

FAA APPROVED  
AIRPLANE FLIGHT MANUAL

HELIO AIRCRAFT LIMITED  
PITTSBURG, KANSAS

MODEL H-800

SERIAL NUMBER \_\_\_\_\_

REGISTRATION NUMBER \_\_\_\_\_

THIS DOCUMENT MUST BE IN THE AIRPLANE AND  
AVAILABLE TO THE PILOT DURING FLIGHT

FAA APPROVED: *JM Baker*

<sup>FOR</sup>  
Manager, Wichita Aircraft Certification Office.  
Central Region, Federal Aviation Administration  
Wichita, Kansas

Date: September 27, 1983

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LOG OF REVISIONS

Rev. No.	Page Number(s)	Description	Date	Approved By*
Orig.	1 thru 9	Initial Flight Manual	09-27-83	G. M. Baker
1	2, 4, 5, 7	Gross Weight Increase	4-11-87	<i>G. M. Baker</i>

\* For Manager, Wichita Aircraft Certification Office.  
Central Region, Federal Aviation Administration  
Wichita, Kansas

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I. LIMITATIONS

The following limitations must be observed in the operation of this airplane:

- A. Engine: Lycoming Model IO-720-AIB (400HP)
- B. Engine Limits: Full Throttle 2650 RPM
- C. Fuel: 100 Octane minimum grade aviation gasoline  
120.5 gallons usable  
Usable fuel main tanks (inboard tanks) 60.2  
Transferable fuel aux tanks (outboard tanks)  
60.3
- D. Propeller: Hartzell Constant Speed; Hub HC-C 3YR-1RF  
Blade: F8475R  
Diameter: 86 in.  
Pitch Setting at 30 in. station; Low 11.8°  
High 30.8°
- E. Power Plant Instruments:
- Cylinder Head Temp: Green Arc: 100°F - 475°F  
Yellow Arc: 475°F - 500°F  
Red Radial: 500°F
- Manifold Pressure: Green Arc: 10-25
- Tachometer: Green Arc: 1000 - 2500  
Red Radial: 2650
- Fuel Pressure: Green Arc: 18 to 40psi  
Red Radials: 18 and 40psi

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E. Power Plant Instruments: (Con't)

Oil Temperature:	Green Arc: 120° - 245°F
	Yellow Arc: 50° - 120°F
	Red Radial: (Max.) 245°F
Oil Pressure:	Green Arc: 60 to 90 psi
	Yellow Arc: (Caution) 25-60 and 90-115
	Red Radials: 25 and 115 psi

F. Airspeed Limits: (Calibrated Airspeed)

Never exceed ( $V_{ne}$ )	168 Kts (Red Radial)
Caution Range	133 - 168 Kts (Yellow Arc)
Design Cruising Speed ( $V_c$ )	133 Kts
Normal Operating Range	50 - 133 Kts (Green Arc)
Max. Design Maneuvering Speed ( $V_p$ )	93 Kts
Max. Flap Extension Speed ( $V_f$ )	83 Kts
Flap Operating Range	47 - 83 Kts (White Arc)
Approach Flap Speed-15°	96 Kts

NOTE: Airspeed Instrument markings and their significance:

1. RED Radial line marks the never exceed speed.
2. YELLOW Arc denotes speeds for operations with caution.
3. GREEN Arc denotes normal operating speed range.
4. WHITE Arc denotes speed range in which flaps may be safely lowered.

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- G. Maneuvers: Normal Category Maneuvers only are approved. Spins are prohibited.
- H. Flight Load Factors: (At max. weight of 4000 lbs.)
- Maneuvers: Positive: 3.8 g                      Negative: 1.5 g
- Flaps extended: 2.0 g
1. Use controls with caution above 93 Kts. CAS.
  2. In gusty air, it is advisable to reduce cruising speed below normal, and in severe turbulence reduce speed below 93 Kts. Flaps and below 65 Kts. Flaps down.
- I. Maximum Weights:                      Take Off - 4000 lbs., Landing 3800 lbs.
- J. Center of Gravity Limits: 102 to 109 at 4000 lbs. (Max. Take Off Wt.)  
101 to 109 at 3800 lbs. (Max. Landing Wt.)  
98 to 109 at 3200 lbs. or less  
Straight line variation between points given

NOTE: All weight over 3800 lbs. must be composed of fuel in the wing tanks.

DATUM: Datum is 60 inches forward of fuselage station 0. (Station 0 is at upper attachment of engine mount to fuselage).

SEATS: Six (6)  
Two at 103.5 inches aft of Datum  
Two at 136 inches aft of Datum  
Two at 162 inches aft of Datum

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

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K. Placards

- a. 1. This airplane must be operated as a normal category airplane in compliance with the operating limitations stated in the form of placards, markings and manuals.
2. No acrobatics, maneuvers, including spins, approved.
3. Design maneuvering speed 93 Kts
- b. Master Switch OFF when A.P.U. is connected
- c. Turn Beacon OFF during IFR
- d. See AFM for ALTERNATE STATIC SOURCE CALIBRATION
- e. No Smoking

L. Noise Level

The certified noise level is 77.4 dBA

The noise limit is 80 dBA

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II. PROCEDURES

A. Normal Procedures

1. Wing Flap Setting:   Take Off: 0° - 30°  
                          Cruise:    0°  
                          Landing:  40°
2. Maximum 90° crosswind velocity demonstrated: 15 Kts
3. Operate airplane with the STATIC PRESSURE SELECTOR VALVE in the STATIC TUBE position.  
  
    See the abnormal procedure section of the AFM for the ALTERNATE SOURCE procedure.
4. See weight and balance for loading instruction.
5. Power OFF Stall Speeds
  1. Flaps up                   50 Kts CAS
  2. Flaps Extended 40°   47 Kts CAS
6. Before T.O. check cargo door pins for security.
7. Altitude loss during the recovery from a stall may be as much as 100 ft.
8. To transfer fuel - wait until main tank's quantity is less than 3/4. Monitor fuel quantity during transfer to avoid overflow. Transfer fuel in level flight only. Transfer lights indicate switch is ON.

B. Abnormal Procedures

1.                   ELECTRIC TRIM MALFUNCTION

If the electric trim MALFUNCTIONS depress the TRIM DISC button and hold depressed until the TRIM CONTROL circuit breaker has been pulled.

If the trim fails at either extreme position slow the airplane to 70 Kts or less and land as soon as practical.

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II. PROCEDURES (Cont.)

B. Abnormal Procedures (Cont.)

2. STATIC SOURCE MALFUNCTION

If the static source malfunctions move the STATIC PRESSURE SELECTOR VALVE to ALTERNATE SOURCE position, with the ALTERNATE SOURCE selected, subtract the following amounts from the indicated airspeed and altimeter readings to correct for ALTERNATE SOURCE ERROR.

Airspeed	A/S - Correction	ALT - Correction
60	14	30
70	14	50
80	15	75
90	15	100
100	16	130
110	16	160
120	17	180
130	18	210
140	18	240

C. Emergency Procedures

1. Engine Failure

To permit a landing flare, maintain an airspeed of at least 60 Kts.

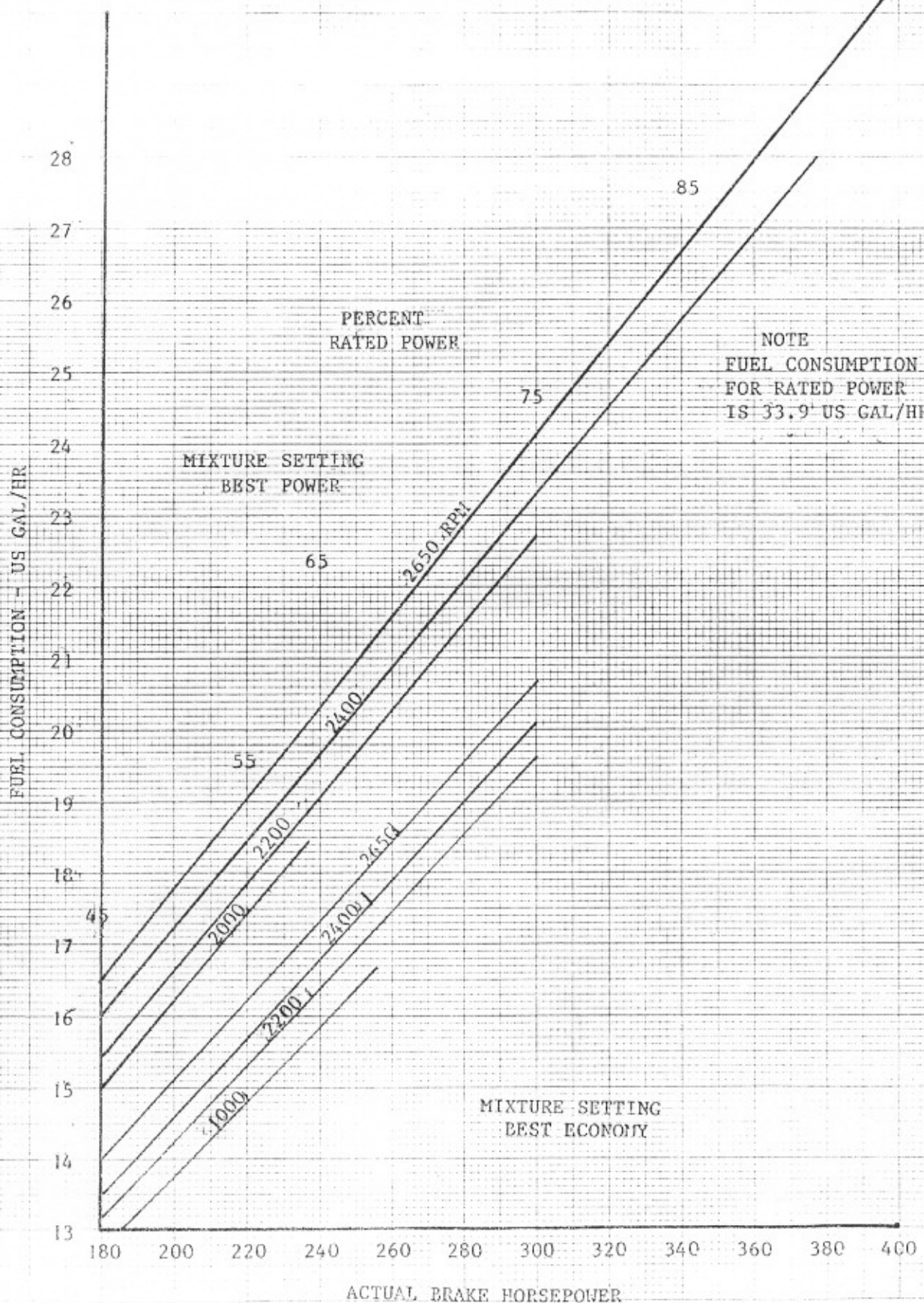


POWER CHART - AVCO LYCOMING MODEL - IO-720

PRESSURE ALTITUDE	STANDARD ALTITUDE	220 HP-55% RATED				260 HP-65% RATED				300 HP-75% RATED		
	TEMPERATURE	RPM - MANIFOLD PRESSURE				RPM - MANIFOLD PRESSURE				RPM - MANIFOLD PRESSURE		
Feet (X10-3)	°F	2100	2200	2300	2400	2100	2200	2300	2400	2200	2300	2400
S.L.	59	23.0	22.4	21.6	21.1	25.9	25.1	24.2	23.5	27.8	26.8	26.0
1	55	22.7	22.1	21.4	20.9	25.6	24.8	23.9	23.2	27.5	26.5	25.7
2	52	22.5	21.8	21.1	20.6	25.3	24.5	23.6	23.0	27.2	26.2	25.4
3	48	22.3	21.6	20.9	20.4	25.0	24.2	23.4	22.7	F.T.	25.9	25.1
4	45	22.0	21.4	20.6	20.1	24.7	23.9	23.1	22.4	---	25.6	24.9
5	41	21.8	21.1	20.4	19.9	24.4	23.6	22.8	22.2	---	F.T.	24.6
6	38	21.6	20.9	20.1	19.7	F.T.	23.4	22.5	21.9	---	---	F.T.
7	34	21.3	20.6	19.9	19.4	---	F.T.	22.3	21.6	---	---	---
8	31	21.1	20.4	19.7	19.2	---	---	22.0	21.4			
9	27	20.8	20.2	19.4	19.0	---	---	F.T.	21.1			
10	23	F.T.	19.9	19.2	18.7	---	---	---	F.T.			
11	19	---	19.7	18.9	18.5							
12	16	---	F.T.	18.7	18.3							
13	12	---	---	F.T.	18.0							
14	9	---	---	---	F.T.							

To maintain constant power, correct manifold pressure approximately 0.14" Hg for each 10° variation in inlet air temperature from standard altitude temperature. Add manifold pressure for air temperatures above standard; subtract for temperatures below standard.

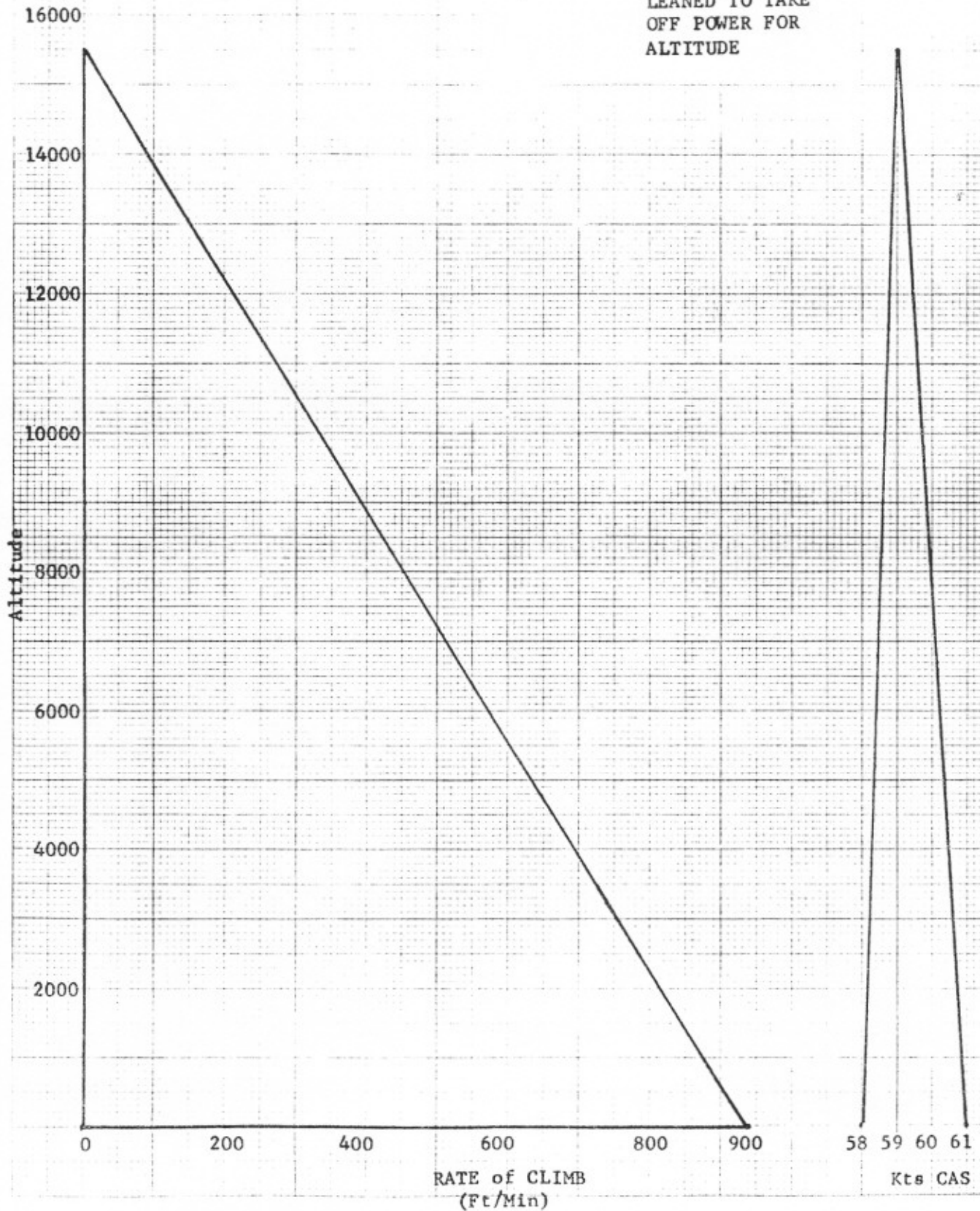
PART THROTTLE FUEL CONSUMPTION  
 LYCOMING MODEL 10-720-A-SERIES



46 1322

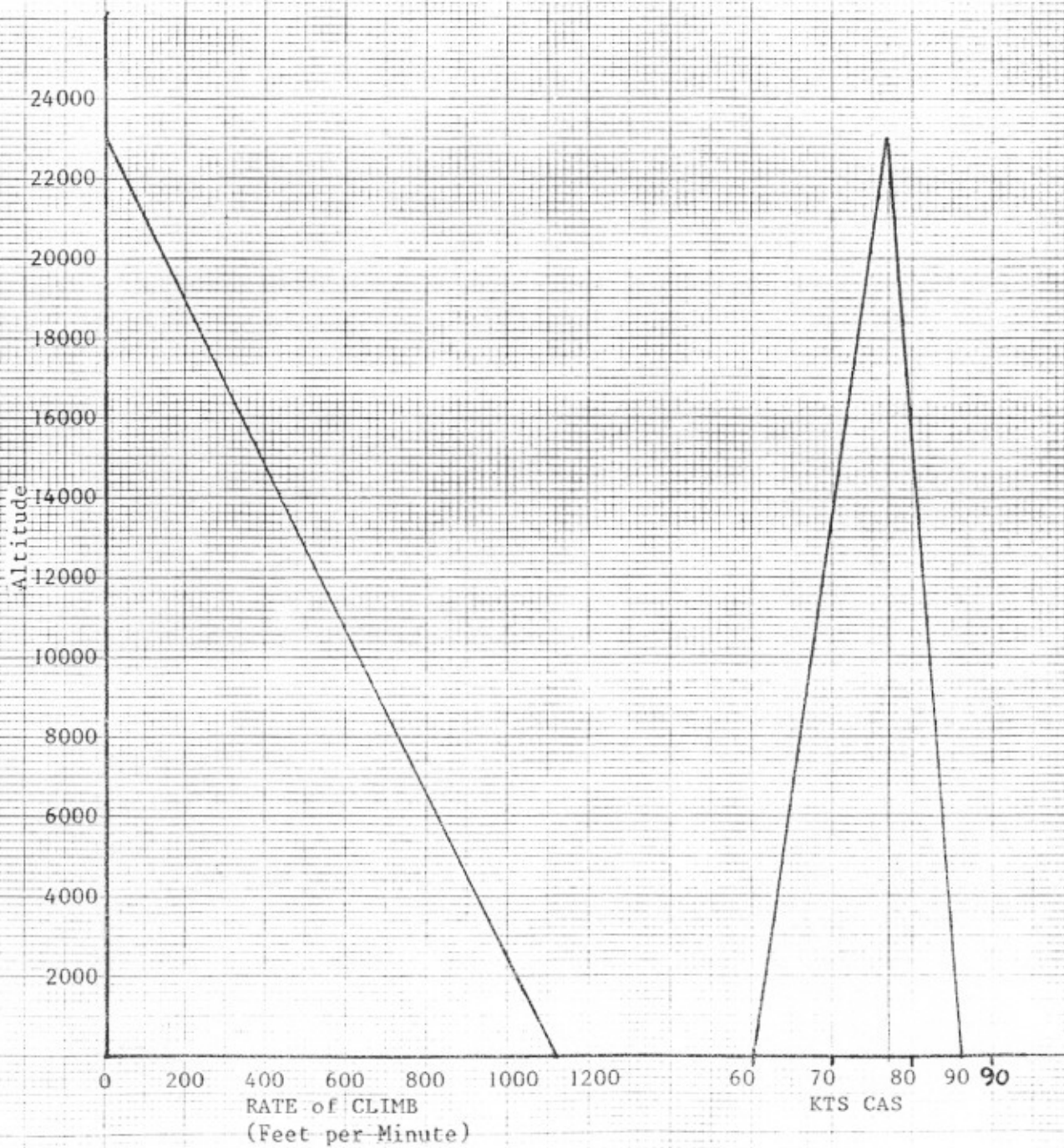
10 X 16 10 1/2 INCH 2 X 30 REPAIRS  
 HULL & ENGINE CO. MADE IN U.S.A.

HELIO MODEL H-800  
BALKLANDING CLIMB  
WING FLAPS 40° (Full Down)  
POWER - FULL THROTTLE  
RPM 2650  
MIXTURE:  
LEANED TO TAKE  
OFF POWER FOR  
ALTITUDE





HELIO MODEL H-800  
CLIMB PERFORMANCE  
WING FLAPS 0° (RETRACTED)  
POWER -FULL THROTTLE  
RPM 2650  
MIXTURE:  
LEANED TO TAKE  
OFF POWER FOR  
ALTITUDE



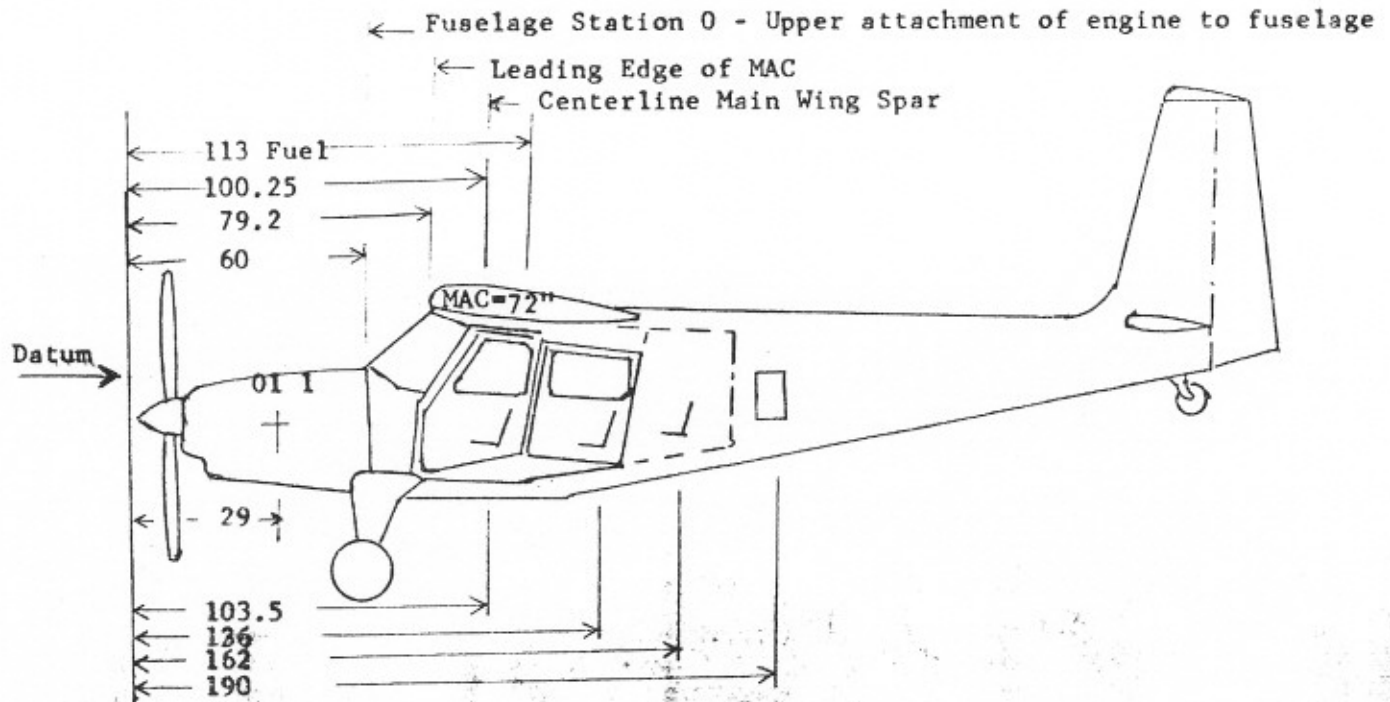
46 1322

K&E 10 X 10 TO 1/2 INCH 7 X 10 INCHES  
KUEFFEL & ESSER CO. MADE IN U.S.A.

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WEIGHT and BALANCE

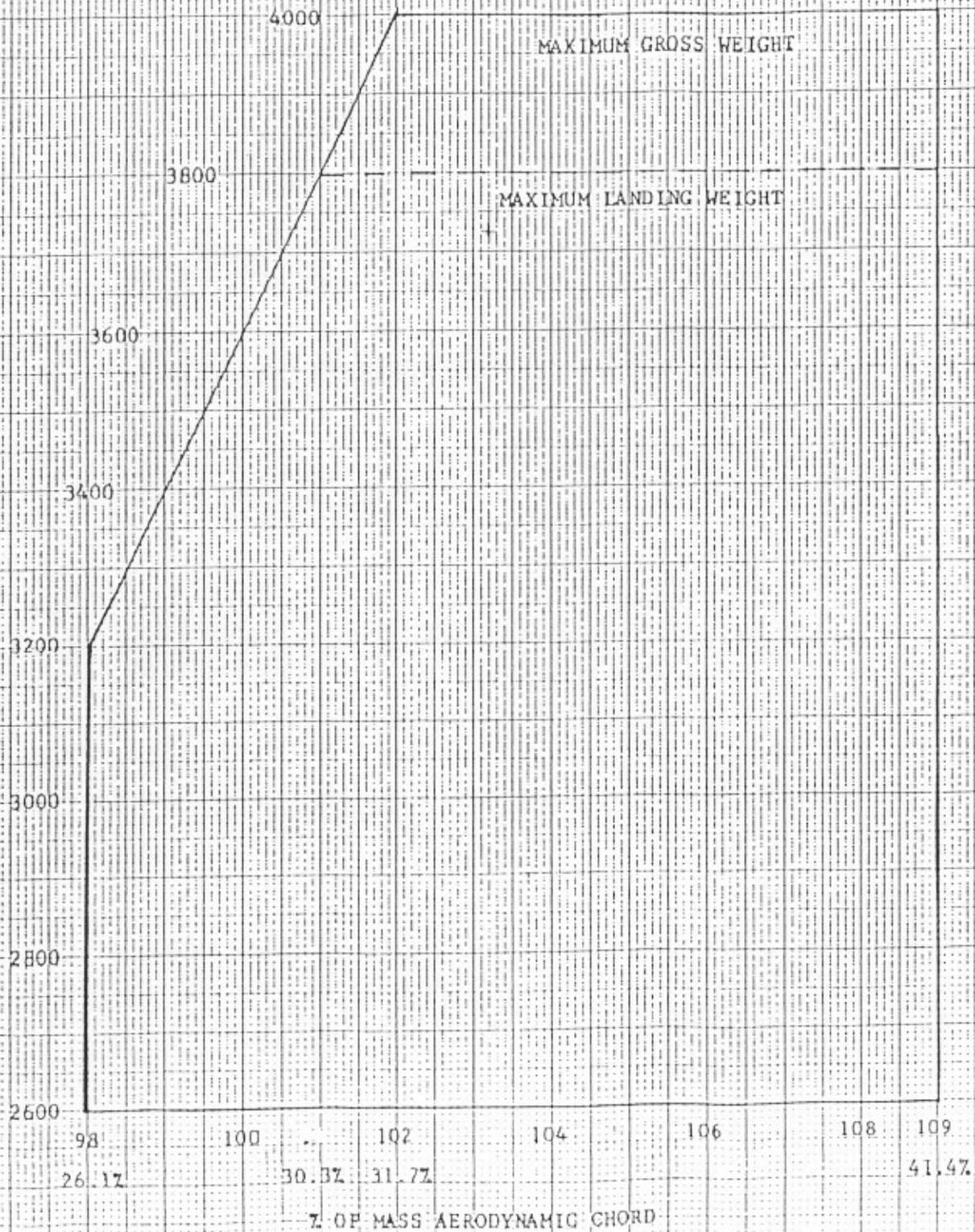


$$\text{CENTER OF GRAVITY} = \text{MOMENT} \div \text{WEIGHT}$$

ITEM	WEIGHT	ARM	MOMENT
BASIC WEIGHT			
Pilot/CoPilot		103.5	
Passenger (40 lbs/square foot)		136	
Passenger (40 lbs/square foot)		162	
Fuel		113	
Baggage (10 lbs/square foot)		190	

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WEIGHT & BALANCE CENTER OF GRAVITY ENVELOPE



DIETZGEN CORPORATION  
MADE IN U.S.A.

NO. 340-10 1/4 DIETZGEN GRAPH PAPER  
10 X 10 PER HALF INCH

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SAMPLE LOADING

FWD C.G. LOADING

ITEM	WEIGHT	ARM	MOMENT
Basic Weight	2601	96.86	251937
Pilot	170	103.5	17595
CoPilot Passenger	170	103.5	17595
Fuel 118 gal.	708	113	80004
Baggage	151	126	19026
	<hr/>		
	3800	101.6	386157

ITEM	WEIGHT	ARM	MOMENT
Basic Weight	2601	96.86	251937
Pilot	170	103.5	17959
Cargo	12	150	1800
Fuel 19.5 gal.	117	113	13221
	<hr/>		
	2900	98.1	284553