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PIPER AIRCRAFT CORP.
DEVELOPMENT CENTER, VERO BEACH, FLA.

REPORT VB-160

PAGE _____

DUPLICATE

AIRPLANE FLIGHT MANUAL

MODEL PA-28-140

FAA IDENTIFICATION NO. PRX

SERIAL NO. 28-21766

(SERIAL NOS. 28-20001 thru 28-7125641)

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

FAA APPROVED: H. E. Waterman

H. E. Waterman
Supervisor, EMDO 42
FAA Southern Region
Atlanta, Georgia

DATE: February 14, 1964

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		PAGE <u>II</u>

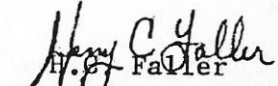
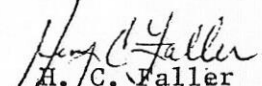
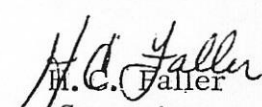
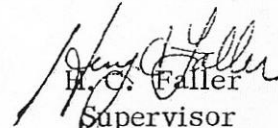
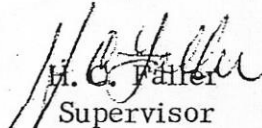
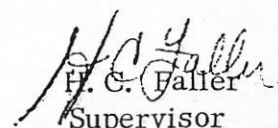
Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
1	1	Deleted Propeller - And Static RPM - Information	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	3/24/64
2	1	Added Static R.P.M. Information	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	5/25/64
3	3	Placards Section: Added Placard No. 4	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	7/8/64
4	2	Maneuvers Section: Deleted Stalls in Utility Category	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	8/31/64
5c	2,3	Increased Gross Weight to 2150 and Baggage Capacity to 200 Lbs.	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	5/21/65
6	1	Limitations Section: Revised Oil Temperature and Fuel Pressure Range	<i>Robert H. Lauer</i> for H. C. Faller Supervisor, SO-EMDO-43	6/23/65
7	1	Static RPM Corrected	<i>Robert H. Lauer</i> for H. C. Faller Supervisor SO-EMDO-43	8/12/65
8	1	Revised Static RPM, Oil Temperature and Fuel Pressure Limitations	<i>H. T. Herold</i> for H. C. Faller Supervisor SO-EMDO-43	12/13/65
	2	Added Note to Maximum Weight Callout		
	3	Revised Placard No. 4		

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<u>REVISION NO.</u>	<u>PAGE</u>	<u>DESCRIPTION</u>	<u>APPROVED</u>	<u>DATE</u>
9	3	Procedure Section. Added Item No. 4 "Electric Pitch Trim Procedures"		
	4	Added Page 4	 H. C. Faller Supervisor SO-EMDO-43	3/16/66
10	4	Add Procedures Section And Item 5		
	3	Added Placard No. 5	 H. C. Faller Supervisor SO-EMDO-43	5/20/66
11	3	Added Placard No. 6	 H. C. Faller Supervisor SO-EMDO-43	12/6/66
12	2	Revised C. G. Range		
			 H. C. Faller Supervisor SO-EMDO-43	9/25/67
13	Title Page	Added FAA Identification No., Serial No. and this document must be kept in airplane at all times.	 H. C. Faller Supervisor SO-EMDO-43	11/27/67
14	1	Added Propeller Designation		
	2,3	Revised Placard Nos. 1 and 6 to read: "In full view of the Pilot".	 H. C. Faller Supervisor SO-EMDO-43	6/24/68

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REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
15	2	Revised Baggage Capacity Limitations	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	10/29/68
16	Title	Allocated Piper Report No. VB-160 to this Manual.	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	11/7/68
17	4	Procedures Section: Revised Item 4 and Added Item 6.	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	5/5/69
	5	Added Page 5.		
18	3	Placards Section: Added Placard No. 7.	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	12/17/69
19	1	Limitations Section: Rephrased Propeller Limits.		
	2	Maximum Weight: Added information.		
	2 thru 5	Pages re-arranged to provide space for added information.	<i>H.M. Toomey</i> Herbert M. Toomey FAA DOA SO-1	1/6/70
20	4	Added Items 8 and 9 to Placards Section.		
	6	Added Page 6. Added Item 7 to Procedures Section.		
	7	Added Page 7. Added Item 8 to Procedures Section.	<i>G.C. Stephen</i> G. C. Stephen FAA DOA SO-1	8/10/70
21	1	Added Lycoming O-320-E3D Engine	<i>G.C. Stephen</i> G. C. Stephen FAA-DOA SO-1	3/30/71

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REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
22	TITLE	Corrected effectivity from "20,001 thru 25,641" to "28-20001 thru 28-7125641"	<i>L.H. Tompler</i>	11-29-73
	V	Added page		
23	1	Changed Oil Pressure Gauge Markings	<i>Ward Evans</i>	7-25-75

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DUPLICATE

Piper Model PA-28-140
Normal and Utility Categories

FAA Identification No. _____
Serial No. 28-24032

AIRPLANE FLIGHT MANUAL

1. Limitations Section

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

Engine	Lycoming O-320-E2A or O-320-E3D
Engine Limits	For all operations 2700 rpm, 150 hp
Fuel	80/87 Octane Aviation Fuel
Propeller	Sensenich M74DM or 74DM6, Maximum diameter 74 inches. Minimum diameter 72-1/2 inches. Static RPM at maximum permissible throttle setting: Not under 2150, not over 2425 for max allowable weight of 1950 lbs. Not under 2275, not over 2425 for max allowable weight of 2150 lbs. No additional tolerance permitted.

Power Instruments	<u>Oil temperature:</u> GREEN arc (normal operating range) 120°F to 245°F; YELLOW arc (caution range) 60°F to 120°F; RED line (maximum) 245°F (S/N 20,000 to 20,550) <u>Oil temperature:</u> GREEN arc (normal operating range) 75°F to 245°F; RED line (maximum) 245°F (S/N 20,551 and up) <u>Oil pressure:</u> GREEN arc (normal operating range) 60 psi to 85 psi; YELLOW arc (caution range) 25 psi to 60 psi; RED line (minimum) 25 psi when installed or 60 psi when installed; RED line (maximum) 85 psi. <u>Fuel Pressure:</u> GREEN arc (normal operating range) .5 psi to 5 psi; RED line (minimum) .5 psi; RED line (maximum) 5 psi (S/N 20,000 to 20,550). <u>Fuel Pressure:</u> GREEN arc (normal operating range) .5 psi to 8 psi; RED line (minimum) .5 psi; RED line (maximum) 8 psi (S/N 20,551 and up). <u>Tachometer:</u> GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.
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Airspeed Limits (Calibrated Airspeed) (Miles per Hour)	Never exceed 171 Maximum structural cruise 140 Maneuvering 129 Flaps extended 115 Maximum positive load factor 3.8 Normal Category Maximum positive load factor 4.4 Utility Category Maximum negative load factor No inverted maneuvers approved.
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Maneuvers

1. Normal Category - All acrobatic maneuvers including spins prohibited.
2. Utility Category - Approved maneuvers for Utility Category only.

	<u>Entry Speed</u>
Spins (Flaps Up)	Stall
Steep Turns	129 mph
Lazy Eights	129
Chandelles	129

Placards

1. In full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATIONS, REFER TO THE AIRPLANE FLIGHT MANUAL.

FOR SPIN RECOVERY, USE FULL RUDDER AGAINST SPIN, FOLLOWED IMMEDIATELY BY FORWARD WHEEL.

NO ACROBATIC MANEUVERS (INCLUDING SPINS) ARE APPROVED FOR NORMAL CATEGORY OPERATIONS."
2. Adjacent to upper door latch: "ENGAGE LATCH BEFORE FLIGHT."
3. On aft side of baggage compartment: "UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE AIRPLANE FLIGHT MANUAL WEIGHT BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS."
4. On the instrument panel in full view of the pilot when the oil cooler winterization kit is installed: "OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50°F."
5. On the instrument panel in full view of the pilot when the autoflite is installed: "FOR HEADING CHANGES: PRESS DISENGAGE SWITCH ON CONTROL WHEEL. CHANGE HEADING. RELEASE DISENGAGE SWITCH."

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Placards
(Cont'd)

6. In full view of the pilot: Utility Category Only
Acrobatic maneuvers are limited to the following:

	<u>Entry Speed</u>
Spins (Flaps Up)	Stall
Steep Turns	129 mph
Lazy Eights	129
Chandelles	129

7. In full view of the pilot: "ROUGH AIR OR MANEUVERING SPEED - 129 MPH."

8. On the instrument panel in full view of the pilot when the AutoFlite II is installed:

"TURN AUTOFLITE ON. ADJUST TRIM KNOB FOR MINIMUM HEADING CHANGE. FOR HEADING CHANGE, PRESS DISENGAGE SWITCH ON CONTROL WHEEL, CHANGE HEADING, RELEASE SWITCH. ROTATE TURN KNOB FOR TURN COMMANDS. PUSH TURN KNOB IN TO ENGAGE TRACKER. PUSH TRIM KNOB IN FOR HI SENSITIVITY. LIMITATIONS AUTOFLITE OFF FOR TAKEOFF AND LANDING."

9. On the instrument panel in full view of the pilot when the supplementary white strobe lights are installed:

"WARNING - TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT, OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE."

Airspeed Instrument Markings	RED radial line	Never Exceed	171 mph (148 knots)
	YELLOW arc	Caution Range (Smooth Air Only)	140 to 171 mph (121 to 148 knots)
	GREEN arc	Normal Operating Range	64 to 140 mph (56 to 121 knots)
	WHITE arc	Flaps Down Range	55 to 115 mph (48 to 100 knots)

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2. Procedures
Section

1. The stall warning system is inoperative with the master switch off.
2. The electric fuel pump must be on for both takeoff and landing.
3. Except as noted above, all operating procedures for this airplane are normal.
4. (Electric Pitch Trim Installation Without Pitch Trim Switch)

The following emergency information applies in case of electric pitch trim malfunction:

- a. In case of malfunction, disengage electric pitch trim by pulling out circuit breaker on instrument panel.
 - b. In emergency, electric pitch trim may be overpowered using manual pitch trim.
 - c. In cruise configuration, malfunction results in 10° pitch change and 30 ft. altitude variation.
5. (AutoFlite Installation Only)

The following emergency information applies in case of autoflite malfunction:

- a. In case of malfunction PRESS disconnect switch on pilot's control wheel.
- b. Rocker switch on instrument panel - OFF.
- c. Unit may be overpowered manually.
- d. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100' altitude loss.
- e. In approach configuration malfunction, 1 second delay results in 10° bank and 0' altitude loss.

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2. Procedures
Section
(Cont'd)

6. (Electric Pitch Trim Installation With Pitch Trim Switch)

The following emergency information applies in case of electric pitch trim malfunction:

- a. In case of malfunction, disengage electric pitch trim by pushing pitch trim switch on instrument panel to OFF position.
- b. In an emergency, electric pitch trim may be overpowered using manual pitch trim.
- c. In cruise configuration, malfunction results in 10° pitch change and 30' altitude variation.

7. (AutoFlite II Installation Only)

I Limitations: AutoFlite off for takeoff and landing.

II Procedures:

- a. Normal Operation - Refer to Manufacturer's Operation Manual.
- b. Emergency
 1. In case of malfunction PRESS disconnect switch on pilot's control wheel.
 2. Rocker switch on instrument panel - OFF.
 3. Unit may be overpowered manually.
 4. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100' altitude loss.
 5. In approach configuration malfunction, 1 second delay results in 10° bank and 0' altitude loss.

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2. Procedures

Section
(Cont'd)

8. (AutoControl III Installation Only)

- I Limitations: AutoPilot off during takeoff and landing.
- II Procedures:
 - a. Normal Operation - Refer to Manufacturer's Operation Manual.
 - b. Emergency
 - 1. In case of malfunction, disengage manual controls.
 - 2. In emergency, pilot may be overpowered manually.
 - 3. In cruise configuration malfunction, 3 seconds delay results in 60° bank and 100 ft. altitude loss.
 - 4. In approach configuration malfunction, 1 second delay results in 10° bank and 0 ft. altitude loss.

3. Performance
Section

All performance is given for a weight of 2150 pounds.

Loss of altitude during stalls can be as great as 200 feet, depending on configuration and power.

Stalling speeds, in MPH, power off, versus angle of bank
(Calibrated Airspeed):

Angle of Bank	0	20	40	50	60
Flaps Up	64	66	73	80	91
Flaps Down	55	--	--	--	--

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EQUIPMENT LIST

MODEL PA-28-140

SERIAL NOS. 20001 THRU 25000

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WEIGHT AND BALANCE DATA
MODEL PA-28-140 B CHEROKEE

Airplane Serial Number 28 - _____

Registration Number _____

Date _____

AIRPLANE EMPTY WEIGHT

Item	Weight (lbs)	C. G. Arm (Inches Aft of Datum)	Moment (In-lbs)
Standard Empty Weight *	Actual Computed		
Optional Equipment			
Unusable Fuel (3 Pints)	2.2	103.0	227
Licensed Empty Weight = Total of Above Items			

* Standard Empty Weight includes paint, hydraulic fluid and undrainable engine oil.

AIRPLANE USEFUL LOAD

(Gross Weight) - (Licensed Empty Weight) = Useful Load

Normal Category: (2150 lbs) - (lbs) = lbs.

Utility Category: (1950 lbs) - (lbs) = lbs.

THIS LICENSED EMPTY WEIGHT, C. G. AND USEFUL LOAD ARE FOR THE AIRPLANE AS DELIVERED FROM THE FACTORY. REFER TO FORM FAA-337 WHEN ALTERATIONS HAVE BEEN MADE.

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C. G. RANGE AND WEIGHT INSTRUCTIONS

1. Add the weight of all items to be loaded to the licensed empty weight.
2. Use the loading graph to determine the moment of all items to be carried in the airplane.
3. Add the moment of all items to be loaded to the licensed empty weight moment.
4. Divide the total moment by the total weight to determine the C. G. location.
5. By using the figures of Item 1 and Item 4, locate a point on the C. G. range and weight graph. If the point falls within the C. G. envelope, the loading meets the weight and balance requirements.

NOTE: With optional jump seats installed, aft passenger weight is restricted only by airplane weight and balance limitations (See Page 4 of this section). For baggage allowance, see Page 2A of this section.

SAMPLE LOADING PROBLEM (Normal Category)

	Weight (lbs)	Arm Aft Datum (Inches)	Moment (In - lbs)
Licensed Empty Weight			
Oil (8 quarts)	15	32.5	488
Pilot and Front Passenger	340	85.5	29070
Passengers, Aft *		117.0	
Fuel (50 Gal. Maximum)		95.0	
Baggage * Area ①		117.0	
Baggage * Area ②		133.3	
Total Loaded Airplane			

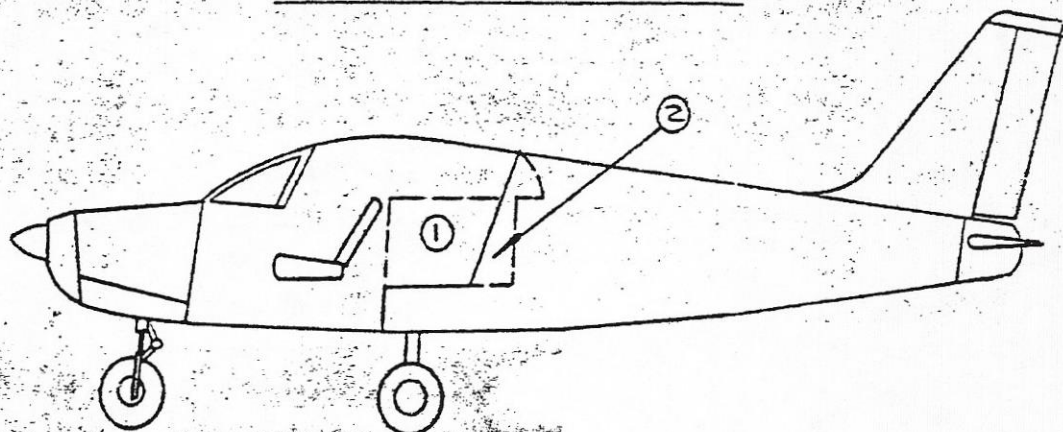
The center of gravity (C. G.) of this sample loading problem is at _____ inches aft of the datum line. Locate this point () on the C. G. range and weight graph. Since this point falls within the weight - C. G. envelope, this loading meets the weight and balance requirements.

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY.

- * Utility Category Operation - No baggage or aft passengers allowed.
- Normal Category Operation - See Page 2A of this section.

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MAXIMUM ALLOWABLE BAGGAGE



A. Maximum Allowable Baggage Capacity Area (1) = 200 lbs.

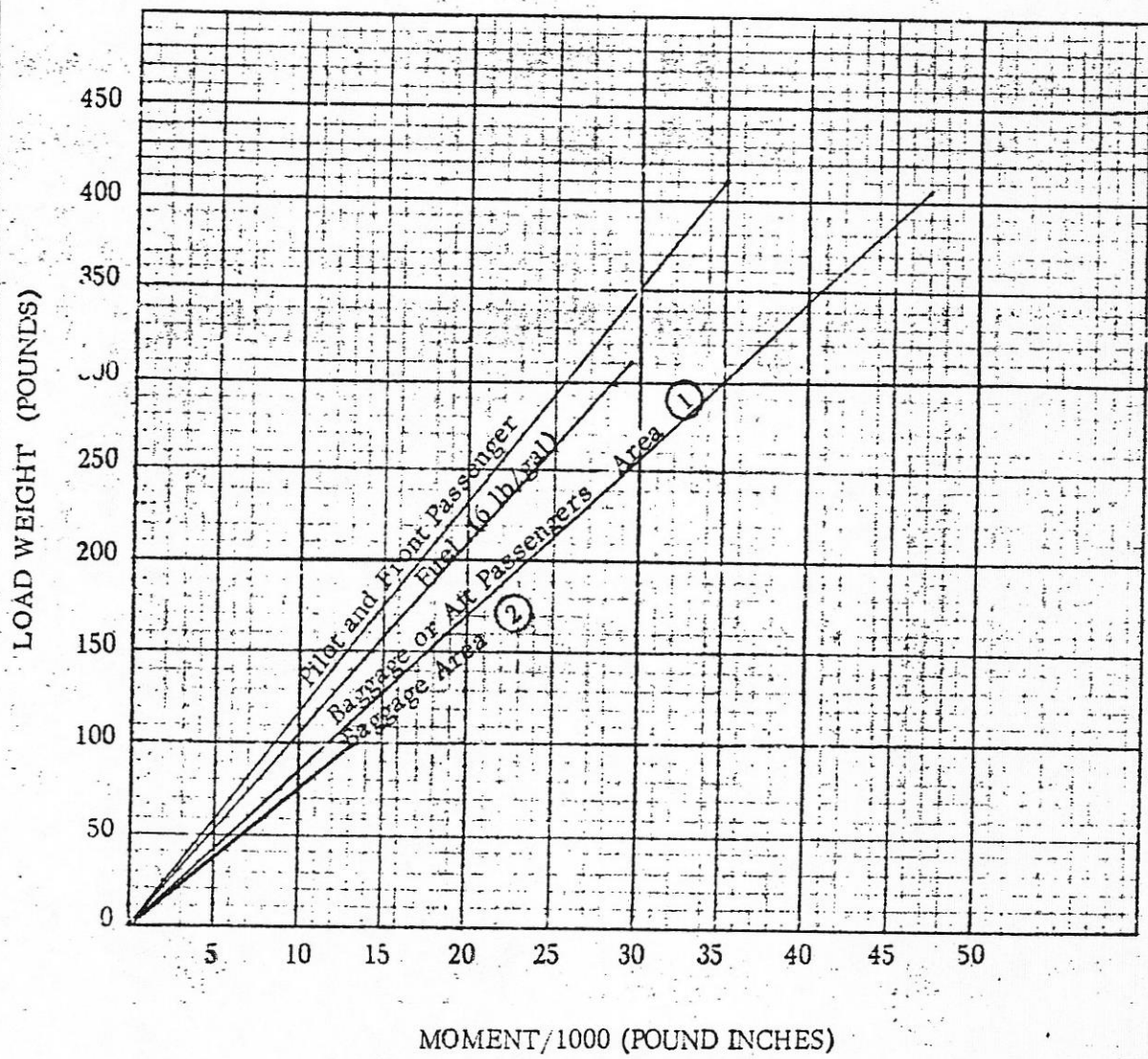
1. S/N 28-20940 and up.
2. S/N 28-20001 through 28-20939 (maximum baggage may be increased to 200 lbs by the installation of Piper Kit 756 962 and Sensenich propeller M74DM58 or 74DM6-0-58).

B. Maximum Allowable Baggage Capacity Area (2) = 100 lbs.

1. S/N 28-20940 and up. (Aircraft are eligible for 100-lb maximum baggage in this area when modified in accordance with Piper drawing 66671).
2. S/N 28-20001 through 28-20939. (Aircraft are eligible for 100-lb maximum baggage in this area by the installation of Piper Kit 756 962, Sensenich propeller M74DM58 or 74DM6-0-58 and when modified in accordance with Piper drawing 66671).

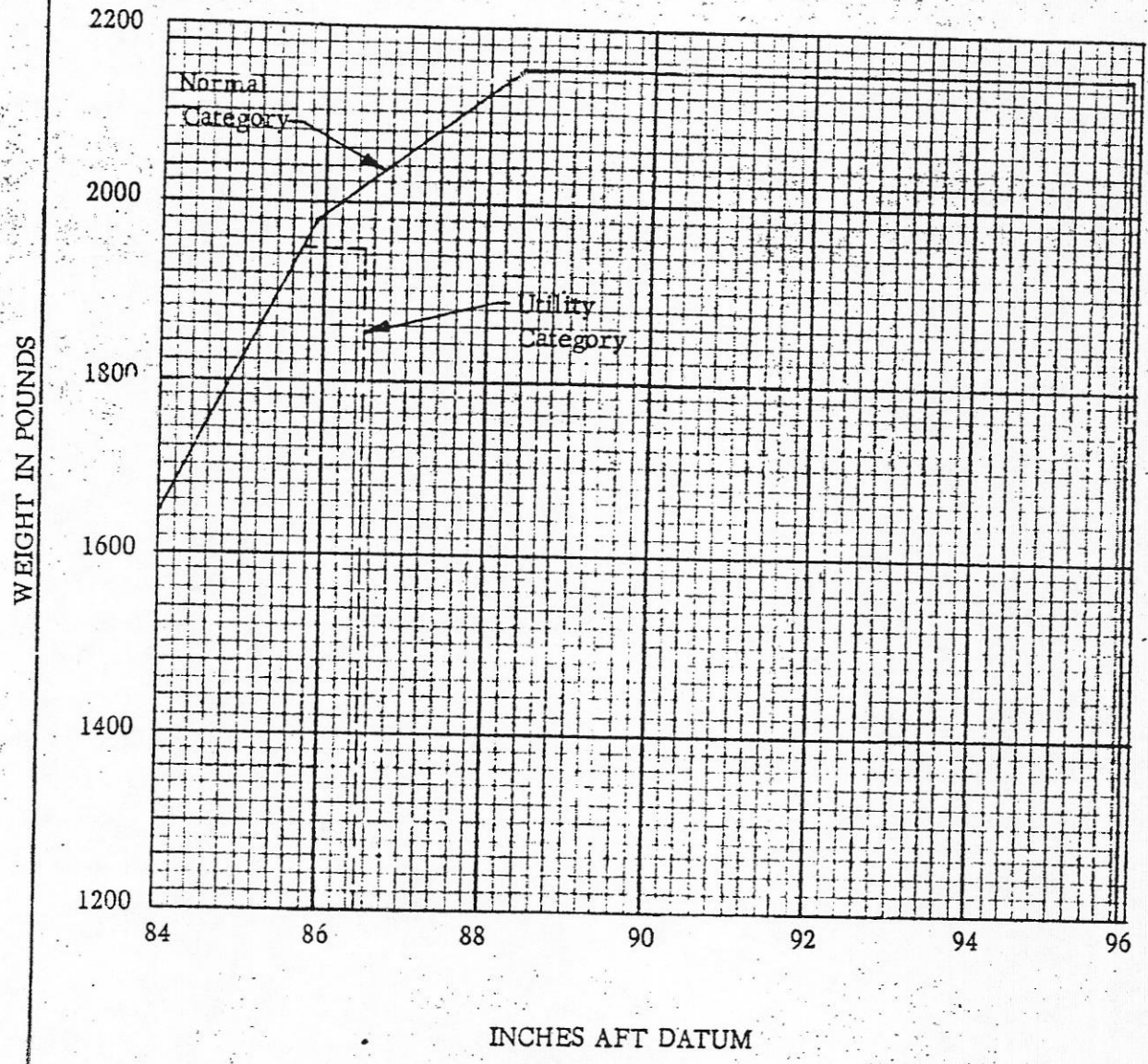
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LOADING GRAPH



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C. G. RANGE AND WEIGHTS



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WEIGHT AND BALANCE DATA

WEIGHING PROCEDURE

At the time of delivery, Piper Aircraft Corporation provides each airplane with the licensed empty weight and center of gravity location. This data is on Page 1, Section 1 of this Flight Manual.

The removal or addition of an excessive amount of equipment or excessive airplane modifications can affect the licensed empty weight and empty weight center of gravity. The following is a weighing procedure to determine this licensed empty weight and center of gravity location:

1. PREPARATION

- a. Be certain that all items checked in the airplane equipment list are installed in the proper location in the airplane.
- b. Remove excessive dirt, grease, moisture, foreign items such as rags and tools from the airplane before weighing.
- c. Defuel airplane. Then open all fuel drains until all remaining fuel is drained. Operate engine on each tank until all undrainable fuel is used and engine stops.
- d. Drain all oil from the engine, by means of the oil drain, with the airplane in ground attitude. This will leave the undrainable oil still in the system. Engine oil temperature should be in the normal operating range before draining.
- e. Place pilot and co-pilot seats in fourth (4th) notch, aft of forward position. Put flaps in the fully retracted position and all control surfaces in the neutral position. Tow bar should be in the proper location and all entrance and baggage doors closed.
- f. Weigh the airplane inside a closed building to prevent errors in scale readings due to wind.

2. LEVELING

- a. With airplane on scales, block main gear oleo pistons in the fully extended position.
- b. Level airplane (see diagram) by deflating nose wheel tire, to center bubble on level.

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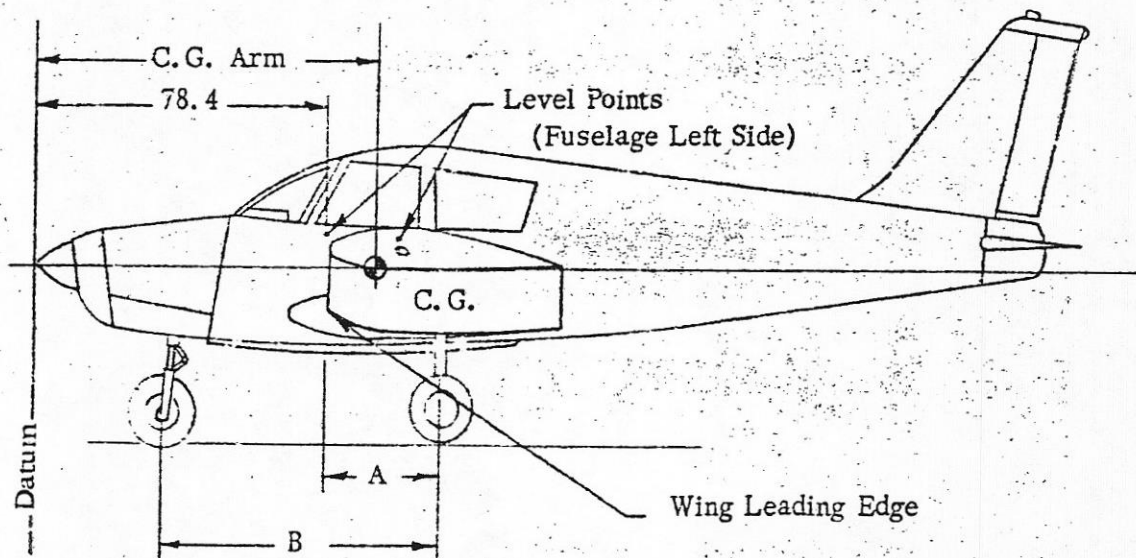
3. WEIGHING - AIRPLANE EMPTY WEIGHT

2. With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.

Scale Position and Symbol	Scale Reading	Tare	Net Weight
Nose Wheel (N)			
Right Main Wheel (R)			
Left Main Wheel (L)			
Airplane Empty Weight, as Weighed (T)			

4. EMPTY WEIGHT CENTER OF GRAVITY

The following geometry applies to the PA-28-140 B airplane when airplane is level (See Item 2).



A =

B =

The datum is 78.4 inches ahead of the wing leading edge at the intersection of the straight and tapered section.

- b. Obtain measurement "A" by measuring from a plumb bob dropped from the wing leading edge, at the intersection of the straight and tapered section, horizontally and parallel to the airplane centerline, to the main wheel centerline.
- c. Obtain measurement "B" by measuring the distance from the main wheel centerline, horizontally and parallel to the airplane centerline, to each side of the nose wheel axle. Then average the measurements.
- d. The empty weight center of gravity (as weighed including optional equipment and undrainable oil) can be determined by the following formula:

$$C.G. \text{ Arm} = 78.4 + A - \frac{B(N)}{T}$$

$$C.G. \text{ Arm} = 78.4 + (\quad) - \frac{(\quad) (\quad)}{(\quad)} = \quad \text{ inches}$$

5. LICENSED EMPTY WEIGHT AND EMPTY WEIGHT CENTER OF GRAVITY

	Weight	Arm	Moment
Empty Weight (as weighed)			
Unusable Fuel (3 pints)	+ 2.2	103.0	+ 227
Licensed Empty Weight			

WEIGHT AND BALANCE
STANDARD EQUIPMENT LIST
MODEL PA 28-140

	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<u>Engine Accessories</u>			
_____	Engine - Lycoming Model 0-320-E2A	261.4	26.1	6822
_____	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.8	41.8	75
_____	Fuel Pump, Engine Driven, Lycoming Dwg. No. 73297, 74082, 75148 or 75246	1.6	41.3	66
_____	Oil Cooler, Piper Dwg. Harrison #C-8526250	2.6	18.1	47
_____	Filter, Fram Model CA-161PL or AC No. A48C or Purolator AFP-2	.9	20.1	18
_____	Starter - Lycoming #69952 (Delco Remy #1109657)	* 17.0	19.5	332
_____	Starter - Lycoming #76210 (Prestolite MZ 4204)	* 17.0	19.5	332
_____	Alternator, 35 Amp., Chrysler No. 2098615 or No. 2642996	12.5	19.0	238
	<u>Propeller and Propeller Accessories</u>			
_____	Propeller, Sensenich M74DM58 or 74DM6-0-58	30.0	10.1	303
_____	Spinner and Attachment Plates	2.0	8.0	16
	<u>Landing Gear and Brakes</u>			
_____	Two Main Wheel Assemblies 6.00-6 (a) Cleveland Aircraft Products (2) Wheel Assembly No. 40-86 (2) Brake Assembly No. 30-55 (b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes	32.0	109.6	3507
_____	One Nose Wheel 6.00-6 (a) Cleveland Aircraft Products Wheel Assembly No. 38501 (less brake drum) (b) One Nose Wheel 4-Ply Rating Tire 6.00-6 with Regular Tubes	12.5	34.8	435

* Included in Engine Weight

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA-28-140
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Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Electrical Equipment</u>			
_____	Stall Warning Device, Safe Flight Instrument Corporation, No. C52207-4	.2	80.2	16
_____	Voltage Regulator, Chrysler No. 2098613	.5	57.8	29
_____	Battery 12V, 25 A. H., Rebat Model S-25	21.5	114.9	2470
	<u>Instruments</u>			
_____	Compass - Airpath No. C2350-L 41	.9	66.6	60
_____	Airspeed Indicator, Piper Drawing 63205	.6	67.7	41
_____	Tachometer, AC 1548302	.8	67.7	54
_____	Tachometer, Stewart-Warner, PAC 62177	.7	67.7	47
_____	Altimeter, Aero Marine No. 522	1.4	66.8	94
_____	Engine Cluster - Piper Drawing 63426	.8	68.8	55
_____	Engine Cluster - Piper Drawing 63922-2	.8	68.8	55
_____	Altimeter, Macleod No. 12003 or 12003M	1.0	66.8	67
	<u>Miscellaneous</u>			
_____	Forward Seat Belts (2)	1.5	86.9	130
_____	Baggage Tie Down Straps	.8	118.0	94
_____	Flight Manual	-----	-----	-----
_____	Tow Bar	1.3	104.7	136

THE ABOVE ITEMS ARE INCLUDED IN THE AIRPLANE STANDARD EMPTY WEIGHT.

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
CHECKED		
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OPTIONAL EQUIPMENT LIST

MODEL PA-28-140

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Engine Accessories</u>			
_____	Vacuum Pump, Airborne Mechanisms Model No. 10-113A1 or 113A5 or 200 cc and Drive	5.0	37.0	185
_____	Starter-Lycoming 74092 (Delco Remy 1109511) (Weight 18.0 lbs.)	1.0 *	19.5	20
_____	Starter-Lycoming 76211 (Prestolite MZ 4206) (Weight 18.0 lbs.)	1.0 *	19.5	20
_____	Oil Filter-Lycoming #74911 (AC 81-A #6437032)	3.3	40.5	134
_____	Vacuum Regulator and Filter	2.2	57.0	125
_____	Vacuum Regulator	1.5	56.0	84
	<u>Electrical Equipment</u>			
_____	Rotating Beacon, Grimes #40-0101-7-12 or Grimes #40-0101-15-12	1.5	263.4	395
_____	Landing Light, G. E. Model 4509	.5	18.1	9
_____	Navigation Lights (2) Grimes Model A1285 (Red and Green)	.4	106.6	43
_____	Navigation Light (Rear)(1) Grimes Model 2064 (White)	.2	281.0	56
_____	Battery 12V., 35 A.H. Reading R-35 (Weight 27.0 lbs)	5.5 *	114.9	632

* Weight and Moment difference between standard and optional equipment.

	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<u>Electrical Equipment (Cont'd)</u>			
_____	Roll Servo Mitchell 1X221E-CH-1	2.8	60.6	170
_____	Console Amplifier and Cables, Mitchell 1X214E	1.8	66.6	120
_____	Dome Light	.3	104.0	31
_____	Speaker	.8	104.0	83
_____	Rotating Beacon, Whelen Model WRML-12	1.6	263.4	421
_____	Auxiliary Power Receptacle 65529	1.3	153.0	199
_____	Diode	2.0	111.5	223
_____	External Power Cable 62355-7	4.6	117.0	538
_____	Piper AutoControl-Mitchell #AKO85	4.5	60.0	270
_____	Piper Pitch Trim	4.0	158.0	632
_____	Heated Pitot Head	.4	100.0	40
	<u>Instruments</u>			
_____	Turn and Bank, Pioneer A-5	1.5	66.4	100
_____	Suction Gauge, AN5771-11	.5	68.1	34
_____	Suction Gauge, U. S. Gauge AW1821AFO3	.5	68.1	34
_____	Suction Gauge, Airborne Mechanisms 1G3-4	.5	68.1	34
_____	Rate of Climb, Standard Precision SP-1403-(1)- PIP	.5	66.8	33

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
CHECKED		
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Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Instruments</u> (Cont'd)			
	Altimeter, AN5760-2 (C-12 or C-13)	Same as Standard Equipment Weight		
	Rate of Climb, Pioneer C-7	1.0	66.8	67
	Rate of Climb, AN5825	1.0	66.8	67
	Artificial Horizon, Jack & Heintz	2.8	66.1	185
	Artificial Horizon, Garwin (3")	1.8	65.8	118
	Artificial Horizon, AIM (3")	2.2	65.3	144
	Directional Gyro, Jack & Heintz	2.6	66.6	173
	Directional Gyro, Sperry	3.9	66.6	260
	Directional Gyro, Garwin (3")	2.4	65.6	157
	Directional Gyro, AIM (3")	3.1	64.9	201
	Air Temperature Gauge, Rochester Manufacturing Co., No. 1592-C2 or NHM-70 (Manning, Maxwell & Moore)	.2	82.6	17
	Clock, 8-Day - MIL-C-7939	.4	68.3	27
	Piper Course Selector, PAC 31058	3.0	66.6	200
	Tru-Speed Indicator, PAC 62143	Same as Standard Equipment Weight		
	Rate of Climb, Karnish AC 135-3	1.0	66.8	67
	Pictorial Rate of Turn, Mitchell 52D69	1.3	66.2	86
	Turn and Bank, Electric	2.2	65.8	145
	Brittain Turn Coordinator #TC-100(12)	2.6	65.6	171
	Artificial Horizon, R. C. Allen (3")	2.2	66.6	147
	Directional Gyro, R. C. Allen (3")	3.3	65.7	217

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA-28-140
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 13 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>AutoPilots</u>			
	AutoControl II			
	Roll Servo, Mitchell #1X221E-CH-1	2.8	60.6	170
	Console, Mitchell #1X224E-3	1.3	66.6	87
	Directional Gyro, Mitchell #52B15E or	4.3	66.6	286
	Directional Gyro, Course Selector PAC Drawing 31058-2	3.0	66.6	200
	Artificial Horizon, Mitchell #52B9	4.5	66.1	298
	<u>Auto Flite</u>			
	Roll Servo, Mitchell #1D363-153	2.6	122.2	318
	Gyro Amplifier, Mitchell #1C359	1.8	111.8	201
	Cables	1.0	95.5	96
	Panel Unit	.3	68.8	21
	<u>Radio</u>			
	Piper Radio Compass PRC-3	4.5	64.4	290
	Piper VHF Transceiver PTR-1	5.0	64.8	324
	Piper Omni Convertor O-1	2.5	65.3	163

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
CHECKED		
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 14 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Radio</u> (Cont'd)			
<input type="checkbox"/>	King KX150B	9.1	62.8	572
<input type="checkbox"/>	Omni Receiving Antenna, Narco VRP-37	1.4	203.0	284
<input type="checkbox"/>	VHF Transmitting Antenna, Narco VTP-17-VHF-1 (Includes Cable)	.7	135.0	95
<input type="checkbox"/>	Low Frequency Antenna	.5	167.0	84
<input type="checkbox"/>	Loop Antenna (PRC-3)	.3	54.5	16
<input type="checkbox"/>	Narco Mark 12			
<input type="checkbox"/>	Transceiver	6.0	62.8	377
<input type="checkbox"/>	Modulator - Power Unit	4.0	56.0	224
<input type="checkbox"/>	Cable	.3	58.0	17
<input type="checkbox"/>	Narco VOA-6 Omni Convertor	1.8	65.3	118
<input type="checkbox"/>	Narco VOA-5 Omni Convertor	3.1	65.3	202
<input type="checkbox"/>	Narco VOA-4 Omni Convertor	3.0	65.3	196
<input type="checkbox"/>	Narco Omnigator VTR-2A Installation (Less Antenna)	14.0	58.0	812
<input type="checkbox"/>	Marker Antenna	1.2	64.8	78
<input type="checkbox"/>	Narco Mark III	7.5	63.6	477
<input type="checkbox"/>	Piper Radio Compass PRC-4	4.9	64.4	316
<input type="checkbox"/>	Loop Antenna (PRC-4)	.4	112.6	45
<input type="checkbox"/>	Piper Omni Convertor OL-1	2.8	65.3	183
<input type="checkbox"/>	VHF Transmitting Antenna, Narco VTP-17-VHF-2 (Includes Cable)	.8	156.6	125

	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<u>Radio</u> (Cont'd)			
_____	Bendix ADF-T-12			
_____	Receiver	3.8	64.9	247
_____	Audio Amplifier	.8	64.9	52
_____	Radio Compass	1.7	67.3	114
_____	Loop Antenna	1.2	160.8	193
_____	Cable, Antenna	1.5	108.0	162
_____	Microphone	.5	66.0	33
_____	Headset	.5	66.0	33
_____	Narco ADF-31 Piper Drawing 65602			
_____	Panel Unit	4.8	64.4	309
_____	Sensor Unit and Doublers	2.2	162.7	358
_____	Sensor Cable	2.3	105.6	243
_____	Sense Antenna and Cable	.4	150.0	60
_____	Omni Tracker (#1D482)	.5	64.5	32
_____	Narco VOA-8 Omni Convertor	3.3	65.3	215
_____	Narco VOA-9 Omni Convertor	3.4	65.3	222
	<u>Miscellaneous</u>			
_____	Fire Extinguisher - Stop Fire #A-20	7.5	93.0	698
_____	Nose Wheel Fairing, Piper Dwg. 65348	3.8	34.8	132
_____	Main Wheel Fairings, Piper Dwg. 65237	7.0	109.6	767
_____	Toe Brakes (Dual)	10.5	54.6	574
_____	Toe Brakes (Single)	5.0	54.6	273
_____	Fire Extinguisher, Kidde Kompact VI (With Brackets)	5.3	85.0	451

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
CHECKED		
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 16 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Miscellaneous</u> (Cont'd)			
_____	Assist Step	1.8	156.0	281
_____	Inertia Safety Belt, PAC 65766 (Set of 2)	2.5	111.6	279
_____	Lighter	.2	68.8	14
_____	Jump Seat Installation, Piper Drawing 66664			
_____	Jump Seats (2)	16.2	118.0	1912
_____	Jump Seat Belts and Cables	* 1.1	123.0	135
_____	Close Out Panel	* 7.3	140.6	1026
_____	Ventilators (2)	1.0	100.9	101
_____	Ash Trays (2)	.8	110.2	88
_____	Assist Strap and Coat Hook	.2	109.5	22
_____	Baggage Tie Down Straps	.8	126.7	101

TOTAL OPTIONAL EQUIPMENT

EXTERIOR FINISH

Base Color _____

1st Trim Color _____

2nd Trim Color _____

Registration No. Color _____

Type Finish _____

* Weight and moment difference between standard and optional equipment.

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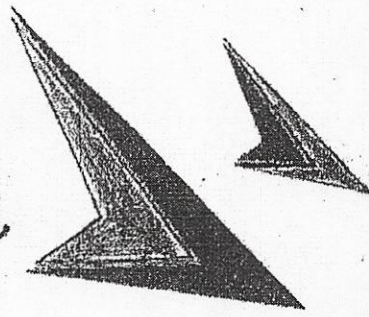
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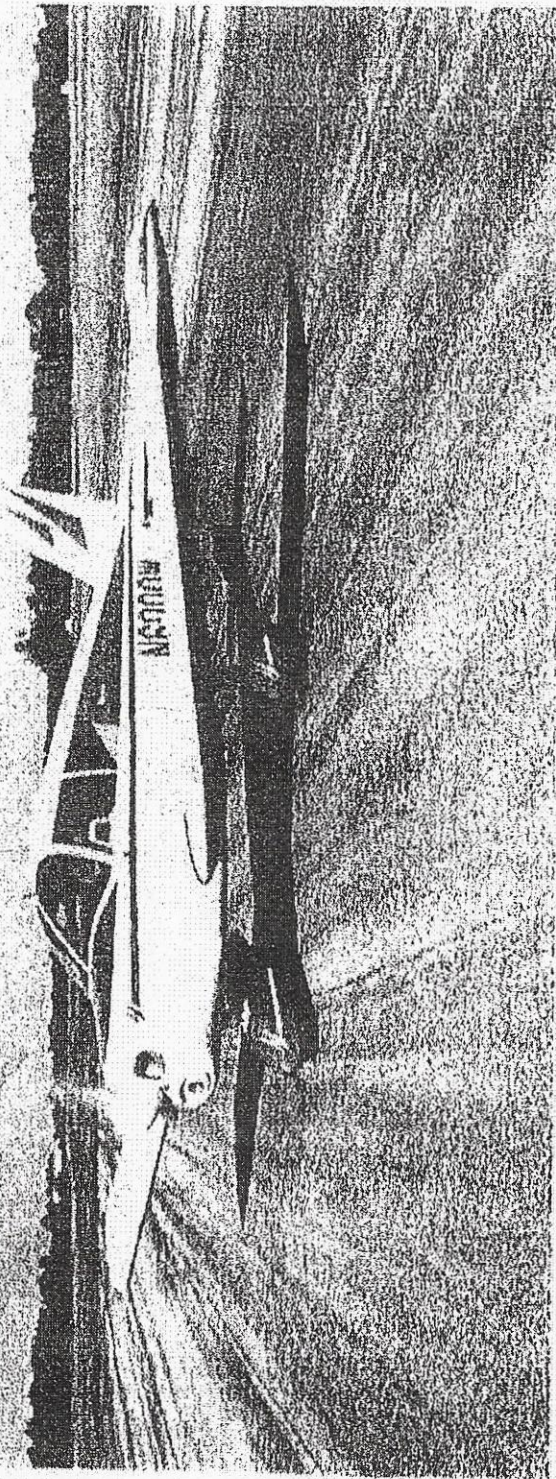
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Owner's Handbook

PIPER



**Piper Aircraft Corporation, Vero Beach, Florida
U. S. A.**



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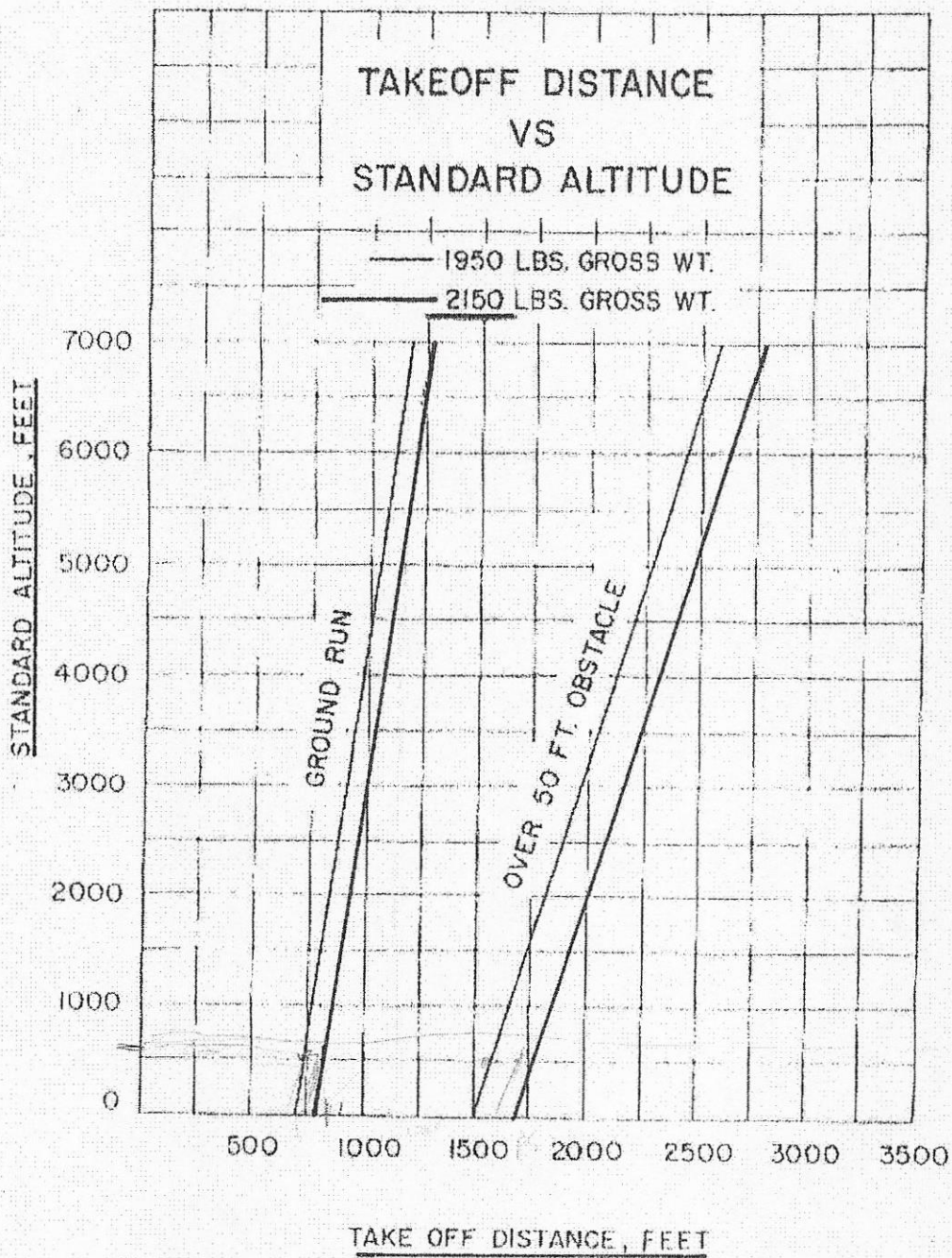
SECTION IV

PERFORMANCE CHARTS

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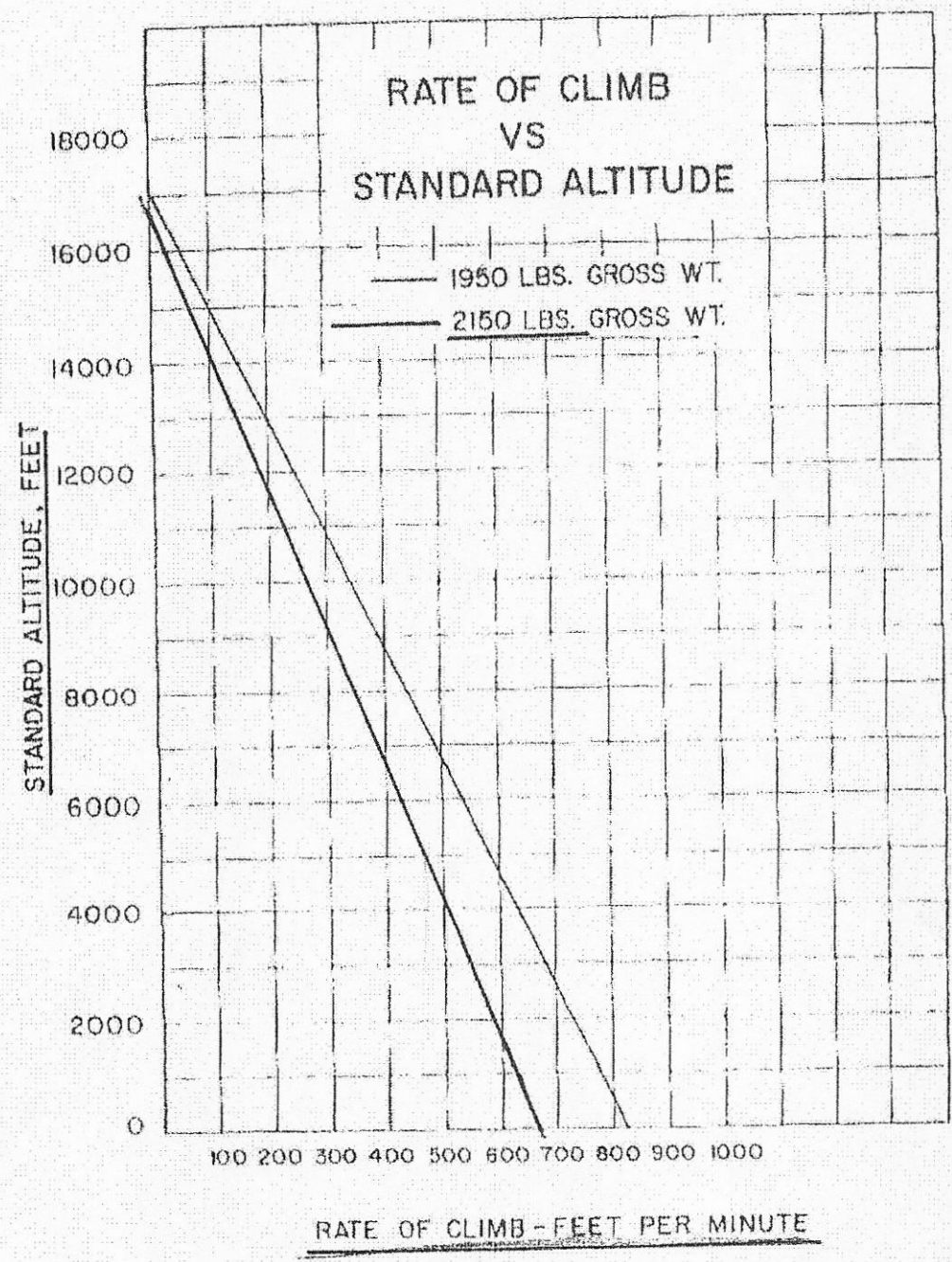
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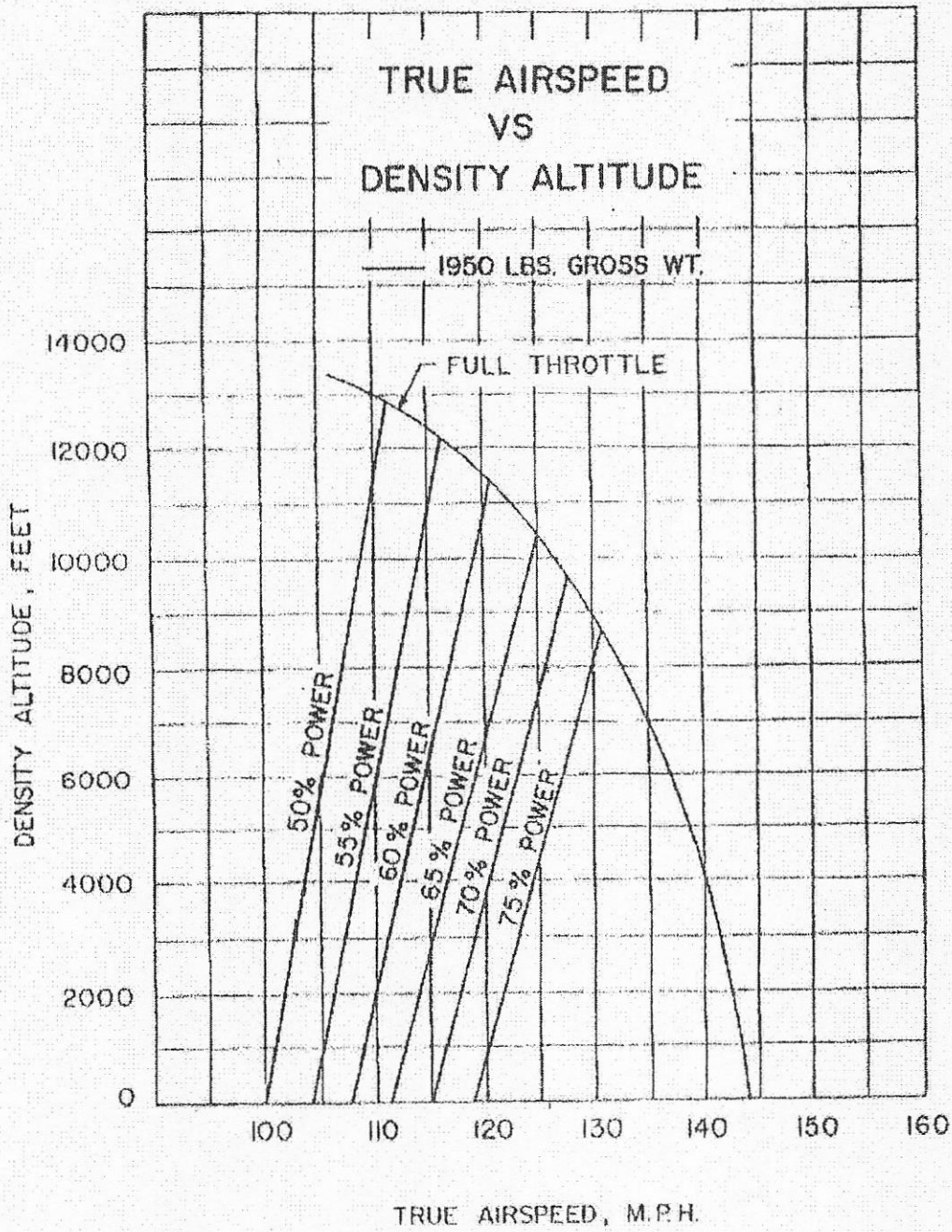


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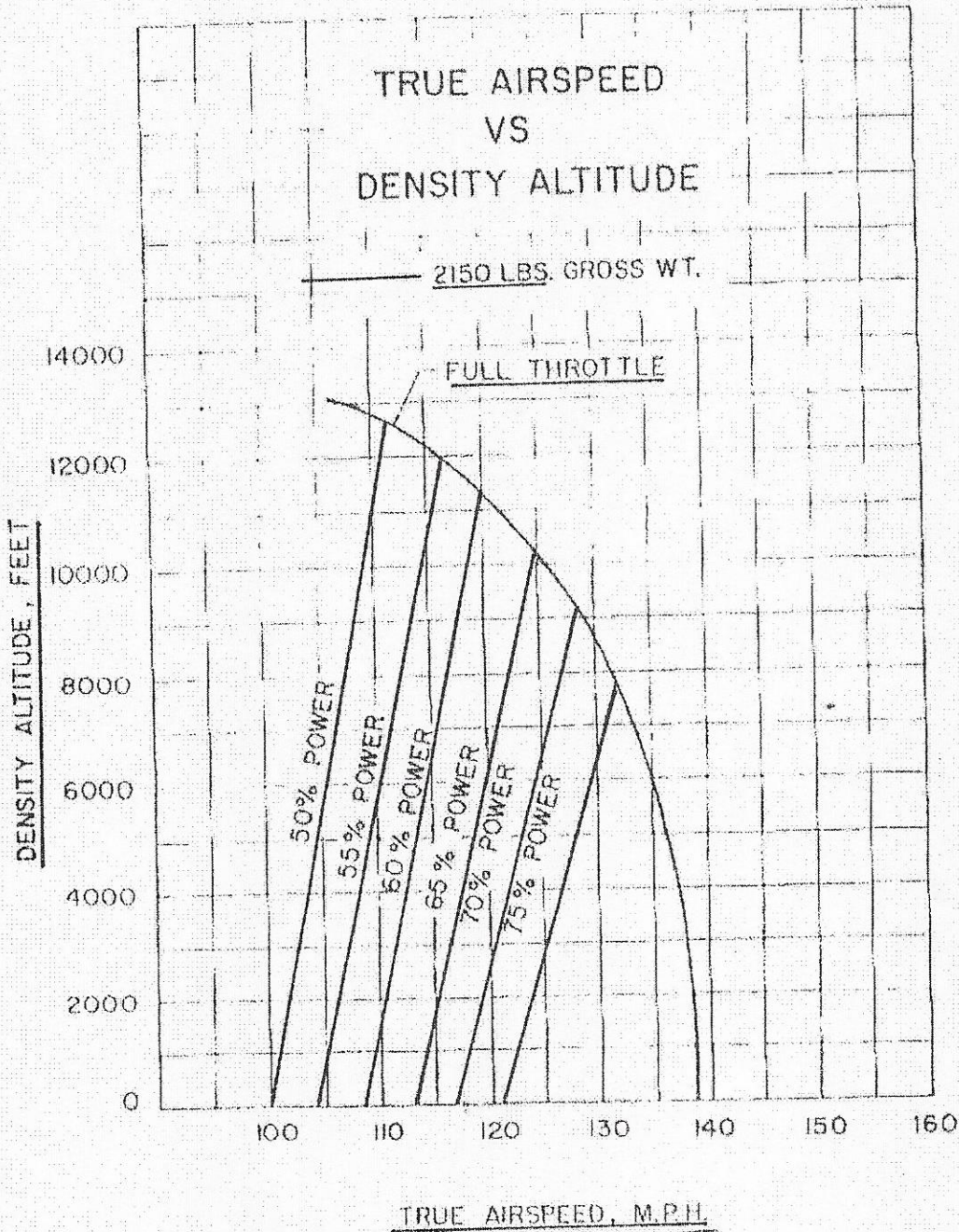
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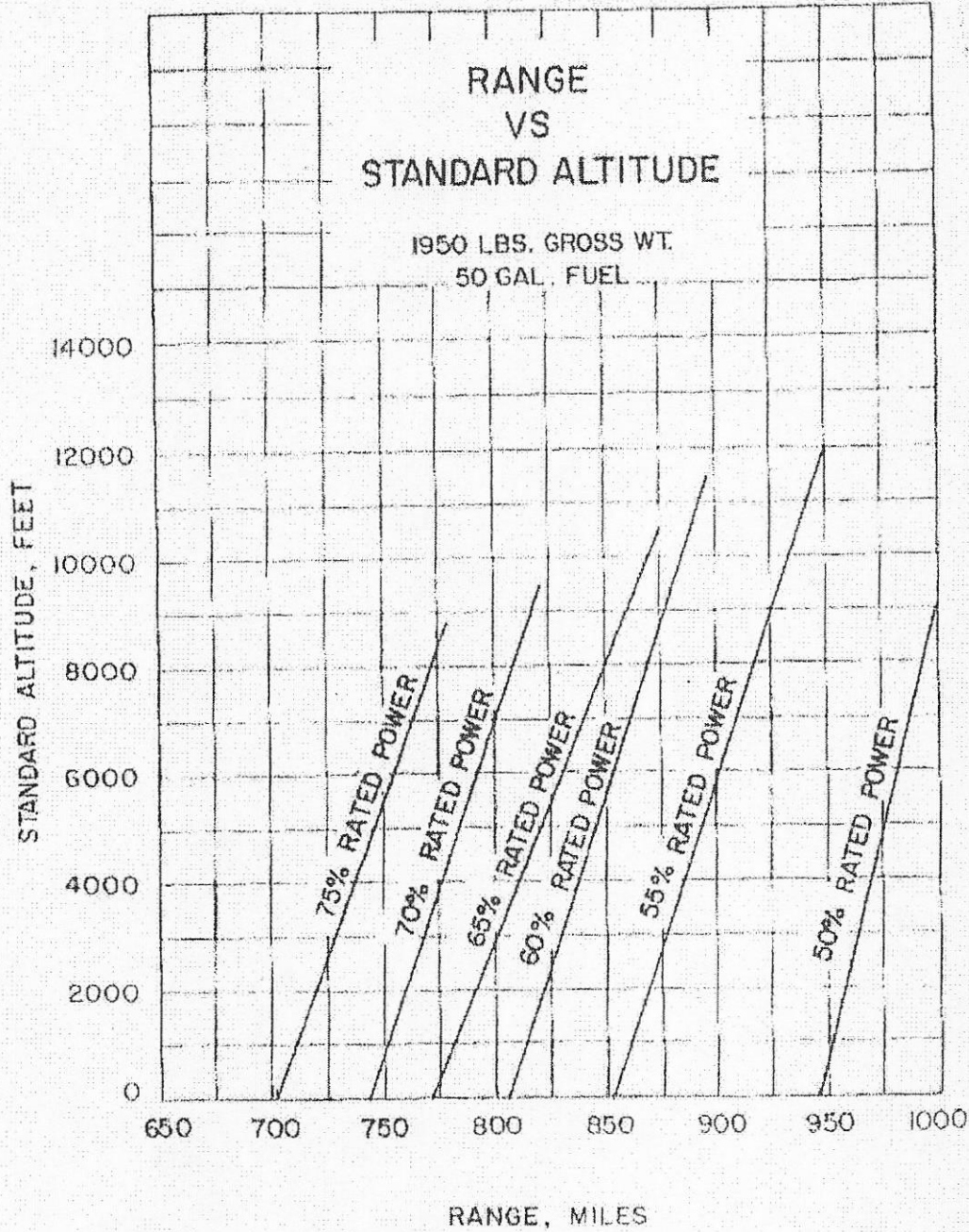


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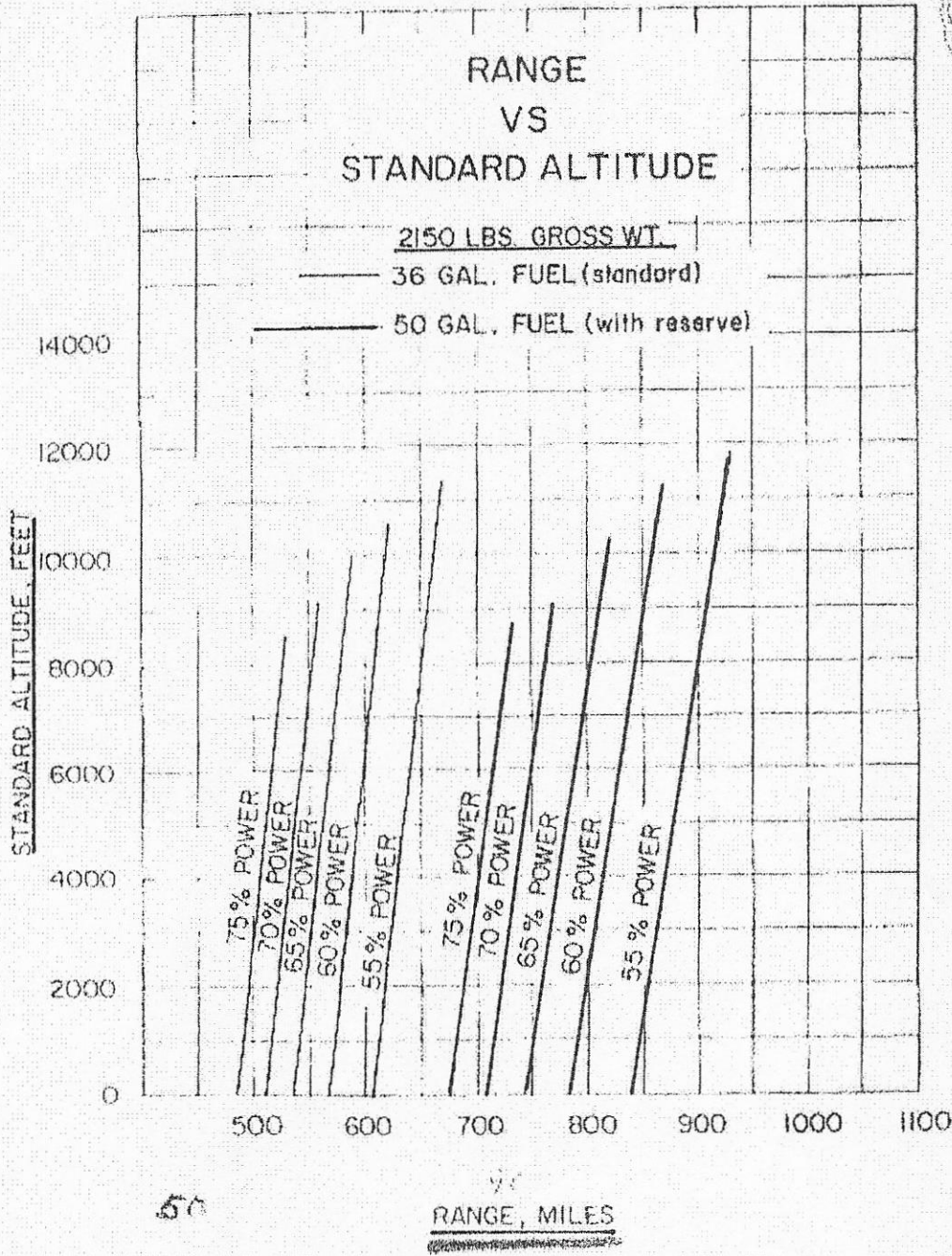
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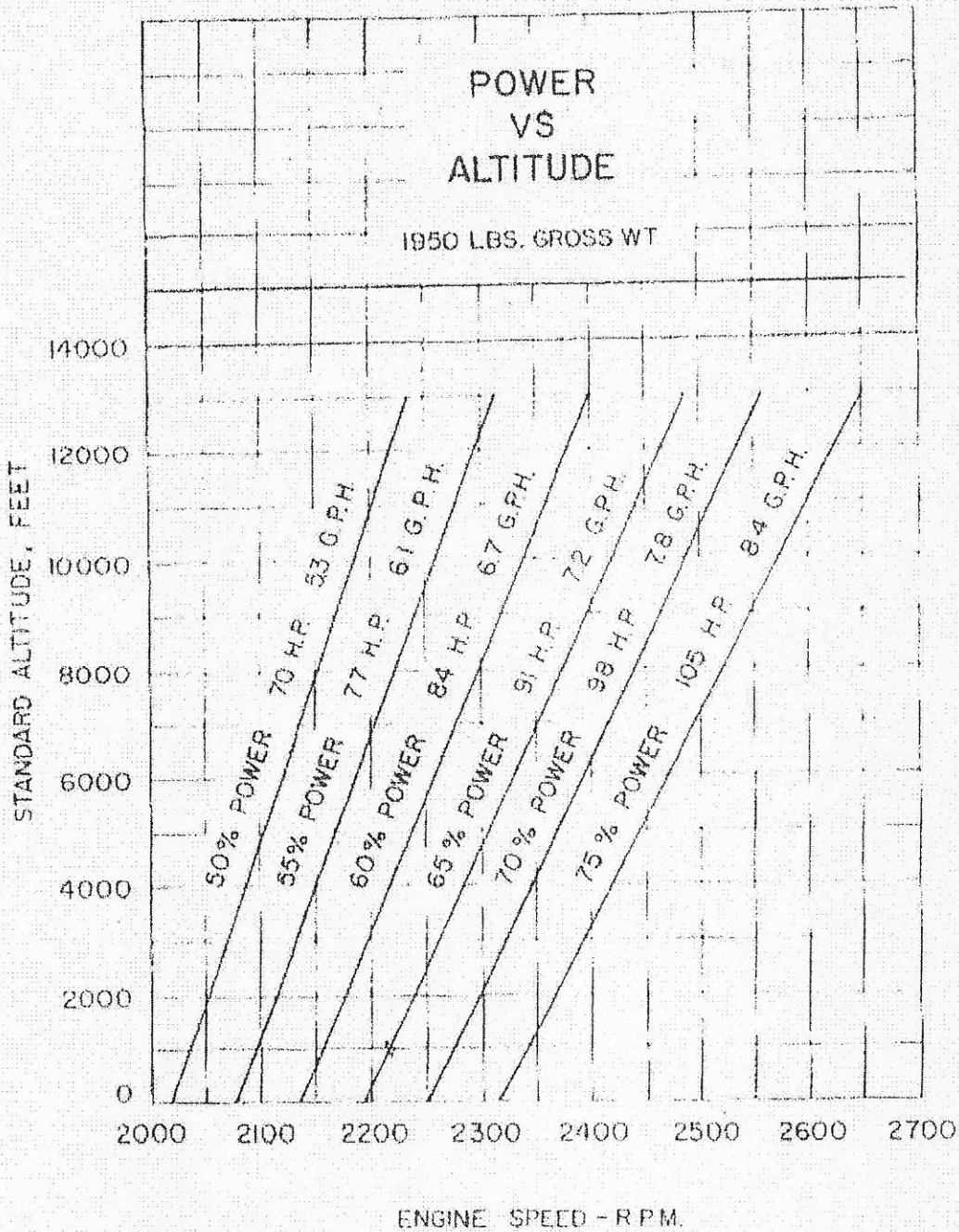


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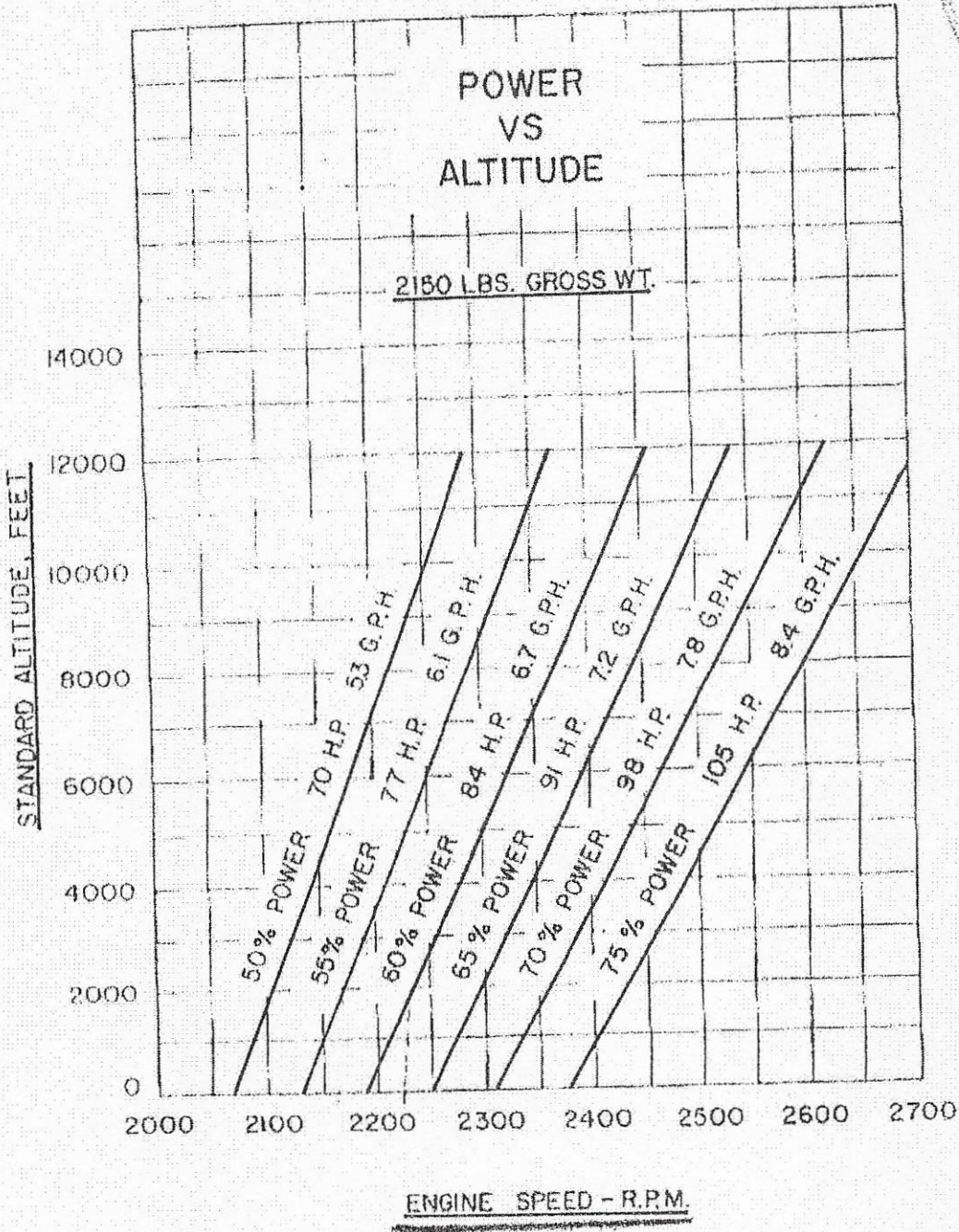
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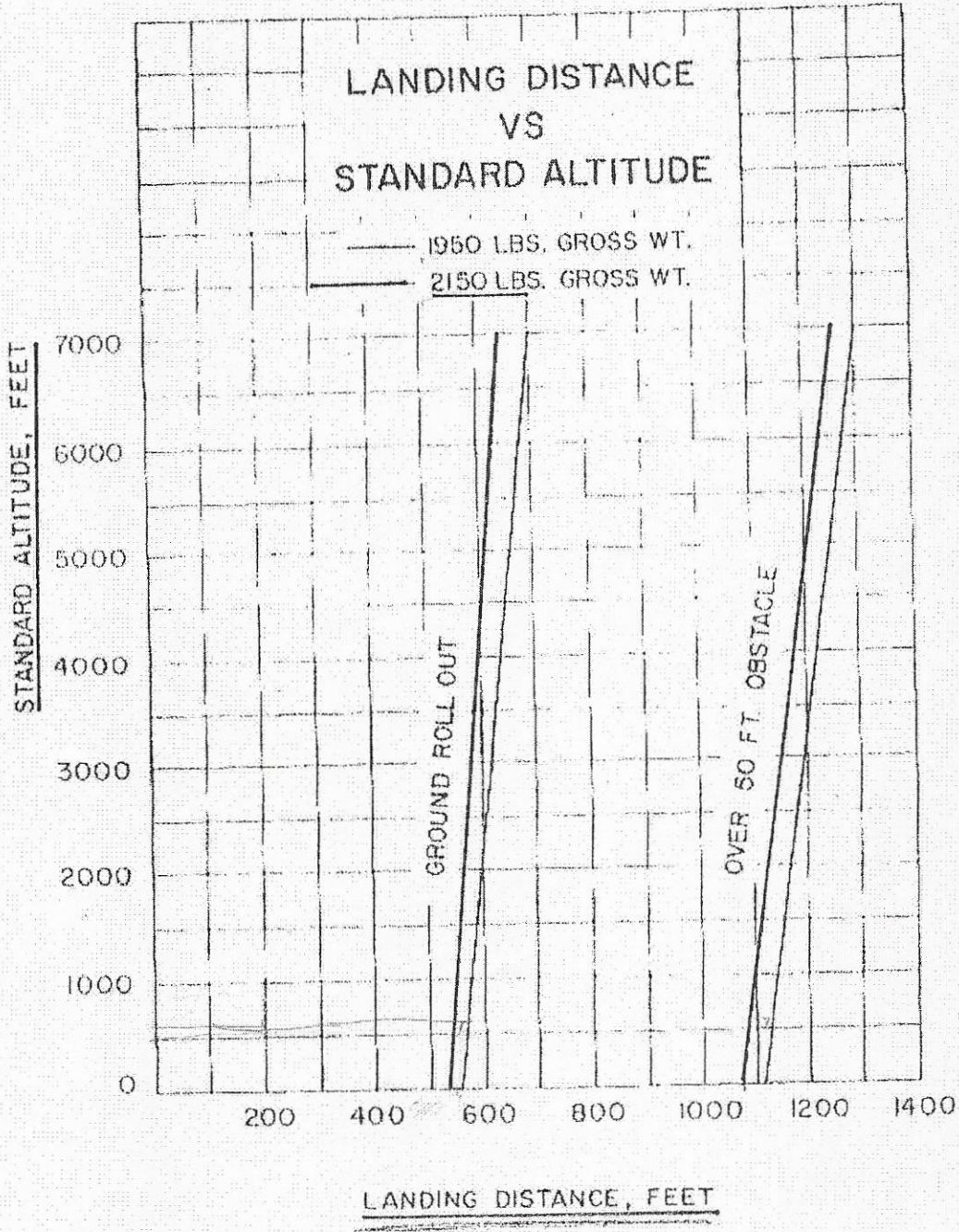
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