necessary for continuance of flight:

e. Master Switch — On

f. Circuit Breaker — Check
(Check for faulty circuit, do not reset)

g. Radio/Electrical Switches — On
(On one at a time, with delay after each one until faulty circuit is localized)

h. Land As Soon As Possible

E. ICING (FLIGHT INTO KNOWN ICING PROHIBITED)

1. Carburetor

a. Carburetor Heat — Hot

b. When ice has cleared carburetor heat — Cold

c. If carburetor heat is used continuouly Lean mixture for maximum manifold pressure.

2. Pitot Static System

a. Alternate static valve — Open

b. Note altimeter error from placard

c. Remain clear of icing and Land As Soon As Possible

F. BEST GLIDE SPEED — 73 MPH

G. STALL WARNING INOPERATABLE WITH MASTER SWITCH OFF

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SECTION III

H. SPINS

1. Spins Are Unauthorized

2. Recovery from an inadvertent spin

   a. Retract throttle to idle

   b. Apply full opposite rudder
   (Opposite direction of rotation)

   c. Move control stick forward of neutral in brisk motion.

   d. When rotation stops, neutralize rudder, make a smooth recovery from dive.

SECTION IV PERFORMANCE INFORMATION

A. STALLS

1. Altitude loss during power off stalls 150 ft.

2. Power off stalling speed versus bank angle @ 1800 lbs.

	BANK ANGLE	STALLING SPEED (IAS)
0° Flaps	0°	51 MPH
	30°	55 MPH
	45°	61 MPH
	60°	72 MPH
30° Flaps	0°	45 MPH
	30°	48 MPH
	45°	54 MPH
	60°	64 MPH

B. MANEUVERS AND ENTRY SPEEDS

1. Design maneuvering speed 94 MPH IAS

2. All acrobatic maneuvers, including spins are unauthorized.

C. ENGINE COOLING

Engine cooling demonstrated to a maximum ambient atmospheric temperature, corresponding to sea level conditions of 100° F.

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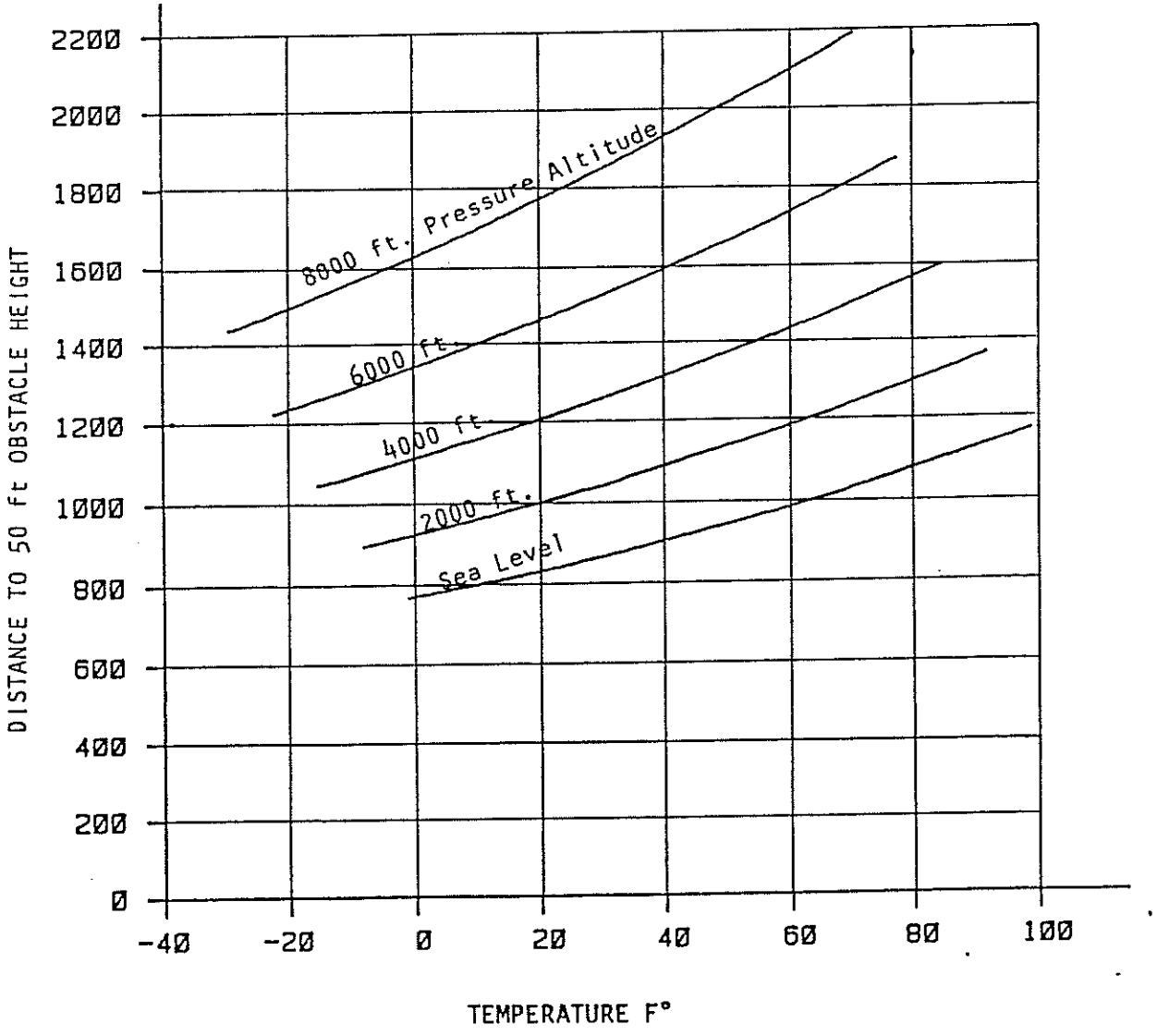
SECTION IV

D. TAKE-OFF — 76 Inch Diameter Propeller

1. Take-off Normal — Flaps 0° (Over 50 Ft. Obstacle)
   Maximum weight ..... 1800 LBS.

2. Notes:
   1. No wind
   2. Hard surface runway (dry, level)
   3. Lift-off 50 to 55 MPH IAS.
   4. Airspeed at 50 ft. obstacle height 1.3 Vsl = 68 MPH IAS.
   5. Ground roll is approximately 40% of total distance to 50 ft. obstacle height.
   6. Technique as specified in Section II.



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D. TAKE-OFF (continued) 72 Inch Diameter Propeller

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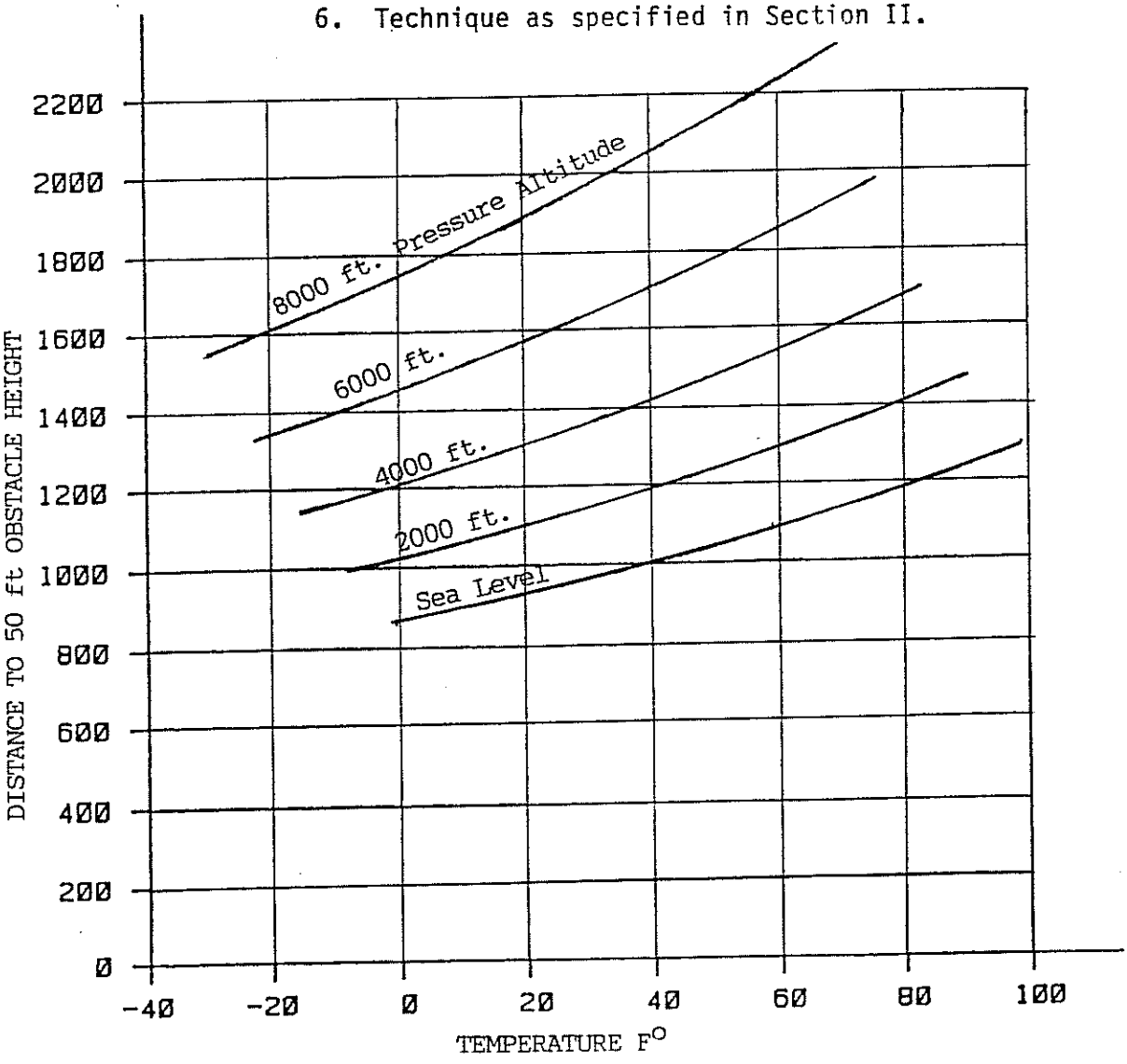
1. No wind
2. Hard surface runway (dry, level)
3. Lift-off 50 to 55 MPH IAS.
4. Airspeed at 50 ft. obstacle height 1.3 Vsl = 68 MPH IAS.
5. Ground roll is approximately 40% of total distance to 50 ft. obstacle height.
6. Technique as specified in Section II.



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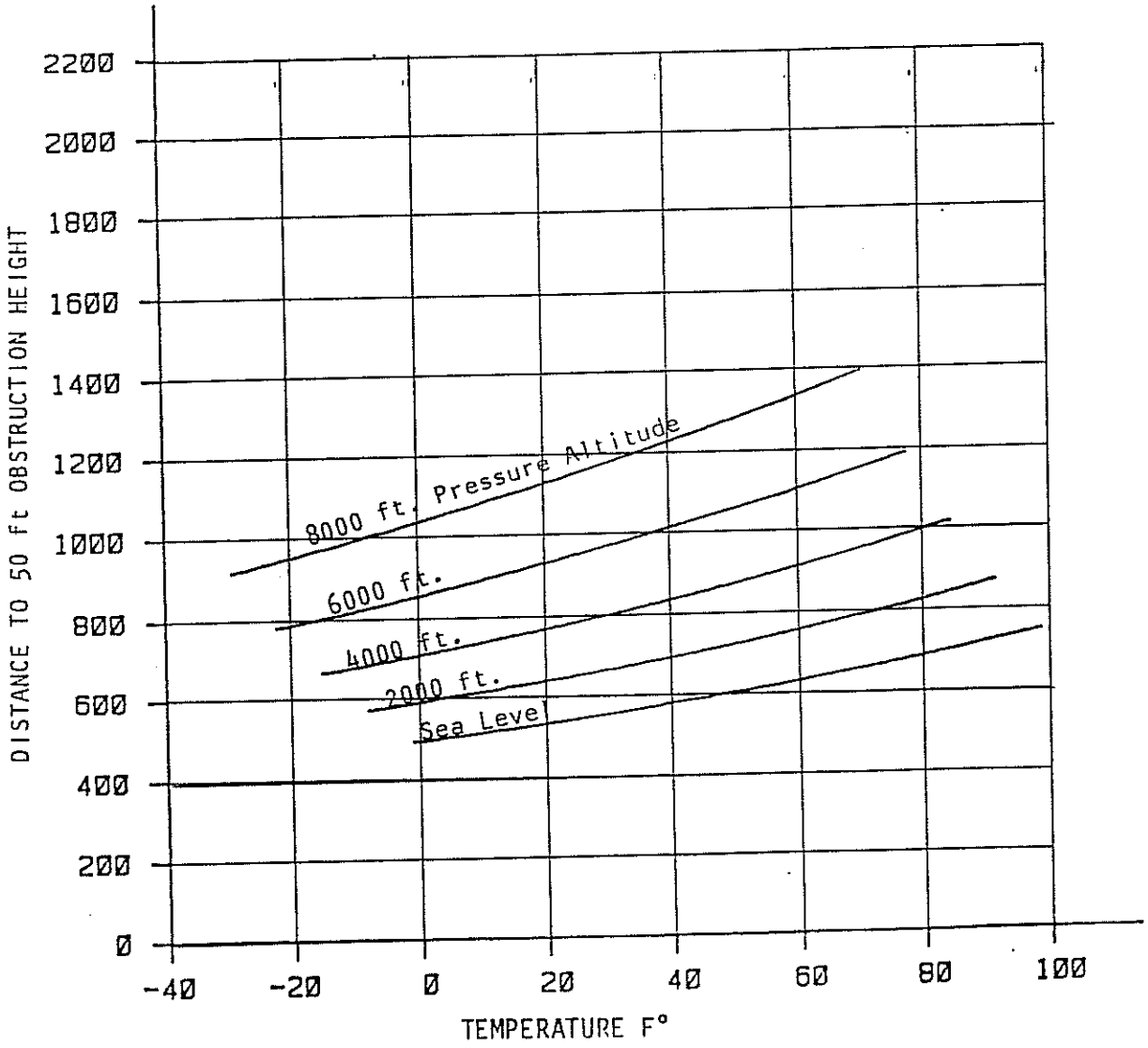
SECTION IV

D. TAKE-OFF (continued) 76 Inch Diameter Propeller

1. Take-off Maximum Performance.Flaps 30°, (Over 50 Ft. Obstacle)
Maximum Weight..... 1800 LBS.

2. Notes:
1. No wind
2. Hard surface runway (dry, level)
3. Lift-off 44 to 48 MPH IAS.
4. Airspeed at 50 ft. obstacle height 1.3 Vsl = 58 MPH IAS
5. Ground roll is approximately 42.5% of total distance to 50 ft. obstacle height.
6. Technique as specified in Section II



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Maximum Weight..... 1800 LBS.

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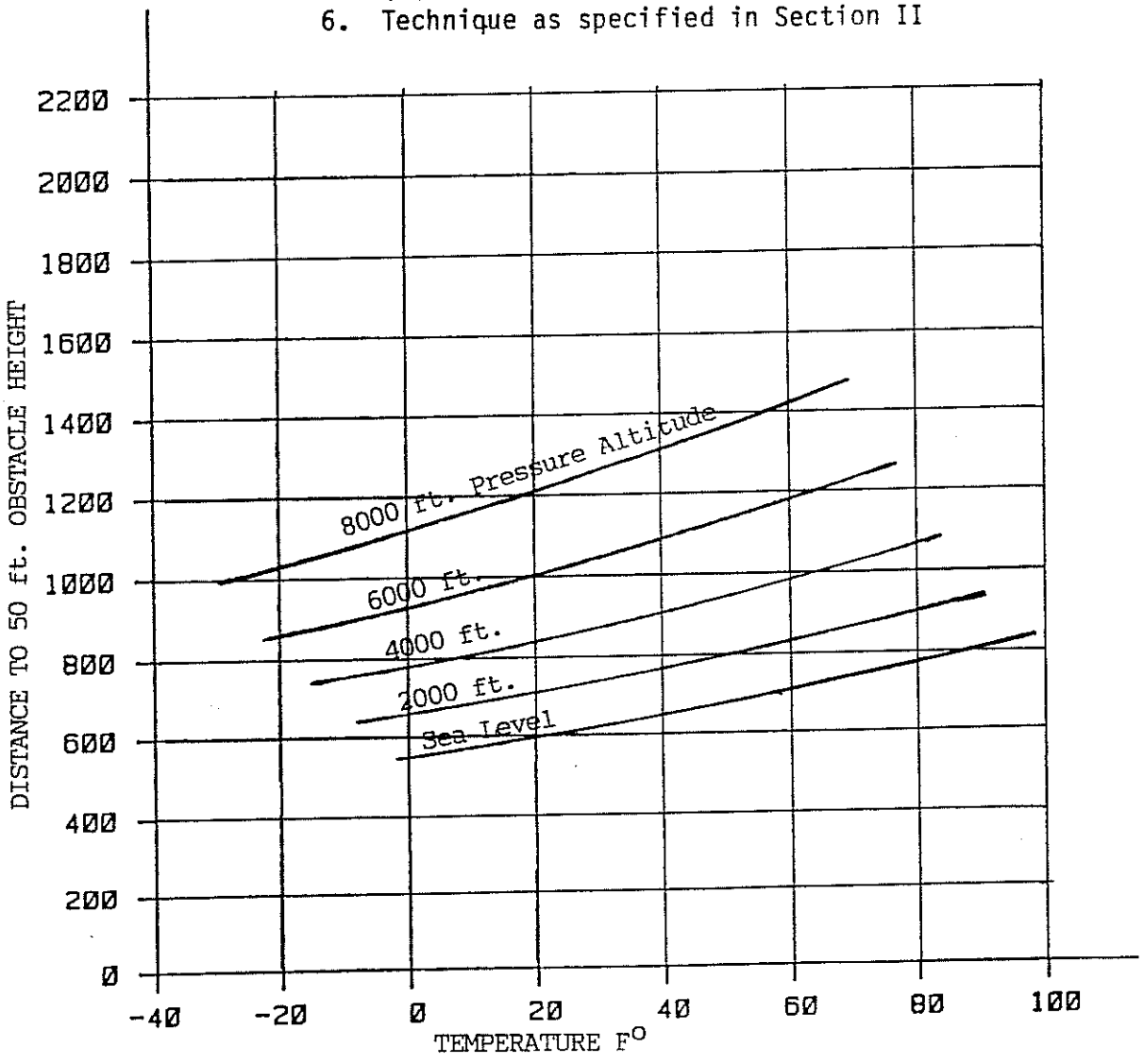

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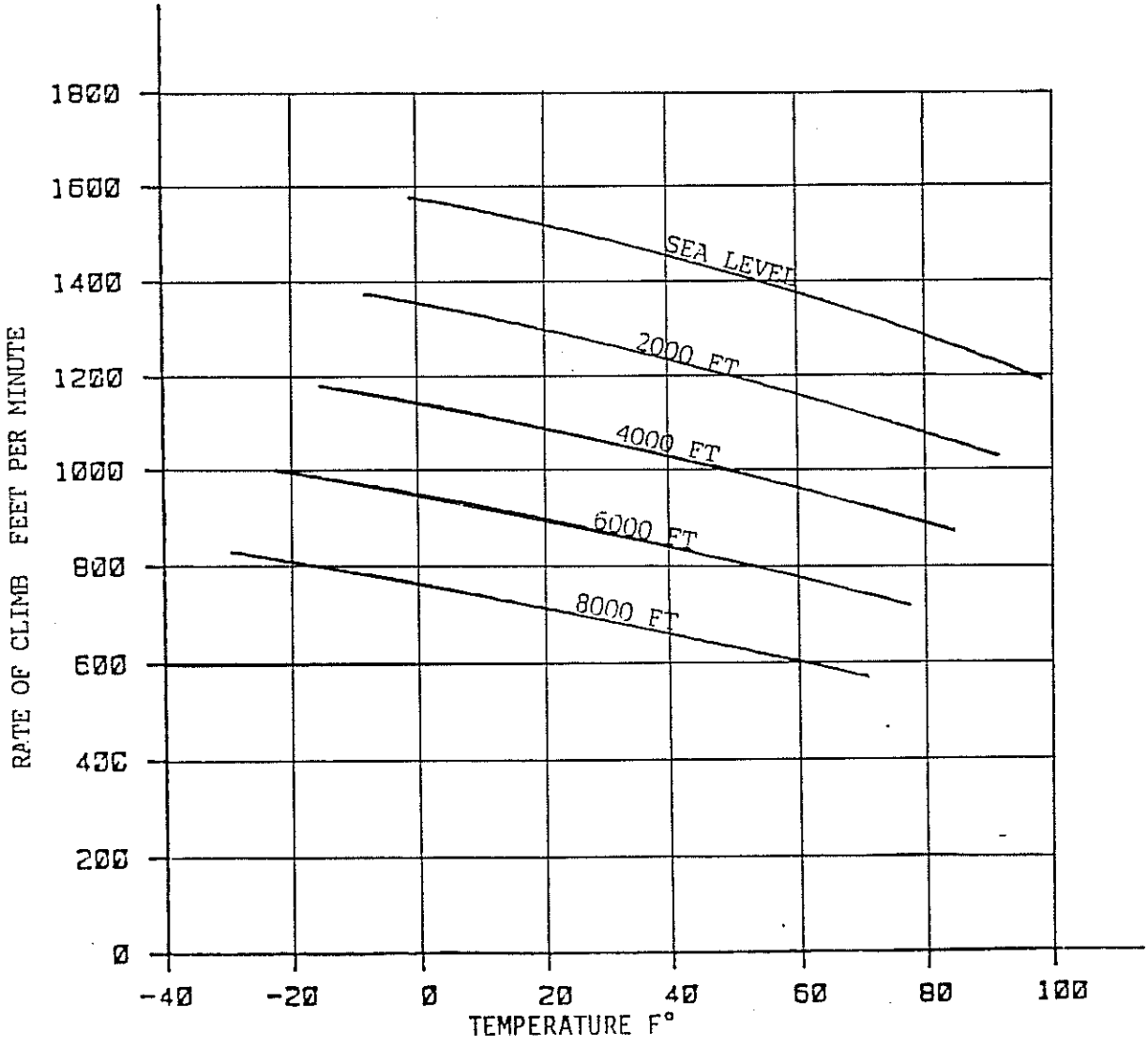
SECTION IV

E. CLIMB

76 Inch Diameter Propeller

Notes:
1. All climbs are with 0° flaps
2. Climb speed is best rate of climb. 73 MPH at sea level to 67 MPH at 10,000 ft. with a straight line variation.
3. Smooth air, no wind.
4. Maximum weight.....1800 LBS.

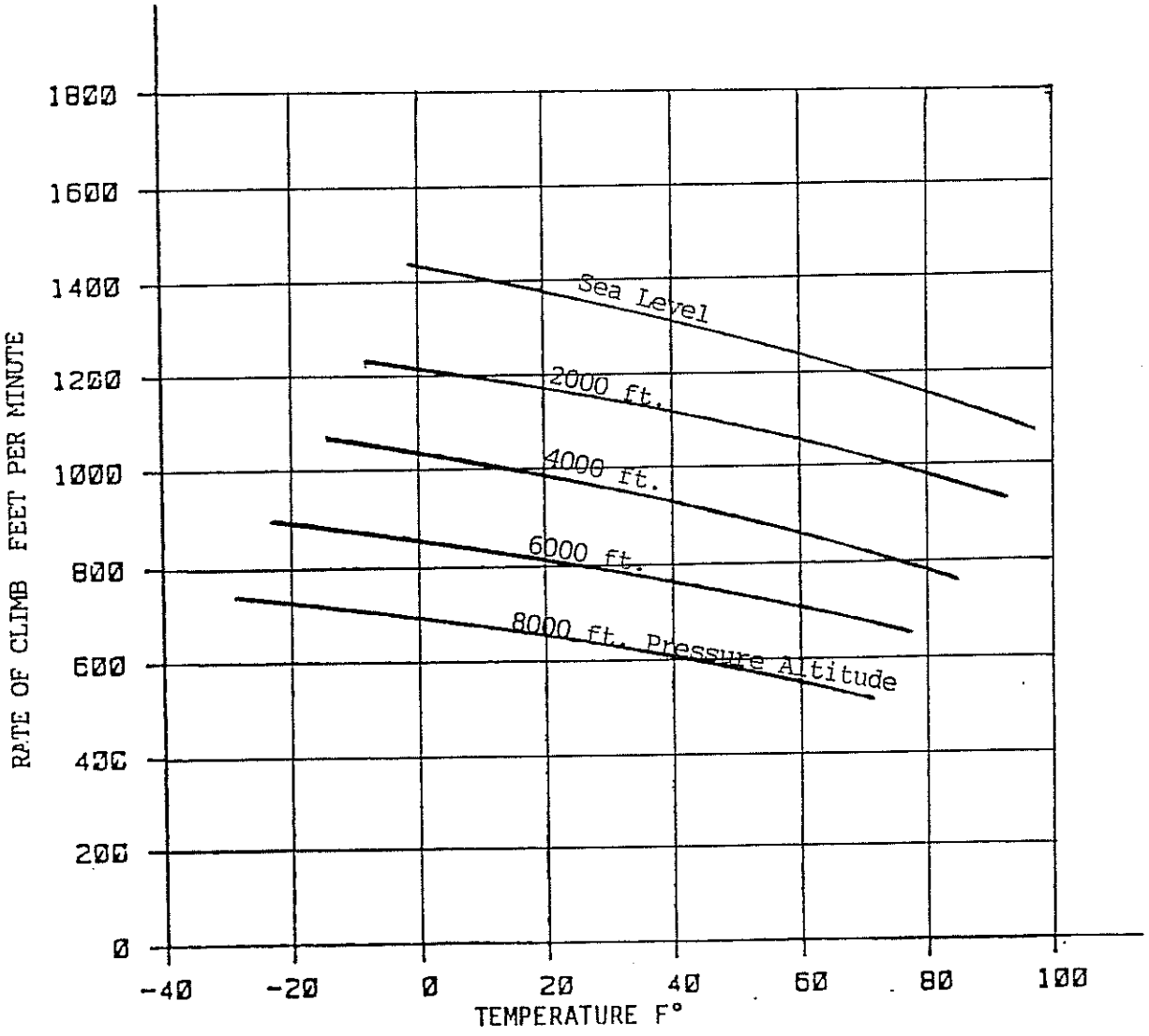


CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION IV

E. CLIMB (continued) 72 Inch Diameter Propeller

Notes:
1. All climbs are with 0° flaps
2. Climb speed is best rate of climb. 73 MPH at sea level to 67 MPH at 10,000 ft. with a straight line variation.
3. Smooth air, no wind.
4. Maximum weight.....1800 LBS.



FAA APPROVED May 1, 1987
Revision G April 20, 1989

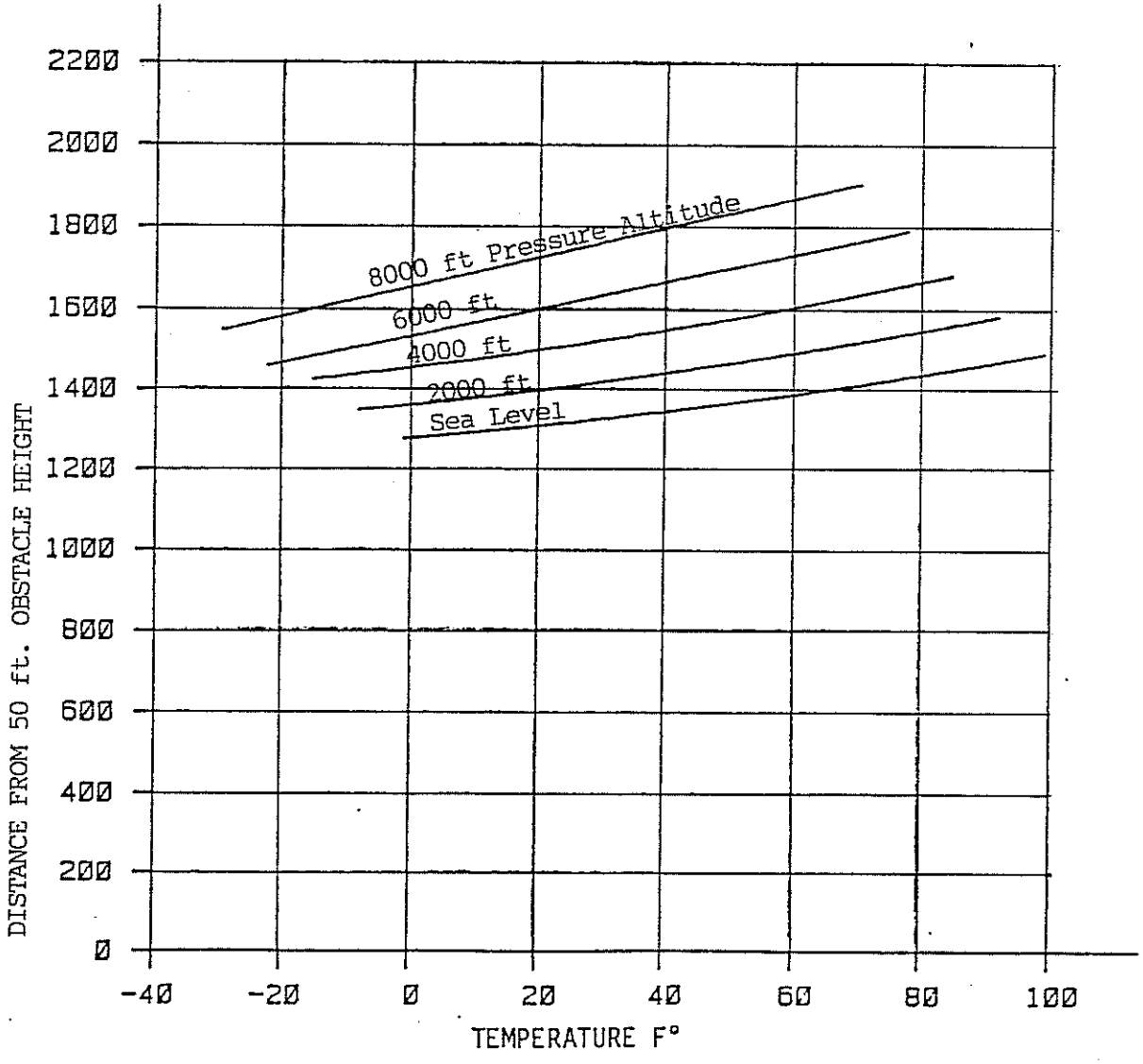
CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION IV

F. LANDING

Landing over 50 ft. obstacle, 30° Flaps,
Maximum weight.....1800 LBS.

NOTES:
1. No wind
2. Hard surface runway (dry, level)
3. Airspeed at 50 ft. obstacle height
   1.3 Vso = 58 MPH IAS
4. Ground roll is approximately 36.5% of total landing distance from 50 ft. obstacle height.
5. Brakes, apply heavily.
6. Technique as specified in Section II



AIRPLANE FLIGHT MANUAL SUPPLEMENT FOR

MODEL A-1 HUSKY AIRPLANE N2881P S/N 1011

AIRCRAFT FLIGHT MANUAL SUPPLEMENT FOR MODEL A-1 HUSKY AIRCRAFT WITH SKIS INSTALLED IN ACCORDANCE WITH FAA FORM 337 DATED 01-08-93
Federal A-2000-A Skis

PERFORMANCE INFORMATION

A. Stalls

The installation of the skis has no appreciable effect on stalls or stall speeds.

B. Takeoff

With the most favorable conditions of smooth packed snow at temperatures approximating 32°F, the takeoff distance is approximately 10 percent greater than that shown for the landplane.

C. Landing

With the most favorable conditions of smooth packed snow at temperatures approximating 32° F, the landing distance is approximately 20 percent greater than that shown for the landplane.

D. Climb Performance

Flight tests with skis installed show no appreciable change in climb performance and, in any case, would not exceed 30 ft. per minute.

APPROVED JAN 08 1993
DATE
PRINCIPAL INSP.
AGL- FSDO-03

AVIAT INC.
AFTON, WYOMING

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR

CHRISTEN A-1 HUSKY AIRPLANE

REGISTRATION NO. N2881P

SERIAL NO. _____

This supplement must be attached to the FAA Approved Airplane Flight Manual, dated May 1, 1987, when the Schwiezer tow hook is installed in accordance with Christen Drawing 35572 dated 8/01/88 or later approved revision. The information contained herein supplements the information of the basic Airplane Flight Manual.

OPERATING LIMITATIONS

A. MARKING and PLACARDS
   1. On floor adjacent to release handle.
      "TOW RELEASE"
      "PULL TO RELEASE"
      "MAXIMUM TOW LINE
      STRENGTH-1200 LBS."

No other sections of the flight manual are affected.

FAA APPROVED: Michael J. Bonfit
Supervisor, Denver Aircraft Certification
Field Office
Northwest Mountain Region
Federal Aviation Administration

Date September 1, 1988

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION

ACTUAL WEIGHT & BALANCE OF:

MODEL: CHRISTEN A-1

SERIAL NO: 1011

DATE: N2381P

Revised 1/3/93

PREPARED BY E. H. Andersen Jr.

E. H. ANDERSEN, JR.
CHIEF ENGINEER

NOTE: It is the responsibility of the pilot to ensure that his airplane is operated in loading configurations which are within the approved weight and center of gravity limits

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

LOG OF REVISIONS

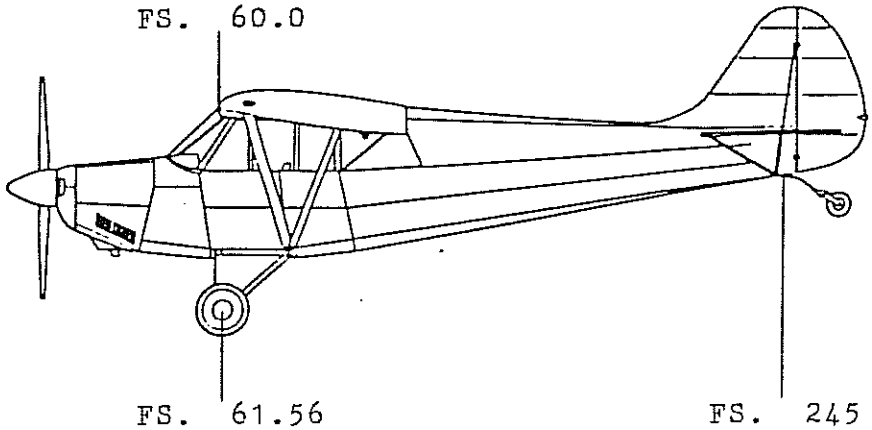
REVISION LETTER	PAGES AFFECTED	DESCRIPTION OF CHANGE	APPROVAL AND DATE
A	8 of 9	Correct Propeller Listing	5-26-87 E.H.A.
B	2 of 9 9 of 9	Add Vacuum Pump & Gyro Instruments to Equipment List	5-12-88 E.H.A.
C	2 of 9 4 of 9 8 of 9 9 of 9	Add Tow Hook, Floats, & Skis to Equipment List	11-20-88 E.H.A.
D	2 of 9 8 of 9	Adds optional tire sizes	2-01-89 E.H.A.
E	2 of 9 9 of 9	Corrects Float Installation C.G.	6-06-89 E.H.A.
F	2 of 9 8 of 9 9 of 9	Add Tundra Tires, Retract Skis to Equipment List	12-15-89 E.H.A.
G	2 of 9 8 of 9 9 of 9	Correct Spinner Listing, Add Battery listing	01-26-90 E.H.A.
H	2 of 9 8 of 9 9 of 9	Add New Starter Update Equipment List	01-10-91 E.H.A.

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE

WEIGHING GEOMETRY:



DATUM IS 60.0 INCHES FORWARD OF WING LEADING EDGE

WEIGHING PERFORMED WITH AIRPLANE LEVEL

LEVELING MEANS IS BOTTOM CABIN DOOR SILL

1. EMPTY WEIGHT AS WEIGHED

SCALE	READING		TARE		NET	
LEFT MAIN	575.2	LB	- 0	LB	575.2	LB
RIGHT MAIN	548.8	LB	- 0	LB	548.8	LB
TAIL	109.0	LB	- 34	LB	75.0	LB
EMPTY WEIGHT AS WEIGHED					1199.0	LB

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

2. EMPTY WEIGHT C.G. (AS WEIGHED)

$$C.G. = \frac{(\text{LEFT MAIN NET} + \text{RIGHT MAIN NET})\ 61.56 + (\text{TAIL})\ 245}{\text{TOTAL NET}}$$

$$C.G. = \frac{(\ 575.2\ +\ 548.8\ )\ 61.56 + (\ 75.0\ )\ 245}{(\ 1199.0\ )}$$

$$C.G. = \frac{(\ 87568.4\ )}{(\ 1199.0\ )} = 73.03 \text{ INCHES AFT OF DATUM}$$

THE AS WEIGHED WEIGHT AND MOMENT UNCLUDES THE FOLLOWING ITEMS:

	WT	ARM	MOMENT	
1. RADIO (OPTIONAL)	6.0	51"	306	KX-155
2. RADIO (OPTIONAL)	2.0	52"	104	KI-209
3. RADIO (OPTIONAL)				
4. ADDITIONAL INSTRUMENTS (OPTIONAL)				
5. ENGINE OIL	0			
6. FUEL (____GAL)	0			

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

3. STANDARD ZERO-FUEL WEIGHT & MOMENT

The following zero-fuel weight is for Christen Model A-1 airplane, Serial No. 1011 with two gallons (8 qts.) of oil, zero fuel, (with) (~~without~~) radio, no pilot, no passenger, no baggage.

ITEM	WEIGHT	ARM	MOMENT
AS WEIGHED	1199.0	73.03	87568.4
OIL CORRECTION	15.0	25.92	388.8
FUEL CORRECTION	0	84.0	0
OTHER CORRECTION (describe)	0		0
STANDARD ZERO-FUEL	1214.0	72.45	87957.2

4. EQUIPPED WEIGHT EMPTY

The equipped weight empty of the airplane is the standard zero-fuel weight, plus 2 gallons of unusable fuel, and includes 8 quarts of oil.

ITEM	WEIGHT	ARM	MOMENT
STANTARD ZERO-FUEL	1214.0	72.45	87957.2
UNUSABLE FUEL	12.0	84.0	1008
EQUIPPED WEIGHT EMPTY	1226.0	72.56	88965.2

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

Superceded
5/3/91

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

5. DETERMINING AIRPLANE WEIGHT & C.G.

a. Forward C. G. (Most Forward)

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	1226.0	72.56	88965.2
MINIMUM FUEL = 7.5 GAL	45.0	84.0	3780
PILOT (USE ACTUAL WEIGHT)		72.5	
TOTAL			

$$C.G. = \frac{\text{TOTAL MOMENT}}{\text{TOTAL WEIGHT}} = \frac{\qquad}{\qquad} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7.

b. Forward C. G. (At Gross Weight)

NOTE: Maximum Fuel = 50 U.S. GALS.

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	1226.0	72.56	88965.2
FUEL (7.5 GALS)	45.0	84.0	378
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACTUAL WEIGHT)		99.0	
TOTAL	1800		

$$C.\ G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad}{1800} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

Superseded
5/31/91

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

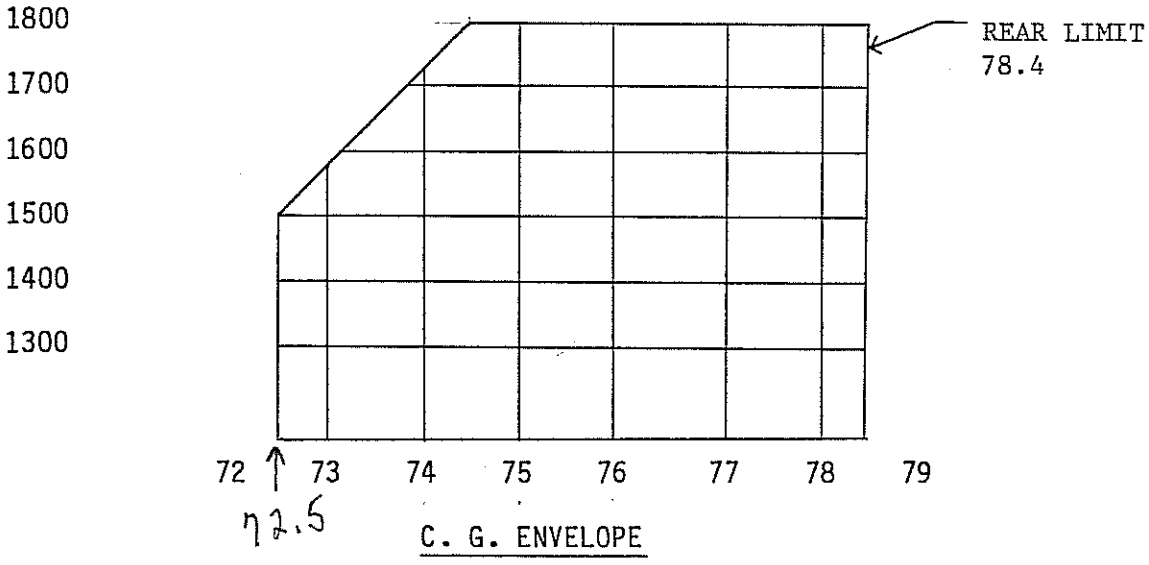
5. DETERMINING AIRPLANE WEIGHT & C.G. (Cont'd)

c. Rearward C. G. (At Gross Weight)
NOTE: Maximum Fuel = 50 U.S. GALS

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	1226.0	72.56	88965.2
FUEL (GALS MAX)		84.0	
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACUTAL WEIGHT)		99.0	
BAGGAGE (50 LBS. MAX)	50	120.0	6000
TOTAL	1800		

$$C.G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad\qquad}{} =$$

Check to be sure the C. G. lies within the C. G. envelope shown below. If the C. G. lies outside the envelope, then the baggage and fuel must be adjusted to bring the C. G. inside the envelope.



C. G. ENVELOPE

AVIAT INC.
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

5. DETERMINING AIRPLANE WEIGHT & C.G.

a. Forward C. G. (Most Forward)

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	With Skis 1283.85	72.04	92493.77
MINIMUM FUEL = 7.5 GAL	45.0	84.0	3780
PILOT (USE ACTUAL WEIGHT)		72.5	
TOTAL			

$$C.G. = \frac{\text{TOTAL MOMENT}}{\text{TOTAL WEIGHT}} = \frac{\qquad}{\qquad} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7.

b. Forward C. G. (At Gross Weight)

NOTE: Maximum Fuel = 50 U.S. GALS.

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	With Skis 1283.85	72.04	92493.77
FUEL (7.5 GALS)	45.0	84.0	378
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACTUAL WEIGHT)		99.0	
TOTAL	1800		

$$C.\ G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad}{1800} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

5. DETERMINING AIRPLANE WEIGHT & C.G.

a. Forward C. G. (Most Forward)

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	Without Skis 1254.4	72.49	90926.34
MINIMUM FUEL = 7.5 GAL	45.0	84.0	3780
PILOT (USE ACTUAL WEIGHT)		72.5	
TOTAL			

$$C.G. = \frac{\text{TOTAL MOMENT}}{\text{TOTAL WEIGHT}} = \frac{\qquad}{\qquad} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7.

b. Forward C. G. (At Gross Weight)

NOTE: Maximum Fuel = 50 U.S. GALS.

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	Without Skis 1254.4	72.49	90926.34
FUEL (7.5 GALS)	45.0	84.0	378
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACTUAL WEIGHT)		99.0	
TOTAL	1800		

$$C.\ G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad}{1800} =$$

Check to be sure the C. G. lies within the C. G. envelope shown on page 7

AVIAT INC.
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

5. DETERMINING AIRPLANE WEIGHT & C.G. (Cont'd)

c. Rearward C. G. (At Gross Weight)
NOTE: Maximum Fuel = 50 U.S. GALS

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	With Skis 1283.85	72.04	92493.77
FUEL (GALS MAX)		84.0	
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACUTAL WEIGHT)		99.0	
BAGGAGE (50 LBS. MAX)	50	120.0	6000
TOTAL	1800		

$$C.G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad}{\qquad} =$$

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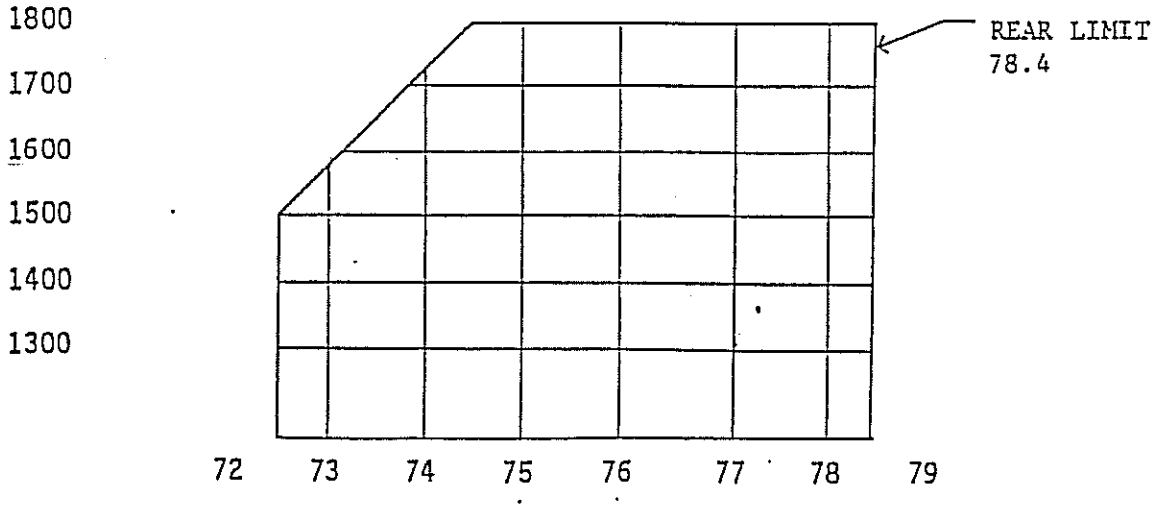

C. G. ENVELOPE

AVIAT INC.
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

A. WEIGHT & BALANCE (Cont'd)

5. DETERMINING AIRPLANE WEIGHT & C.G. (Cont'd)

c. Rearward C. G. (At Gross Weight)
NOTE: Maximum Fuel = 50 U.S. GALS

ITEM	WEIGHT	ARM	MOMENT
EQUIPPED WEIGHT EMPTY	Without Skis 1254.4	72.49	90926.34
FUEL (GALS MAX)		84.0	
PILOT (USE ACTUAL WEIGHT)		72.5	
PASSENGER (ACUTAL WEIGHT)		99.0	
BAGGAGE (50 LBS. MAX)	50	120.0	6000
TOTAL	1800		

$$C.G. = \frac{\text{TOTAL MOMENT}}{1800} = \frac{\qquad\qquad}{} =$$

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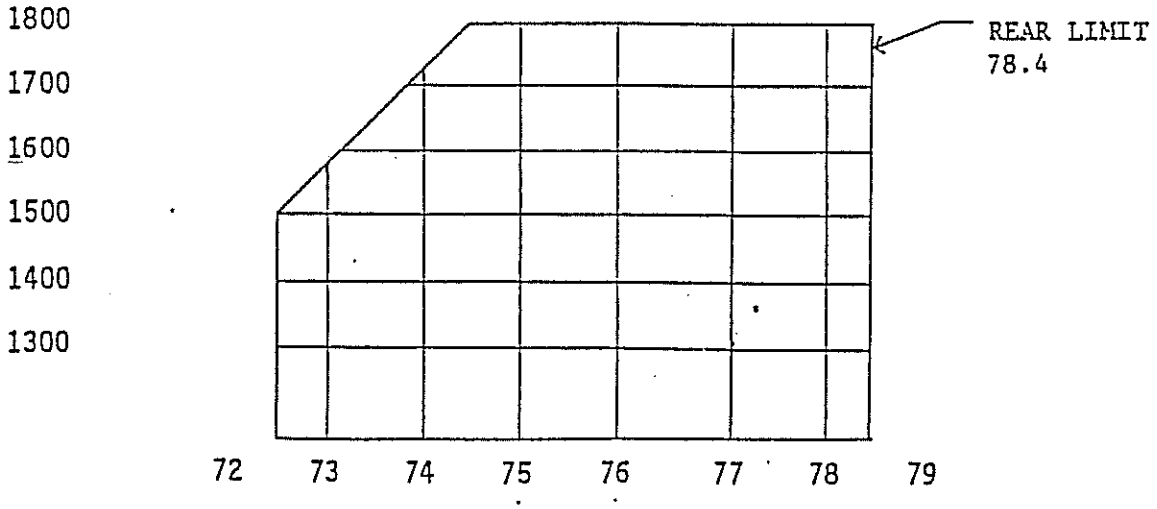

C. G. ENVELOPE

SECTION V LOADING INFORMATION (Cont'd)

B STANDARD & OPTIONAL EQUPMENT LIST

The Christen Model A-1 airplane empty weight includes the following items in installed equipment.
The following equipment was installed in this airplane as delivered from the factory and is included in the empty weight.

CHECK ITEMS INSTALLED

(X)	1. ENGINE (LYCOMING O-360-C1G)	Weight	292.0	lb. @ FS	20
(X)	2. PROPELLER (HARTZELL HC-C2YK-1BF/F7666A)	Weight	57.0	lb. @ Fs	4
(X)	3. PROPELLER SPINNER (HARTZELL 833-60)	Weight	5.5	lb. @ FS	2
(X)	4. GOVERNOR (HARTZELL V3-6)	Weight	3.5	lb. @ FS	10
(X)	5. STARTER (BC-149)	Weight	10.0	lb. @ FS	11
(X)	6. ALTERNATOR (PRESTOLITE ALY 8420)	Weight	12.0	lb. @ FS	11
(X)	7. MAIN GEAR WHEELS (CLEVELAND MODEL 40-60)	Weight	6.3	lb. @ FS	61.5
(X)	8. MAIN GEAR BRAKES (CLEVELAND MODEL 30-60)	Weight	2.5	lb. @ FS	61.5
(X)	9. MAIN GEAR TIRES (8:00 x 6 TYPE II TUBE TYPE)	Weight	13.0	lb. @ FS	61.5
(X)	10 TAIL WHEEL UNIT (CHRISTEN 35454-501)	Weight	8.0	lb. @ FS	263.7
(X)	11. RADIO (USE ACTUAL WEIGHT) KX-155 Se # 54681	Weight	6.0	lb. @ FS	51.0

CHRISTEN INDUSTRIES
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

Superceded
5/3/91

SECTION V LOADING INFORMATION (Cont'd)

B STANDARD & OPTIONAL EQUPMENT LIST (Cont'd)

CHECK ITEMS INSTALLED

(X) 12. RADIO (USE ACTUAL WEIGHT)
KI-209 Vor Se # 20937 — Weight 2.0 lb. @ FS 52

( ) 13. RADIO (USE ACTUAL WEIGHT) — Weight _____ lb. @ FS _____

(X) 14. BATTERY (GEL/CELL U-128) — Weight 24.0 lb. @ FS 144

(X) 15. ELT (EBC-102A) — Weight 1.3 lb. @ FS 117

( ) 16. — Weight _____ lb @ FS _____

( ) 17. — Weight _____ lb. @ FS _____

( ) 18. — Weight _____ lb. @ FS _____

( ) 19. — Weight _____ lb. @ FS _____

( ) 20. — Weight _____ lb. @ FS _____

AVIAT INC.
AIRPLANE FLIGHT MANUAL
MODEL A-1 AIRPLANE

SECTION V LOADING INFORMATION (Cont'd)

B STANDARD & OPTIONAL EQUIPMENT LIST (Cont'd)

(X) Factory installed (F) Field installed

CHECK ITEMS INSTALLED

(X)	12.	RADIO (USE ACTUAL WEIGHT)				
(X)		KI-209 Vor Se # 20937	Weight	2.0	lb. @ FS	52
(F)		KT-76A Transponder & Alt encoder	Weight	6.0	lb. @ FS	51
(F)	13.	RADIO (USE ACTUAL WEIGHT)				
		Oregon ICS-40 Intercom Ststem	Weight	1.0	lb. @ FS	48
		Rnav R21 Loran	Weight	6.0	lb. @ FS	51
(X)	14.	BATTERY (Gel/Cell U-128 or U1-31)	Weight	24.0	lb. @ FS	144.0
(X)	15.	ELT (EBC-102A or equiv.)	Weight	1.2	lb. @ FS	117.0
(F)	16.	VACUUM PUMP (Sigmatek 1U128B-005 or equiv.)	Weight	2.4	lb @ FS	32.0
(F)	17.	ARTIFICIAL HORIZON (R C Allen 22-7)	Weight	2.2	lb. @ FS	48.0
(F)	18.	DIRECTIONAL GYRO (R C Allen 11A-8 or equiv.)	Weight	2.7	lb. @ FS	48.0
(F)	19.	TURN COORDINATOR (Electric Gyro 1394T100-7Z, or equiv.)	Weight	1.2	lb. @ FS	48.0
(F)	20.	RATE OF CLIMB (United Inst 7040-C28 or equiv.)	Weight	.7	lb. @ FS	48.0
(F)	21.	SCHWEIZER TOW HOOK INSTALLATION	Weight	6.2	lb. @ FS	145.9
( )	22.	EDO 89-2000 FLOAT INSTALLATION	Weight	198.0	lb. @ FS	67.3
		Federal Fluidyne A2000A skis				
(F)	23.	SKI WHEEL REPLACEMENT SKIS (USE ACTUAL WEIGHT DIFFERENCE)	Weight	48.75	lb. @ FS	56.5
( )	24.	AERO RETRACT SKIS MODEL 2800	Weight	117.5	lb. @ FS	57.8

WEIGHT AND BALANCE REPORT WITHOUT SKIS

CHRISTEN A-1 HUSKY N2881P SERIAL # 1011 MAY 3,1991

ITEM	WEIGHT	ARM	MOMENT
Airplane as weighed by Christen 6/12/87	1226.00	72.56	88958.56
Vacuum pump	2.40	32.00	76.80
Artificial horizon	2.20	48.00	105.60
Directional gyro	2.70	48.00	129.60
Turn coordinator	1.20	48.00	57.60
Rate of climb	0.70	48.00	33.60
Schweizer tow hook installation	6.20	145.90	904.58
Oregon Avionics ICS 40 intercom system	1.00	48.00	48.00
KT 76A Transponder with altitude encoder	6.00	51.00	306.00
Arnav R-21 loran	6.00	51.00	306.00
			0.00
			0.00
			0.00
			0.00
New empty weight	1254.40	72.49	90926.34

NEW EMPTY C.G. = 72.49" AFT OF DATUM
MAXIMUM GROSS WEIGHT = 1800.00 POUNDS
USEFULL LOAD = 545.60 POUNDS

WEIGHT AND BALANCE REPORT

Christen Husky A1 N2881P S/N 1011 January 8, 1993

WHEN WHEELS INSTALLED USE THE FOLLOWING WEIGHTS

ITEM	WEIGHT	ARM	MOMENT
Airplane weight from weight and balance report dated May 3, 1991	1254.40	72.49	90926.34

Empty C.G. 72.49"
Max Gross Weight 1800.00 lbs
Empty Weight 1254.40 lbs
Useful Load 545.60 lbs
Refer to Airplane Flight Manual for CG Limits

WHEN FEDERAL A-2000-A SKIS INSTALLED USE THE FOLLOWING WEIGHTS

ITEM	WEIGHT	ARM	MOMENT
Airplane weight from weight and balance report dated May 3, 1991	1254.40	72.49	90926.34
2 main wheels removed	-38.00	61.50	-2337.00
2 Federal A-2000-A skis installed	48.75	56.50	2754.38
Totals	1265.15		91343.72

New Empty C.G. 72.20"
Max Gross Weight 1800.00 lbs
New Empty Weight 1265.15 lbs
New Useful Load 534.85 lbs
Refer to Airplane Flight Manual for CG Limits

Prepared by Ronald N. Ridenour A&P 353480092