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APPROVED	REPORT VB-160	

DUPLICATE

AIRPLANE FLIGHT MANUAL

MODEL PA-28-140

FAA IDENTIFICATION NO. N 7517 R

SERIAL NO. 28-22074

(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

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
1	1	Deleted Propeller - And Static RPM - Information	<i>R.A. Lagan</i> H. E. Waterman Supervisor SO-EMDO-42	3/24/64
2	1	Added Static R.P.M. Information	<i>R.A. Lagan</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. Schuer</i> for H. C. Faller Supervisor, SO-EMDO-43	6/23/65
7	1	Static RPM Corrected	<i>Robert H. Schuer</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	<i>Henry C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	3/16/66
10	4	Add Procedures Section And Item 5		
	3	Added Placard No. 5	<i>Henry C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	5/20/66
11	3	Added Placard No. 6	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	12/6/66
12	2	Revised C. G. Range		
			<i>Henry C. Faller</i> 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.	<i>H. C. Faller</i> 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".	<i>H. C. Faller</i> 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	I	Changed Oil Pressure Gauge Markings	<i>Ward Evans</i>	7-25-75

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Piper Model PA-28-140
Normal and Utility Categories

FAA Identification No. _____
Serial No. 28-22074

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 Oil temperature: 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)
 Oil temperature: GREEN arc (normal operating range) 75°F to 245°F; RED line (maximum) 245°F (S/N 20,551 and up)
 Oil pressure: 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.
 Fuel Pressure: 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).
 Fuel Pressure: 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).
 Tachometer: GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.
- Airspeed Limits Never exceed 171
 (Calibrated Airspeed) Maximum structural cruise 140
 (Miles per Hour) 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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Maximum Weight 1950 lbs. Utility Category - S/N 28-20001 and up
Normal Category - S/N 28-20001 through 28-20939
(Normal category maximum weight for aircraft with S/N 28-20001 through 28-20939 may be increased to 2150 lbs. by the installation of Piper Kit 756 962 and Sensenich propeller M74DM58)

2150 lbs. Normal Category Only (S/N 28-20940 and up)

Baggage Capacity 100 lbs. S/N 28-20001 through 28-20939 (Maximum baggage may be
(+117) increased to 200 lbs. by the installation of Piper Kit 756 962 and Sensenich propeller M74DM58 or 74DM6-0-58. Maximum baggage may be increased to 300 lbs. by the installation of Piper Kit 756 962, Sensenich propeller M74DM58 or 74DM6-0-58 and when modified in accordance with Piper drawing 66671. See Page 2A of the weight and balance section for proper loading of baggage).

200 lbs. S/N 28-20940 and up. (See Page 2A of the weight and balance
(+117) section for proper loading of baggage).

300 lbs. S/N 28-20940 and up. (Aircraft are eligible for 300-lb maxi-
(+117) mum baggage when modified in accordance with Piper draw-
(&) ing 66671. See Page 2A of the weight and balance section
(+133) for proper loading of baggage).

C.G. Range

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

1. Normal Category

<u>Weight</u> (Pounds)	<u>Forward Limit</u> (In. Aft of Datum)	<u>Rearward Limit</u> (In. Aft of Datum)
2150	88.4	95.9
1975	85.9	95.9
1650	84.0	95.9

2. Utility Category

<u>Weight</u> (Pounds)	<u>Forward Limit</u> (In. Aft of Datum)	<u>Rearward Limit</u> (In. Aft of Datum)
1950	85.8	86.5
1650	84.0	86.5

Straight line variation between given points.

NOTE: It is the responsibility of the airplane owner and/or the pilot to insure that the airplane is properly loaded. See weight and balance section for loading information.

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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	RED radial line	Never Exceed	171 mph (148 knots)
Instrument	YELLOW arc	Caution Range (Smooth Air Only)	140 to 171 mph (121 to 148 knots)
Markings	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 E CHEROKEE

Airplane Serial Number 28 -22074

Registration Number _____

Date _____

AIRPLANE EMPTY WEIGHT

Item	Weight (lbs)		C.G. Arm (Inches Aft of Datum)	Moment (In-lbs)
	Actual	Computed		
Standard Empty Weight *				
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			

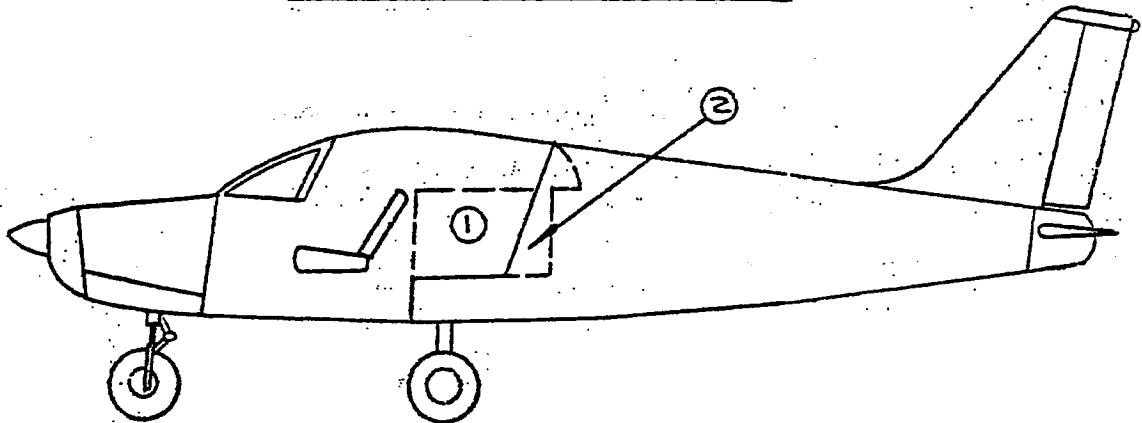
The center of gravity (C. G.) of this sample loading problem is at _____ inches aft of the datum line. Locate this point () on the C. G. range and weight graph. Since this point falls within the weight - C. G. envelope, this loading meets the weight and balance requirements.

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.

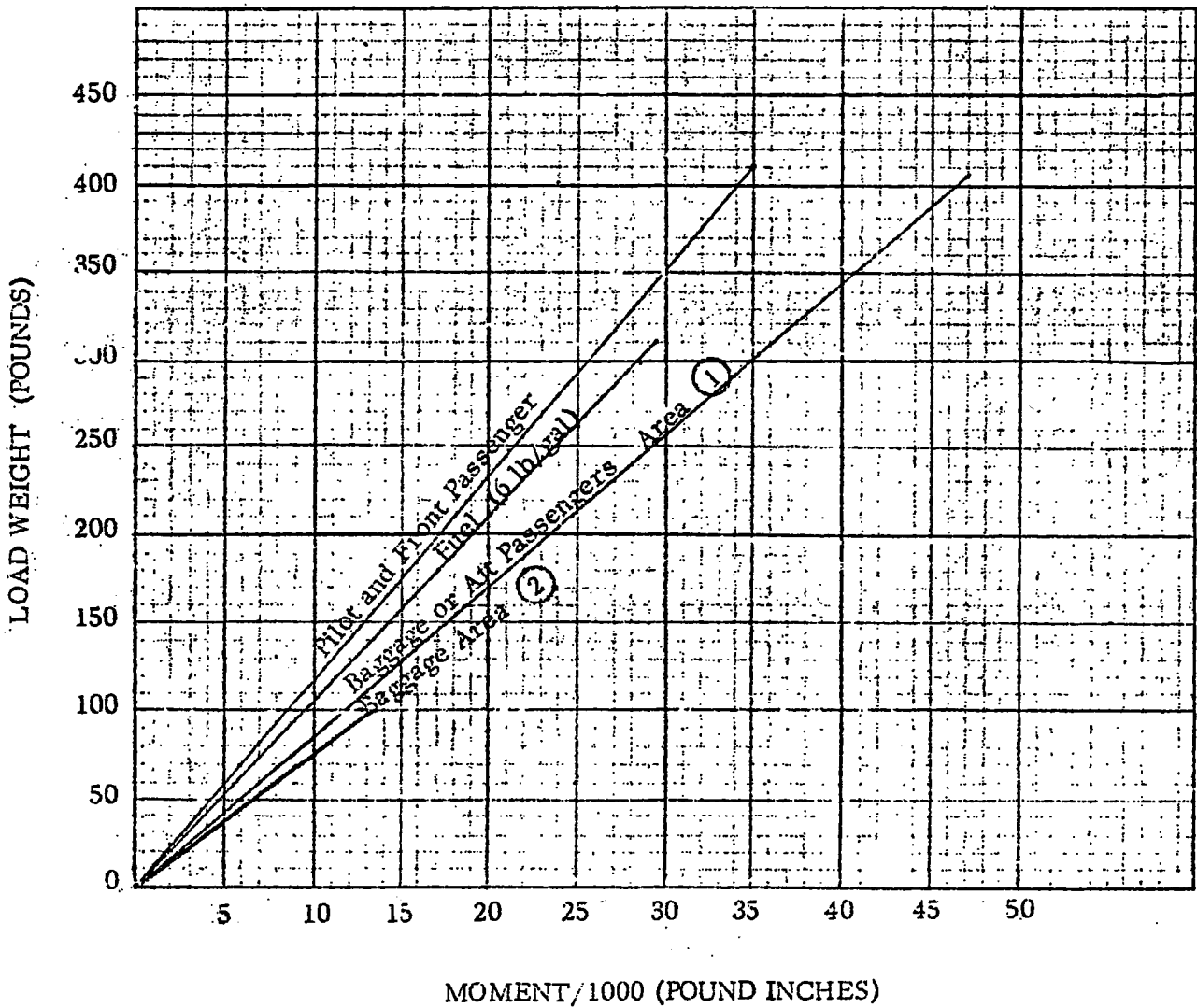
1. S/N 28-20940 and up
2. S/N 28-20001 through 28-20939 (maximum baggage may be increased to 200 lbs by the installation of Piper Kit 756 962 and Sensenich propeller M74DM58 or 74DM6-0-58).

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).

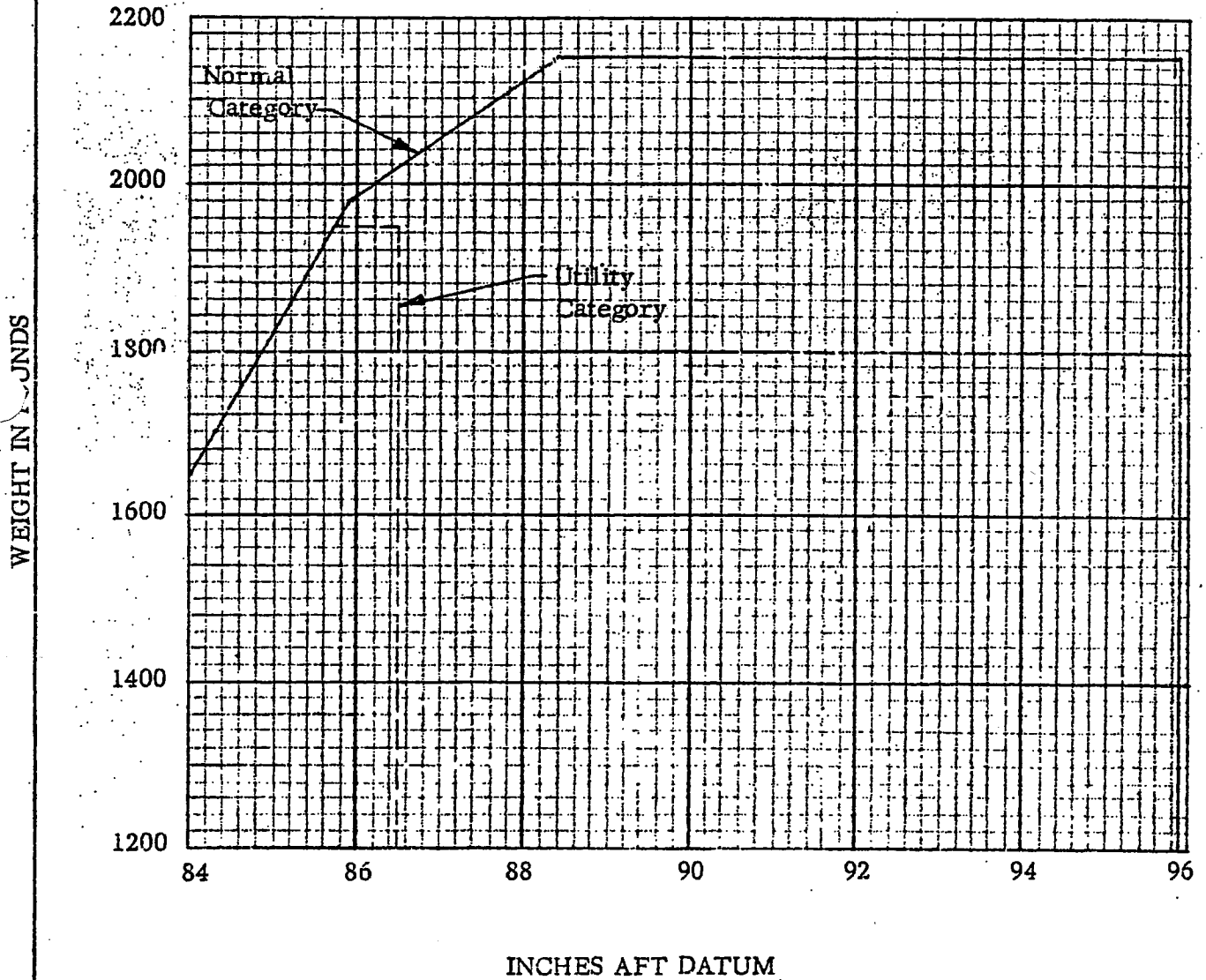
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LOADING GRAPH



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C. G. RANGE AND WEIGHTS



PREPARED <i>J. S. Dean</i>	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140 B
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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.

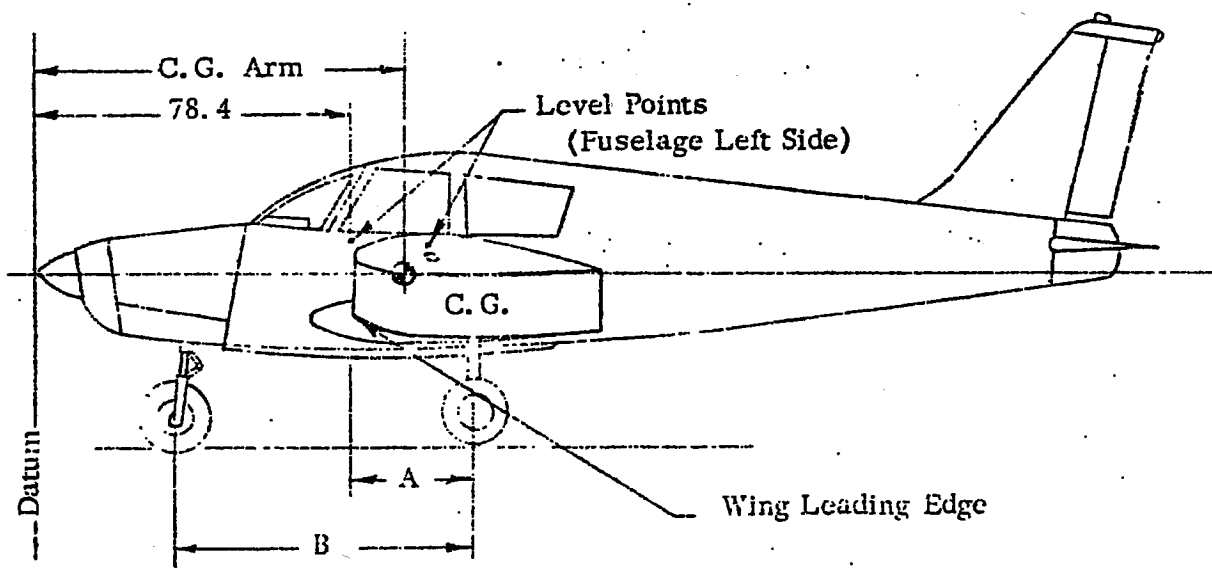
3. WEIGHING - AIRPLANE EMPTY WEIGHT

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.

PREPARED <i>J. S. Dean</i>	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
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- 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 / Equipment List Revision

Aircraft N #: N7517R
 Make: Piper
 Model: PA-28-140
 Serial #: 28-22074

Date: 11/30/2023
 Name: Kent Kelkins
 A&P #: A&P 2666760
 Signature: See attached original

Previous:	Date:		Weight (Lbs):	Arm (Inch):	Moment (Inch/Lbs):
	11/30/2023		1375	85.768	117931.400
Equipment List	In	Out	Weight (Lbs.)	Arm	Moment
Drainable Unusable Fuel	X		2.2	103	226.6
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
TOTALS			2.2		226.6

New Aircraft Empty Weight: 1377.2
 New Arm (CG): 85.80
 New Moment: 118158.000
 Max Gross Weight: 2150
 New Useful Load: 772.80

NOTE: Weight and Balance must be completed and attached to pilot's operating handbook.

Felkins Aviation LLC
P.O. Box 700506
Tulsa Oklahoma 74170

918-691-5637

Aircraft Weighing Data Sheet

Registration: **N7517R** Date: **November 30, 2023**
Make & Model: **Piper PA-28-140** Serial: **28-22074**

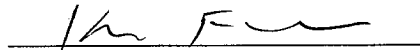
Aircraft as weighed:

Datum is 78.4 forward of wing leading edge.

Fuel drained. Oil full	Pounds	Arm Inch	Moment
Left wheel	452	109.7	49584.4
Right Wheel	486	109.7	53314.2
Nose wheel	437	34.7	15163.9
Total as weighed:	1375	85.86	118062.5
Adjustments:			
Add drainable unusable fuel	2.2	103	226.6
Remove 3rd seat.	-7	118.1	-826.7
Wheel pants not installed.			
Basic Empty Weight	1370.2	85.73	117462.4
	Pounds	C.G.	Moment
Gross weight 2150 Lbs. Useful load 779.8 lbs. Aircraft weighed with one aft seat.			

M2000-3-10 26CS kit calibrated May 23, 2023, Next due May 23, 2024

Computed by :


Kent Felkins AP 2666760

Two seat configuration.



memo

2-10-22

OLD empty weight 1314.0

OLD moment 111656.8

" Useful load 836.0

" C.G. 84.97

Added DME 3.5 207.9

Added GPS 2.6 154.44

^{weight} 6.1 362.34

1/30/23

New weight 1320.0

New moment 111956.8

New useful load 842.1

New C.G. 84.97

John Ingram AWP 3134394

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Weight and balance Supplement
Piper Cherokee 140 S/N 28-22074
N# 7517R

Old A/C empty weight 1325.4
Moment 112233.9

Removed K160DME	7.9	59.4	469.2
Removed Bendix T-122	3.5	59.4	207.9
	<u>11.4</u>		<u>677.1</u>

New A/C empty weight 1314.0
New moment 111656.8
New useful load 836.0
New C.G. 84.97

John Ingram AIP 3134394

Supervised
2/10/2022

ADC AVIATION DEVELOPMENT CO.
P.O. BOX 59906 • OKLAHOMA CITY, OKLA. 73159



John Ingram
2708 S. 115th E. Av.
Tulsa, Okla. 74129

DATE 8-30-94
INVOICE NO. Serial# 28-22074
TERMS: N# 7517R

Piper Cherokee Weight&Balance
Pa-28 140 Supplement

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
	Old aircraft empty weight:	1314	Moment-111449.1
	Added: Kn60C DME	7.9 59.4	469.2
	ACK-30 Encoder	.7 49.4	34.6
	Assist step	1.8 281	281.0
		-----	-----
		10.4	784.8

New Aircraft empty weight: 1325.4

New Moment: 112233.9

New useful load: 824.6

New Aircraft C.G.: 84.68

Name. John B Ingram A & P ~~XXXXXXXXXX~~

Supplement

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

WEIGHT AND BALANCE
STANDARD EQUIPMENT LIST
MODEL PA 28-140

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Engine Accessories</u>			
	Engine - Lycoming Model O-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	32.0	109.6	3507
	(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			
	One Nose Wheel 6.00-6	12.5	34.8	435
	(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			

* Included in Engine Weight

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-140
CHECKED		
APPROVED	REPORT VB-161 STANDARD EQUIPMENT LIST	PAGE 9 Section 1

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-L41	.9	66.6	60
	Airspeed Indicator, Piper Drawing 63205	.6	67.7	41
	Tachometer, AC1548302	.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		
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 10 Section 1

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.

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 11 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<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
CHECKED		Model PA-28-140
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 12 Section 1

	<u>ITEM</u>	<u>WEIGHT (LBS)</u>	<u>ARM AFT DATUM (INCHES)</u>	<u>MOMENT (POUND- INCHES)</u>
Check if Installed	<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

	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<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>AutoFlite</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
CHECKED		Model PA-28-140
APPROVED	REPORT VB-161 OPTIONAL EQUIPMENT LIST	PAGE 14 Section 1

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

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 15 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<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

	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<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.